CDC'S STRATEGY FOR THE

National Environmental Public Health Tracking Program

FISCAL YEARS 2005–2010

HAZARD

EXPOSURE

HEALTH EFFECT

IMPROVED PUBLIC HEALTH

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

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Acronyms

DEFINITION OF TERMS

APHL	Association of Public Health Laboratories
ASTHO	Association of State and Territorial Health Officials
ATSDR	Agency for Toxic Substances and Disease Registry
CDC	Centers for Disease Control and Prevention
CSTE	Council of State and Territorial Epidemiologists
DHHS	U.S. Department of Health and Human Services
ECOS	Environmental Council of the States
EHTB	Environmental Health Tracking Branch
EPA	U.S. Environmental Protection Agency
EPHI	Environmental Public Health Indictors
EPHT	Environmental Public Health Tracking
FERPA	Family Educational Rights and Privacy Act
GIS	Geographic Information System
HANES	Health and Nutrition Examination Survey
HELIX-Atlanta	Health and Environment Linked for Information Exchange, Atlanta
HHS	U.S. Department of Health and Human Services
HIPAA	Health Insurance Portability and Accountability Act
IOM	Institute of Medicine
LPHA	local public health agency
MOU	memorandum of understanding
NACCHO	National Association of County and City Health Officials
NASA	National Aeronautics and Space Administration
NCEH	National Center for Environmental Health
NEDSS	National Electronic Disease Surveillance System
NEHA	National Environmental Health Association
NEIEN	National Environmental Information Exchange Network
NGO	non-governmental organization
NPHPSP	National Public Health Performance Standards Program
OMB	Office of Management and Budget
ORISE	Oak Ridge Institute of Science and Education
PBMS	Performance-based Management System
EPA	U.S. Environmental Protection Agency
PHIN	Public Health Information Network
PMO	Program Marketing and Outreach Workgroup
PSR	Physicians for Social Responsibility
RUP	Rational Unified Process
SHIPP	State/Community HANES Intergovernmental Planning Project
SND	Standards and Network Development Workgroup
TPA	trading partner agreement

Executive Summary

DEFINING CDC'S ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM

> "CDC's National Environmental Public Health Tracking Program is building a national integrated environmental and public health information system that supports national efforts to standardize and facilitate the electronic exchange of information. Linking environmental and health data will enable a timely response to potential health problems related to the environment."
>
> **Dr. Julie Louise Gerberding, MD, MPH**
> **Director, Centers for Disease Control and Prevention**

IN January 2001, the Pew Environmental Health Commission called for the creation of a coordinated public health system to prevent disease in the United States by tracking and combating environmental health threats.[1] In response, the United States Congress appropriated funding to the Centers for Disease Control and Prevention (CDC) in Fiscal Year (FY) 2002. This funding enabled the development of CDC's National Environmental Public Health Tracking (EPHT) Program, which is led by the National Center for Environmental Health's (NCEH) Environmental Health Tracking Branch (EHTB).

The purpose of the EPHT Program (the Program) is to provide information from a nationwide network of integrated health and environmental data that drives actions to improve the health of communities. This National Network (the Network) will integrate three distinct components: hazard monitoring, exposure surveillance, and health effects surveillance. CDC's EHTB is establishing the Network by drawing on a wide range of expertise from federal agencies, state and local health and environmental agencies, non-governmental organizations (NGOs), state public health and environmental laboratories, and the Program's Schools of Public Health.

Data from this Program can be used to identify areas and populations most likely to be affected by environmental contamination and to provide important information on the health and environmental status of communities. The Network will provide valuable data on trends that can be used to study the possible relations between the environment and noninfectious health effects. The data can be used to drive public health policy and actions that ultimately will reduce the burden of adverse health effects on the American public.

This document, *CDC's Strategy for the National Environmental Public Health Tracking Program, Fiscal Years 2005–2010*, provides the conceptual framework to further this important work over the next 5 years. The mission, goals, and objectives described in this plan support CDC's vision for achieving success in both the immediate and the long term while providing clear direction and guidance to the many stakeholders who contribute to the Program's ongoing development and implementation. The strategic plan gives insight into the topics and means that lead to improved Program performance, sustainability, quality, and focus.

CDC has defined the vision, mission, and goals described in the following pages to set a clear direction for the EPHT Program. These core foundational elements incorporate activities internal and external to CDC at the federal, state, and local levels, emphasizing that the vision cannot be achieved alone. To be successful, the Program requires the input and participation of many stakeholders and partners.

Vision:

Healthy Informed Communities

The vision captures the ideal for the National EPHT Program. Translating environmental and public health data into meaningful information leads to increased knowledge; applying that knowledge leads to actions that result in healthy communities.

Mission:

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

The mission provides a means to reach the vision, empowering environmental and public health practitioners, health-care providers, community members, policy makers, and others to make information-driven decisions that affect their health. At the local, state, and national levels, the Network will include a core set of health, exposure, and hazards data; information summaries; and tools for analysis, visualization, and reporting.

Goals:

GOAL 1

Build a Sustainable National Environmental Public Health Tracking Network

Using information from an EPHT Network, federal, state, and local agencies will be better prepared to develop and evaluate effective public health actions. These actions will prevent or control health effects that can be linked to hazards in the environment.

GOAL 2

Enhance Environmental Public Health Tracking Workforce and Infrastructure

Improving infrastructure and developing the workforce will ensure that essential services are provided for existing and emerging environmental public health issues. Sustainability of the Program depends on a trained workforce and adequate equipment, data, and tools for using the data.

GOAL 3

Disseminate Information to Guide Policy, Practice, and Other Actions to Improve the Nation's Health

The public, environmental and public health practitioners, healthcare providers, policy makers, and other people will gain a better understanding of what is occurring in communities and what actions they may take to protect or improve health.

GOAL 4

Advance Environmental Public Health Science and Research

Collecting EPHT data is only one of many steps. Through science and research, critical information will be produced about the following:

- Pathways from hazard source to population exposure (e.g., measured through biomonitoring) to disease
- Patterns of disease and environmental agents over time and space
- Relations and risks among health, environment, and other risk factors
- Methods and tools appropriate for tracking and analysis

GOAL 5

Foster Collaboration Among Health and Environmental Programs

Agencies, organizations, and entities with a vested interest in EPHT will accelerate the impact of the Program. Strengthening these partnerships will enable increased interaction and collaboration.

Introduction

A PROGRAM WHOSE TIME HAS COME

> "The National Environmental Public Health Tracking Program is a giant step towards fulfilling one of CDC's overarching goals and that is that people in all communities are protected from infectious, environmental, and terrorist threats. By integrating environmental and public health information systems, CDC will be better able to protect the nation's health by responding more timely to public health problems related to the environment."

Dr. Julie Louise Gerberding, MD, MPH
Director, Centers for Disease Control and Prevention

Historical Perspective

AT the beginning of the 20th century, the American population faced significant health challenges from continued outbreaks of infectious diseases that ravaged the population.[1] Much of the dramatic decrease in mortality from infectious disease in Western civilization was attributable to environmental public health measures such as disinfection of water, food safety regulations, and housing improvements, among others.[2]

The second half of the 20th century witnessed a dramatic shift in the health burden of the U.S. population from infectious diseases to diseases such as cancer, birth defects, and asthma, many of which may be associated with environmental exposures. During the same period, advances in industrial science and technology led to the development and use of many new chemical compounds. Unheard of 50 years ago, these chemical compounds are now found throughout our air, water, food, workplaces, and homes. Other environmental hazards have also affected the health of Americans, including pollution from increasing traffic and social implications from urban sprawl.

Responding to the evolving health challenges of Americans, the Institute of Medicine (IOM) convened a committee to examine health issues in the United States. In 1988, the committee published *The Future of Public Health*, which noted that the removal of environmental health authority from public health agencies has led to fragmented responsibility, lack of coordination, and inadequate attention to the health dimensions of environmental problems.[3] This document focused on three core functions for public health practice: assessment, assurance, and policy development.

As a companion to IOM's three core public health functions, the Essential Public Health Services list was developed in 1994 by the Core Public Health Functions Steering Committee.[4] This committee, which included representatives from U.S. Public Health Service agencies and other major public health organizations, created a list of ten essential public health services, to communicate the scope and importance of governmental public health services to the public and legislators. Examples of the services in the Essential Public Health Services include monitoring health status to identify and solve community health problems; informing, educating, and empowering people about health issues; and ensuring a competent public and personal healthcare workforce.[5]

In September 2000, the Pew Environmental Health Commission released a report on the state of environmental public health in the United States titled *America's Environmental Health Gap: Why the Country Needs a Nationwide Health Tracking Network.*[6] The commission found that the environmental public health system was fragmented, neglected, and ineffective. The report stated that the current system does not have the capability to respond adequately to environmental threats. The first recommendation made by the commission called on the federal government to establish a National EPHT Network to link information on environmentally related diseases, human exposures, and environmental hazards. The information from this tracking network would be used to respond to, and eventually reduce, the burden of environmentally related diseases on the nation's population. In this strategic plan, the term "tracking" is synonymous with the term "public health surveillance." Tracking data can be used for the purposes shown in the following box.

Uses of Tracking Data[7]

- **Quantify the magnitude of a problem**
- **Detect unusual trends and occurrences**
- **Document the distribution and spread of a hazard or health event and identify populations at risk**
- **Plan and evaluate protective and preventive measures**
- **Facilitate research**
- **Develop information that can inform clinical care providers and stimulate individual-health action**
- **Detect changes in health practice**

Following issuance of the Pew report, the U.S. Department of Health and Human Services (DHHS) published *Healthy People 2010* in November 2000.[8] This document outlined the steps needed to improve the nation's health and presented two overarching goals: (1) increase quality and years of healthy life and (2) eliminate health disparities. The report ranked the environment as one of three primary factors affecting health.

The overarching implication of the DHHS, Pew, and IOM reports and the Core Public Health Functions Steering Committee's Essential Public Health Services is that the nation recognizes and emphasizes the need to improve public health. In alignment with these documents, CDC will lead efforts to implement a National Environmental Public Health Tracking Network that provides information necessary to make healthy decisions in our environment.

Why an EPHT Network Is Needed

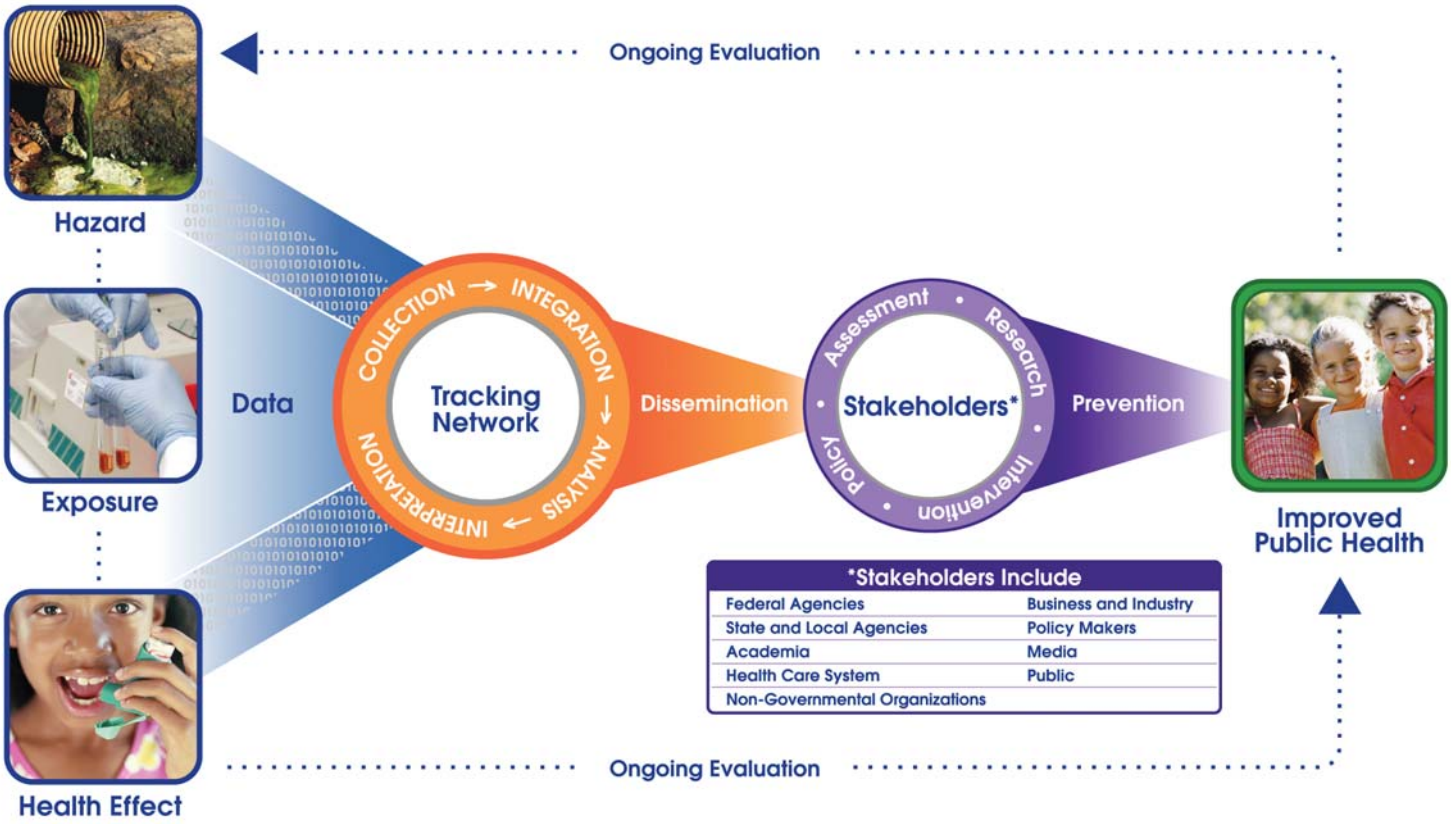
Public health surveillance or tracking systems are critical in preventing and controlling disease in populations.[1] Having accurate and timely surveillance data permits public health authorities to determine disease impacts and trends, recognize clusters and outbreaks, identify populations and geographic areas most affected, and develop and assess the effectiveness of policy and environmental public health interventions.[9] Much of the public health surveillance currently in place in the United States focuses on infectious diseases. An urgent need exists for a more comprehensive national approach to the collection and analysis of non-infectious disease data and the integration of that information with environmental hazard and biomonitoring data. The availability of these types of data in a standardized tracking network will enable researchers, public health authorities, healthcare practitioners, and the public community to begin to understand the possible associations between the environment and adverse health effects.

What EPHT Is

EPHT is the ongoing collection, integration, analysis, interpretation, and dissemination of data from environmental hazard monitoring, and from human exposure and health effects surveillance. As part of Program efforts, CDC is currently leading the initiative to build a National EPHT Network, as shown in Figure 1. The Network will integrate data from these three components into a network of standardized electronic data that will provide valid scientific information on environmental exposures and adverse health conditions as well as the possible spatial and temporal relations between them.

Development of a National EPHT Network depends on the availability, quality, timeliness, compatibility, and utility of existing hazard, exposure, and health effect data.[1]

FIGURE 1: Environmental Public Health Tracking



Hazards include chemical agents, physical agents, biomechanical stressors, and biologic toxins that can be found in air, water, soil, food, and other environmental media. At a minimum, hazard data included in the National EPHT Network will need to be obtained through routine standardized data collecting and reporting and must have ongoing quality control, appropriate geographic coverage for the population at risk, and timely availability.

Exposure tracking is the monitoring of individuals, communities, or population groups for the presence of an environmental agent or its metabolite. Exposure data can include estimates derived from hazard data through sophisticated modeling. Exposure data can also include biomonitoring of hazardous agents in the human body such as childhood lead poisoning surveillance of blood lead levels. However, very little exposure data is currently available for tracking exposures in an ongoing, systematic manner.

The final component—health effects tracking—represents traditional public health surveillance efforts. Disease registries, vital statistics data, annual health surveys such as the National Health Interview Survey, and administrative data systems, such as hospital discharge data, are sources that have been used for tracking health conditions. Using data from these varied sources has created a patchwork of health effect measures, and reliance on these data demonstrates the need for standardization for most disease surveillance.

A key distinction between EPHT and traditional surveillance is the emphasis on data integration across health, human exposure, and hazard information systems.[1] This Program to build a National EPHT Network is the first national effort to provide the United States with standardized data from multiple health, exposure, and hazard information systems that includes linkage of these data as part of regular surveillance activities. The Network builds on separate ongoing efforts within the public health and environmental sectors to improve health surveillance, hazard monitoring, and response capacity.[10, 11] This system will be used to identify potential relationships between exposure and health conditions that either indicate the need for additional research or require intervention to prevent disease, disability, and injury.

Whom the EPHT Network Is For

CDC encourages all interested stakeholders to participate in EPHT program's growth, including environmental and public health practitioners, governmental agencies, Program grantees, healthcare providers, community groups, policy makers, NGOs, industries, and others. To create a strong EPHT Program, regular input from stakeholders is needed to sustain development and accelerate learning.[12] Partner involvement is important because the data for the Network comes from and must be useful to many stakeholders. Through partner involvement,

- many perspectives will contribute to better insights and more solutions for creating the Network;
- sharing of both personnel and assets will lead to efficient use of such resources; and
- stakeholder expertise will provide tailored, community-based approaches that can help the Program achieve its mission.

CDC has funded grantees in state and local health departments, Schools of Public Health, and several national partners. CDC staff members also work with and gather the input of many unfunded partners. Maintaining existing relationships and building new ones are key factors to achieving the goals of the EPHT Program.

Federal Agencies—CDC, as a United States government agency, has the responsibility to promote health through prevention. Though other federal public health and environmental agencies have different missions, several overlapping interests exist. To take advantage of this overlap, CDC formed partnerships through memorandums of Understanding (MOU) with the Environmental Protection Agency (EPA) and the National Aeronautics and Space Administration (NASA).[13] The benefit of these partnerships is to minimize redundancies and leverage each other's resources when working on similar efforts.

States—State governments have the overarching responsibility for implementing environmental and public health programs. CDC values the role that state public health and environmental agencies and laboratories have in achieving EPHT goals. Grants are given to some states to promote working partnerships that are focused on building capacity and implementing demonstration projects to create a national network.

Tribes and Territories—Although they are still regulated under the federal government, tribes and territories retain most of the attributes of their original status as self-governing sovereign nations.[14] Interaction between the Program and the tribes and territories would provide a comprehensive level of data across the nation that is needed to increase EPHT effectiveness.

Local Governments—County, city, and community levels of environmental and public health departments comprise the front lines of the EPHT Program. Local communities tend to be more in tune with the needs of their residents, which leads to more clearly addressing their populations' problems. CDC funds some local governments to establish capacity and demonstrate linkage of data applicable for EPHT.

Schools of Public Health—They provide assistance and expertise to the Program's state and local partners. In 2002 three schools were funded as Centers of Excellence in EPHT to conduct epidemiologic research, develop EPHT methods and tools, provide training, and develop communication and outreach products. The EPHT Program in these Centers provides an excellent training ground for our future environmental public health workforces, and the Network will stimulate further research on environmental risk factors for disease.

Industry—CDC recognizes the private sector, which supplies goods or services, as having the desire to positively affect the public. By sharing their data, private organizations will contribute to and receive valuable information from the Network.

Advocacy and Non-governmental Organizations—Public interest groups and organizations use information strategically to address policies that affect people's lives. Advocacy groups and NGOs work to protect rights and improve the health of the environment and people. These groups share information and increase the involvement of various constituencies in EPHT. After the Network is developed, they will disseminate information from the Network to inform their constituencies.

The Public—Consisting of citizens in diverse geographic and socioeconomic stations across the nation, the public

is the backbone of community efforts. To make healthy decisions related to their environment, members of the public need timely access to environmental and health data that is easily understandable and relevant. The public can aid the Program by providing feedback on information needs and the best methods for communicating that information.

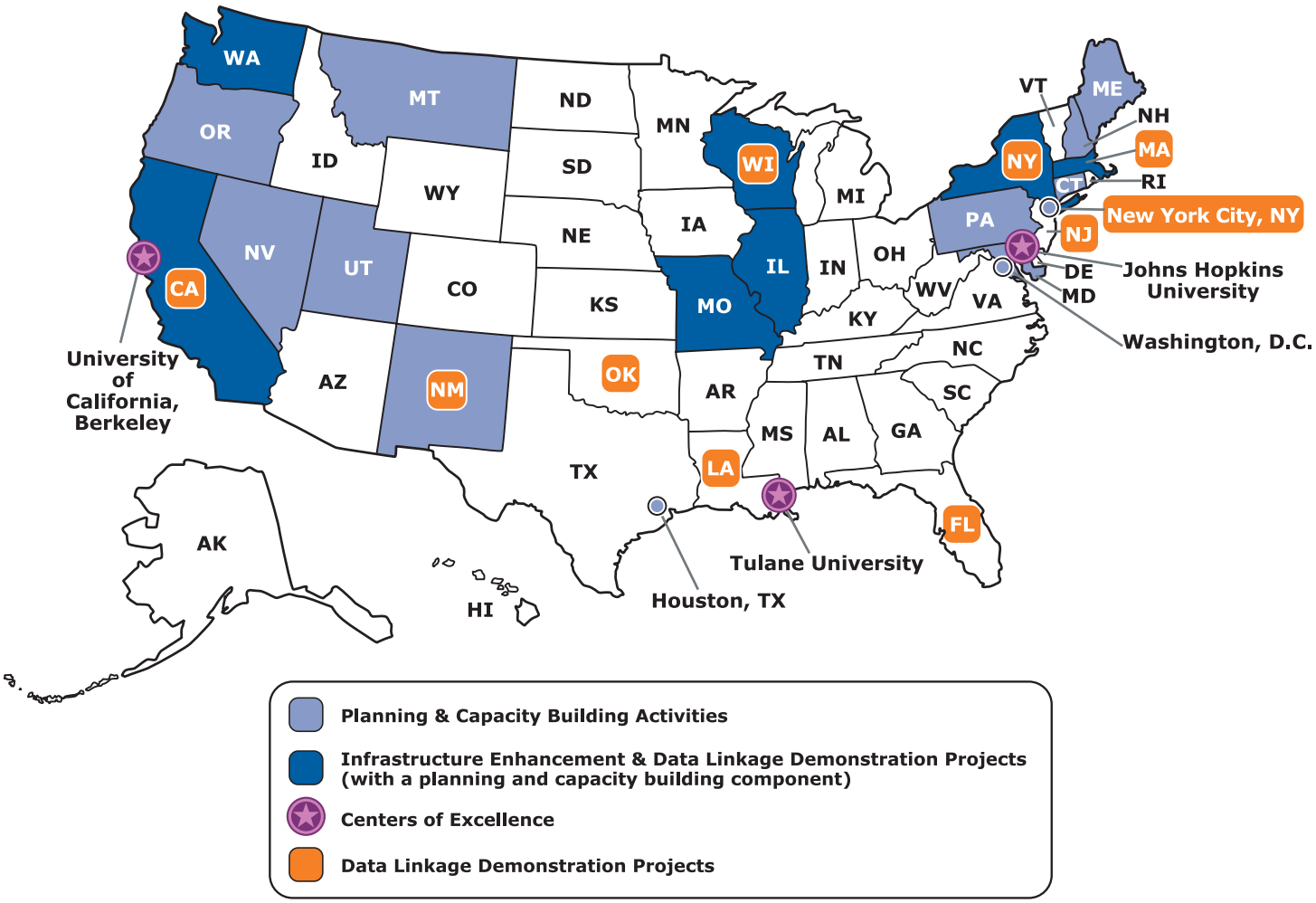
EPHT Strategic Development

Planning for a National EPHT Program is an important priority for CDC because of the opportunity it provides to address some of the most challenging problems facing local, state, and national public health leaders. From the outset, this activity has involved substantial collaboration between CDC and its health and environmental partners.

In August 2001, following up on the Pew report, CDC and the Agency for Toxic Substances and Disease Registry (ATSDR) developed a document titled *CDC and ATSDR's Proposed Plan for an Environmental Public Health Tracking Network*.[15] The plan described methods to (1) develop and implement an integrated tracking system, (2) strengthen the environmental public health workforce at the state and local levels, and (3) improve collaboration among agencies and organizations that have environmental public health and environmental protection responsibilities.

CDC/ATSDR subsequently assembled four workgroups to develop practical recommendations for the National Environmental Public Health Tracking Program. The workgroups included 75 representatives from 30 organizations

FIGURE 2: CDC's Environmental Public Health Tracking Program



including federal agencies, state and local public health and environmental agencies, NGOs, and academic institutions. Held in fall 2001 and spring 2002, the workgroups addressed the following areas:

- Organization and management
- Data technology and tracking methodology
- Tracking system inventory and needs assessment
- Translation, policy, and public health action

The EPHT workgroup process elicited dialog among professionals from diverse disciplines and created recommendations. The workgroups' findings were incorporated into the design of CDC's National EPHT Program and funded tracking activities at the state and local level. A complete report of the workgroups can be found on the Program's Web site at www.cdc.gov/nceh/tracking/tracking_network_workgroups_report.htm

In September 2002, the EPHT began to fund state and local partners to begin the process of developing the National EPHT Network. The EPHT Program relies on the efforts of these state and local partners. At the end of 2004, CDC provided funding through cooperative agreements to 3 cities, 21 states, and 3 Academic Centers of Excellence to promote planning and capacity building activities, infrastructure enhancement, and data linkage demonstration projects. As the funding agency, CDC expects to be substantially involved with the recipients of the funds in carrying out the stated activities. These recipients (grantees) are illustrated in Figure 2 (current as of FY 2004).

In the summer of 2003, Program staff held strategic planning sessions with interested staff of other CDC programs. Results of these sessions included identifying key activities, intended outcomes, and action steps for the EPHT Network.

CDC has gathered input on the EPHT Program in a series of strategic thinking sessions with grantees. These sessions, held in July and December 2003 and March 2004, provided critical building blocks and milestones for envisioning the future of the EPHT Program. These building blocks formed the foundation for the Program's vision, mission, and goals.

In September 2004, a National Partners Update on EPHT activities was held in Atlanta, Georgia. Participants included representatives from the Environmental Council of the States (ECOS), the Association of State and Territorial Health Officials (ASTHO), the National Environmental Health Association (NEHA), Physicians for Social Responsibility (PSR), the National Association of County and City Health Officials (NACCHO), and CDC's EHTB. This meeting was held to continue participation of and collaboration among the organizations.

To broaden input from stakeholders, CDC hosted a National Dialogue on EPHT in Atlanta, Georgia, in June 2004 with city and state grantees, national partners, federal and professional organizations, advocacy groups, and community groups. The stakeholders used this forum for open dialogue on future EPHT activities, including key information and data needs, areas for more intensive stakeholder involvement, and best practices for communicating among stakeholders. Information from this dialogue is available on the CDC Web site at www.cdc.gov/nceh/tracking/dialogue2004.htm.

As a result of this meeting, CDC is developing mechanisms to better share information about the Program. On the basis of stakeholder input, CDC is revising grantee fact sheets, developing information templates, updating EPHT Program status information, and providing a listserv and other forums of communication exchange. These materials are discussed further in the section on Goal 3.

Building on the prior input supplied by stakeholders, CDC conducted conference calls with focus groups in November 2004. Participants were asked to be involved in discussions that built on previous strategic planning efforts. Calls were held with various stakeholder groups, as shown below. Many of the concerns and comments are addressed in this strategic plan and contributed to its development.

Stakeholder Conference Call Groups

- **Advocacy Groups**
- **Associations**
- **CDC/ATSDR**
- **Community Groups**
- **Federal Organizations**
- **Unfunded Cities and States**
- **Grantees: Schools of Public Health, Cities, and States**

The EPHT Network will grow incrementally through a tiered approach with functional components at the local, state, and federal levels. The main building blocks of the Network will be statewide or citywide EPHT networks and national data surveys that enable the exchange and aggregation of data.[1] As national data standards are adopted, health and environmental data will be incorporated into the Network, along with data that are linked at local, state, regional, and national levels. At the federal level, implementation of the Network will require that CDC be able to access agreed-upon state and national data. At the state and local levels, the Network structure will be flexible enough to enable state and local partners to track their own unique priority issues as well as core national diseases, exposures, and hazards.

Aligning with Agency Goals

This strategic plan will serve as CDC's foundation to execute the Program during FY 2005–2010. It outlines what the EPHT Program can accomplish in addressing environmental public health challenges and ensures that the Program is aligned with and assists both CDC and HHS in achieving their programmatic and informatics goals.

As new guidance is provided through CDC's Futures Initiative, the Program will monitor its alignment with CDC goals. The CDC Office of Strategy and Innovation, which leads the CDC goal setting effort, developed two overarching health protection goals shown in the following box.

CDC Health Protection Goals

HEALTHY PROMOTION AND PREVENTION OF DISEASE, INJURY, AND DISABILITY:
All people, especially those at higher risk due to health disparities, will achieve their optimal lifespan with the best possible quality of health in every stage of life.

PREPAREDNESS:
People in all communities will be protected from infectious, occupational, environmental, and terrorist threats.

The EPHT Network directly contributes to CDC's strategic goal of "health promotion and prevention of disease, injury, and disability." By integrating data on environmental hazards, exposures, and health effects, the EPHT Network provides federal, state, and local agencies needed information to develop and evaluate effective public health action. Subsequently, health effects potentially linked to hazards in the environment can be prevented or controlled. EPHT data also can be used by healthcare providers to improve patient care and targeted preventive services and by members of the public to determine what actions they should take to improve their health.

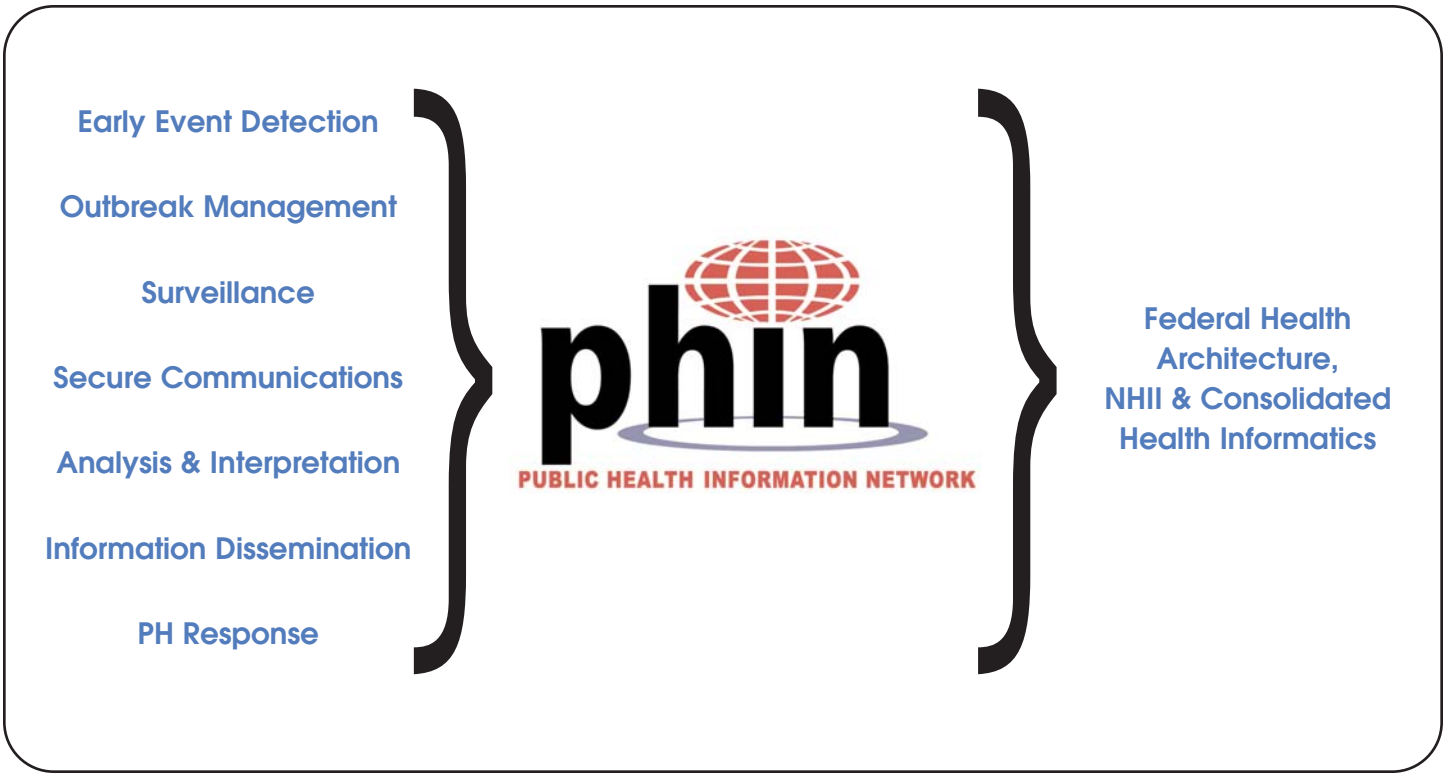
Additionally, the EPHT Network directly contributes to CDC's strategic goal of preparedness by providing timely, integrated data on environmental hazards, exposures, and health effects at the federal, state, and local levels. The Network provides a basis for public protection from environmental health events that are immediate (e.g., carbon monoxide poisoning) or long-range (e.g., cancer).

As a component of CDC's Public Health Information Network (PHIN), Figure 3, the EPHT Network contributes to the HHS Enterprise IT strategic plan. This plan states that HHS and CDC will "provide a well-managed and secure enterprise information technology environment that enables stakeholders to advance the causes of better health, safety, and well-being of the American people."[16] Specifically, the EPHT Network aligns with the following goals:

HHS Goal 1: Provide a secure and trusted IT environment—Through the adoption of PHIN standards and specifications, the EPHT Network ensures integration and interoperability among the numerous information systems across the public health environment, promoting a higher degree of reliability, security, and trust.

HHS Goal 2: Enhance the quality, availability, and delivery of HHS information and services to citizens, employees, businesses, and governments—The EPHT Network, in collaboration with PHIN, will contribute to the documentation and development of data exchange specifications and components to enable reliable and secure messaging to targeted audiences.

FIGURE 3: CDC's Public Health Information Network (PHIN)



HHS Goal 3: Implement an enterprise approach to information technology infrastructure and common administrative systems that will foster innovation and collaboration—The EPHT Network, in collaboration with PHIN, will advance this goal through documentation of requirements and through the development and adoption of specifications that systems supporting environmental public health jurisdictions must implement. This approach creates an information technology infrastructure that can be integrated across environmental public health and its diverse and numerous organizations.

HHS Goal 4: Enable and improve the integration of health and human services information—The EPHT Network, in collaboration with PHIN and other federal agencies [e.g., EPA's National Environmental Information Exchange Network (NEIEN)], will advance this goal by integrating data on environmental hazards, exposures, and health effects. The EPHT Network provides federal, state, and local agencies needed information to develop and evaluate effective public health action to prevent or control health effects that can be linked to hazards in the environment.

GUIDING FRAMEWORK FOR THE NATIONAL ENVIRONMENTAL PUBLIC HEALTH TRACKING PROGRAM

Strategic Elements

Responsible for directing NCEH's national tracking efforts, this CDC strategic plan articulates the critical elements of the EPHT vision, mission, goals, and objectives. These elements combine to set a clear direction for the Program through 2010 and acknowledge the need to rely on expertise and resources not only from CDC, but also from across environmental public health as a whole.

The Program's vision, mission, and goals are positioned to incorporate multiple dimensions, including activities internal and external to CDC at the federal, regional, state, local, tribal, and territorial levels and among other public and private partners (e.g., academic institutions). CDC recognizes its leadership role as providing scientific expertise and public health service as well as being the federal public health agency that empowers state, local, and other partners to execute their responsibilities through its funding and programmatic support.

This strategic plan does not constitute a summary of:

- lessons learned or current status reports from ongoing federal, state, local, and academic efforts;
- definitions and standards of common tracking-network data elements; or
- detailed network architecture plans.

Though summarizing these components of environmental public health tracking is important, such components are being addressed in ongoing EPHT workgroups and other operational documents, including the *Environmental Public Health Tracking Network Vision*, that can be found on the Program's Web site at www.cdc.gov/nceh/tracking.

Program Evaluation

Program evaluation is a critical component and a common thread throughout the activities that support the Program's vision, mission, and goals. CDC evaluates its grantees through progress reports that demonstrate whether grantees have met cooperative agreement requirements.

In the same manner, the Program is accountable for ensuring that its work aligns to the guidelines of utility, feasibility, propriety, and accuracy.[17] These standards guarantee that the program's efforts satisfy the information needs of users, are viable and pragmatic, are ethical, and produce accurate findings. Furthermore, as a federal agency sensitive and responsible to the nation's accountability standards, CDC must demonstrate tangible progress towards its overall Program goals. Effective performance management, which includes planning, measurement, and evaluation, ensures compliance with the performance standards of the Office of Management and Budget (OMB).

Vision

Healthy Informed Communities

The vision statement describes what CDC's EPHT Program strives to achieve in the future as a long-term ideal. This vision not only provides EPHT Program staff and partners with a focused, noble purpose but also supports the CDC vision: "Healthy People in a Healthy World—Through Prevention."

EPHT is an initiative to protect communities by providing information to all those who can use it to take action and make decisions to improve health. For example, federal, state,

and local public health agencies will use this information to plan, apply, and evaluate public health actions to prevent and control environmentally related diseases. As a result, people will have the opportunity to lead healthier lives.

Mission

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

The mission statement identifies the purpose of the organization and describes the Congressional mandate that the Program must fulfill. This statement also supports the CDC mission: To promote health and quality of life by preventing and controlling disease, injury, and disability.

The Program will develop a tracking system that integrates data about environmental hazards and exposures with data about diseases that are possibly linked to the environment. This tracking system will allow federal, state, and local agencies and others to

- monitor and distribute information on occurrence and trends among environmental hazards, exposures, and health effects;
- advance research on possible associations among environmental health effects that are linked to exposure to environmental hazards; and
- develop, implement, and evaluate regulatory and public health actions to prevent or control exposure to environmentally related hazards.

Goals

The five goals of the Program chart the course by which CDC will work to create a positive impact in environmental health. These goals were designed by incorporating and synthesizing the results of previous dialogue, strategic sessions, and meetings with stakeholders. The goals are broad achievements necessary to reach the vision and conduct the mission.

Achieving the Program's goals is a complex yet viable undertaking. Network infrastructure, data collection, essential partnerships, solid science, clear communication, specialized training, and capacity building are some of the components contributing to making the Program a success. All of the goals are interdependent and build upon each other to provide substance and momentum to future efforts.

Objectives and Activities

To ensure that the tasks that lie ahead are more manageable, this strategic plan outlines objectives and activities to focus the Program's efforts in both the immediate and long term. These objectives support the intent of each goal and chart the course of activities through the end of FY 2010. Objectives describe tactically how the Program will attain its goals.

Summary of Goals and Objectives

The goals and objectives listed below are essential to reaching the overall vision of healthy, informed communities. The implementation of these goals and objectives will require a coordinated effort from CDC and its stakeholders through partnership, collaboration, commitment, and dedication to environmental public health tracking.

Goal 1: Build a Sustainable National Environmental Public Health Tracking Network

Objectives:

A. Design the National EPHT Network requirements, standards, and tools
B. Construct the Network
C. Deploy the Network
D. Update the Network design, functionality, and content

Goal 2: Enhance Environmental Public Health Tracking Workforce and Infrastructure

Objectives:

A. Build EPHT expertise through workforce development
B. Facilitate the growth of EPHT infrastructure

Goal 3: Disseminate Information to Guide Policy, Practice, and Other Actions to Improve the Nation's Health

Objectives:

A. Implement communications and outreach strategies to develop and deliver information to key audiences
B. Facilitate and promote effective risk communication at the state and local level

Goal 4: Advance Environmental Public Health Science and Research

Objectives:

A. Synthesize current state of EPHT knowledge
B. Identify and facilitate EPHT analytic approaches
C. Translate science and research into public health practice

Goal 5: Foster Collaboration Among Health and Environmental Programs

Objectives:

A. Engage health and environmental programs as partners in EPHT
B. Collaborate with EPHT partners to improve knowledge, resources, and accountability

GOAL 1:

BUILD A SUSTAINABLE NATIONAL ENVIRONMENTAL PUBLIC HEALTH TRACKING NETWORK

OBJECTIVES AND ACTIVITIES			
OBJECTIVE A: Design the National EPHT Network requirements, standards, and tools • Define technical, functional, and data requirements • Develop data standards • Define user analysis, visualization, and reporting tools	**OBJECTIVE B:** Construct the Network • Develop Implementation Plan • Create user analysis, visualization, and reporting tools • Finalize Network architecture • Finalize data storage architecture	**OBJECTIVE C:** Deploy the Network • Test operability and user accessibility • Provide leadership, technical assistance, and financial resources for implementation at state and local levels	**OBJECTIVE D:** Update the Network design, functionality, and content • Respond and align to congressional guidance and Federal Health Architecture/PHIN development • Query and respond to user needs • Upgrade data, equipment, and features through ongoing maintenance and development releases

Importance of This Goal

Developing a sustainable standards-based national network is an iterative process that will enable direct electronic data reporting and linkage within and across health effects, exposure, and hazard data, and will interoperate with other environmental public health systems. This goal challenges the Program to provide a distributed, Web-based Network that will enable access to (1) environmental and health data collected by a wide variety of agencies and (2) a core set of environmental public health data maintained by CDC.

This Network will not stand alone nor will it create a new "silo" for data. It will be one component of a larger effort to improve public health informatics within CDC and to improve health information across HHS through development of the Federal Health Architecture. The Network will be compatible with PHIN standards and will support the development and adoption of standards that will further increase interoperability and functionality across public health information systems. Additionally, to bridge the gap between health and environmental data, the Network is being developed to be interoperable with EPA's NEIEN.

CDC has selected the Rational Unified Process (RUP) as the framework for all information technology (IT) development projects.[18] CDC's RUP establishes the sequence, steps, and processes that IT projects must follow to adhere to federal regulations and CDC policies as well as best practices for ensuring a successful project outcome. It divides the lifecycle of a project into four distinct phases:

1) Inception—defines the scope of the project and its business case
2) Elaboration—analyzes the project needs in greater detail and defines the architectural foundation
3) Construction—creates the application design and source code
4) Transition—delivers the system to the end users

Each phase is organized into separate iterations that must satisfy predefined criteria before moving to the next phase. By using an iterative approach, the program increases stakeholder feedback throughout the project lifecycle, which allows for changing requirements and provides for early identification of the highest risks. Thus, objectives and activities for Goal 1 build from the RUP framework.

Surveys conducted by the Pew Commission in the 50 states and selected local jurisdictions found that fundamental information about community health status and environmental exposures is often not available to public health departments for disease prevention, policy making, and scientific purposes.[19] The creation of the Network will provide this functionality and benefits, including

- providing timely information to all users;
- integrating local, state, and national databases of environmental hazards, environmental exposures, and health effects;
- allowing broad analysis across geographic and political boundaries;
- promoting interoperable systems through compliance with standards;
- increasing environmental public health capacity at the state and local levels;
- furnishing the means to enhance and improve data; and
- providing a secure, reliable, and expandable means to link environmental and health data.

Achieving Objectives of This Goal

The Program has made steady progress toward the objectives set for this goal. The Standards and Network Development (SND) Workgroup was formed to identify, develop, implement, and promote standards and other mechanisms to support data sharing and Network development. The workgroup consists of representatives of grantee states, cities, universities, health and environmental associations, CDC, EPA, and contractors. The workgroup's goal is to work on various aspects of Network development, including architecture, data access, metadata and data quality, and locational referencing. To date, workgroup efforts have led to the development of the *EPHT Network Vision* document, an EPHT glossary, a draft architectural design schematic, an assessment of metadata and data exchange standards, and a trading partner agreement (TPA) template.

Multiple stakeholders will continue to be included in constructing the Network to provide appropriate input in defining requirements. The Program will hold user feedback sessions and design prototypes to foster feedback. These prototype efforts are the first step in development of the Network.

Already, stakeholders have contributed invaluable services toward the creation of a national network. All state and local health departments funded by CDC's Tracking Program in FY 2002 are examining the use of environmental public health indicators (EPHIs) in tracking. Their assessment of EPHIs is helping define uses and limits of existing data and can lead to development of data requirements and metrics for an integrated standards-based tracking system. For example, Maine is initiating and conducting two in-depth pilot projects of state priority EPHIs, and feasibility assessments of four potential priority EPHIs. One of the pilot projects proposes to link health outcome data for carbon monoxide (CO) poisoning and power outage data obtained through collaboration with Maine's Public Utilities Commission (PUC). This EPHI developed as a result of Maine's efforts in response to a large cluster of CO poisonings during a winter-storm power outage.

The New York Department of Environmental Conservation (NYDEC) and the New York Department of Health (NYDOH), in collaboration with CDC and EPA, have performed a pilot study to explore mechanisms for exchanging data with each other. Using health data exchange standards specified by CDC's PHIN and environmental data exchange standards specified by EPA, New York has demonstrated how data can be transmitted and translated between different information systems. This pilot study has stimulated discussions on improving interoperability between CDC and EPA and will serve as an

excellent starting point in developing a fully automated data exchange between NYDEC and NYDOH. Moreover, this pilot study has resulted in extended collaboration between CDC and EPA, provided lessons learned to other state and local partners, and produced implications for building the nationwide Network.

The efforts of the Maryland Department of Health and Mental Hygiene (DHMH) are an example of local efforts that could benefit the nationwide initiative. Through their County Data Initiative Project, staff members are working with local environmental health departments to recommend IT standards for improvements in data management and data exchange that will be consistent with both PHIN and NEIEN.

After a variety of widely dispersed environmental public health data become available through the Network, users will have various levels of access depending on their role and purpose. Access to data will be granted to the maximum extent possible considering confidentiality, legality, and technical feasibility. Some data sets will be accessible without constraint, but other information will be accessible only with appropriate approval review. Data owners will have the ability to restrict the release of data because of reliability or privacy concerns.

Examples of Network Users

- **Public health and environmental agencies and programs, such as bioterrorism**
- **Hospitals, health maintenance organizations, insurers, and healthcare systems**
- **Public health, environmental, and clinical laboratories**
- **Researchers, instructors, and students**
- **Policymakers**
- **Advocacy, industry, and trade groups**
- **General public**
- **Other networks and systems such as NEIEN and the National Electronic Disease Surveillance System (NEDSS)**

Key External Factors

The Program's ability to achieve Goal 1 depends on several factors, and the Program has only little or partial control over some of the factors. For example, in terms of the Network, the Program relies on state and local partners to develop their own networks where such networks do not currently exist, and to link networks that do exist. If these partners do not receive sufficient funding, employ adequate and knowledgeable staff, or collect quality data to support a national system, the creation of a national network is at risk. Much of the Program's success depends on collaboration with partners and on collection of many disparate sources of data and can only be accomplished through cooperation, partnership, and resources.

The SND Workgroup and the Tulane University Center of Excellence assessed Program grantees' experiences regarding data sharing and access barriers. In terms of environmental data, barriers tend to be associated with identifying the availability of data and putting the data in a usable format, including entering hardcopy data into an electronic format. In terms of health data, barriers were found to be centered on gaining approval for data access and maintaining confidentiality.

Overcoming these barriers for environmental data typically involves allocating staff time and effort to preparing the data for use, including cleaning the data or making it available in electronic format. Overcoming barriers for health data primarily focuses on establishing formal agreements in which the scope of use of the data is made explicit. These formal agreements include TPAs, data sharing agreements, and MOUs.

Issues of confidentiality have the potential to hinder Network development. They affect access not only to health data protected by the Health Insurance Portability and Accountability Act (HIPAA) and state privacy regulations, but also other data. An example is data maintained by state departments of education, which is a possible source of information to track health issues such as developmental disabilities.

The State of Massachusetts provides an example of how privacy issues around health and educational data have

been addressed for tracking purposes. The state amended existing regulations to grant the Massachusetts Department of Public Health (MDPH) access to health and medical information while also ensuring compliance with HIPAA and other confidentiality stipulations. The amendment added the word "surveillance" to the title of the regulation and added specific diseases that are possibly linked to environmental exposures. This amendment authorizes the collection of data on individuals evaluated or diagnosed with diseases that MDPH deems necessary to investigate, monitor, prevent, and control.

This authority, however, does not extend to education records. To gain access to data for a linkage project on developmental disabilities and to adhere to privacy requirements of the Family Education Rights and Privacy Act (FERPA), MDPH is working closely with the state Department of Education (DOE). Under FERPA, DOE determined that releasing records from special-needs programs is significantly restricted. For the MDPH to conduct its linkage project for developmental disabilities data, DOE has to send consent forms to parents of children with developmental disabilities. Only those who give consent will be identified to MDPH.

Also, the Program has created the Legislative and Partner Agreements Workgroup to look at legislative and policy issues surrounding the implementation of networks. With representatives from the Program's grantees, this work-group has raised awareness of existing legislation and policies that act as either barriers or opportunities to EPHT. For example, CDC facilitated a presentation on HIPAA during several workshops and conferences. Additionally, the Program has developed a template to aid grantees in developing official MOUs with their partners and produced a toolkit to give state and local partners key information to respond to policymaker inquiries.

Limited resources present another barrier to data access. The potential exists that users will misuse the data and draw unscientific or incorrect conclusions. Health and environmental agency resources would be needed to investigate false positive results and to allay concerns over inaccurate information. The fear of data owners that greater access could result in misinterpretation or misuse of their data makes plain the need for content experts to continue to be involved in Network efforts to

1) ensure that data use and limitations are clearly described for end users;
2) assist in developing interpreted and analyzed data summaries for Network dissemination;
3) provide technical assistance for funded partners and Network developers in addressing frequently asked questions.

The benefits gained through data sharing include the ability to proactively versus reactively identify potential health hazards. More people will have the ability to work toward preventing the occurrence of negative health effects instead of becoming involved only at the point of intervention.

To summarize external risk factors, certain state and local regulations may prevent access to various data because of [19]

1) concerns regarding privacy and confidentiality that may restrict the content of data sets provided to the Network;
2) challenges with stakeholder agreements that emerge from different backgrounds and complicate needs;
3) fears that greater accessibility will lead to misinterpretation or misuse of data resulting in an increased possibility of lawsuits (liability risk); and
4) delays in accessing data while Trading Partner Agreements are negotiated and finalized.

GOAL 2:

ENHANCE ENVIRONMENTAL PUBLIC HEALTH TRACKING WORKFORCE AND INFRASTRUCTURE

OBJECTIVES AND ACTIVITIES

OBJECTIVE A:
Build EPHT expertise through workforce development
- Develop and maintain highly skilled, adequately staffed National EPHT workforce
- Facilitate, design, and distribute training courses and materials

OBJECTIVE B:
Facilitate the growth of EPHT infrastructure
- Enhance existing surveillance systems
- Support development of new surveillance systems to measure health effects, exposures, and hazards

Importance of This Goal

The neglected public health infrastructure and the lack of a trained workforce are monumental challenges to establishing a National EPHT Network.[1] In 2003, an IOM committee found that improving public health infrastructure and developing the workforce were still needed to ensure the delivery of essential public health services and to address emerging public health issues. A trained, motivated, and dedicated workforce is necessary for establishing a National EPHT Network and ensuring the health of the American people through the coming decades.

The need for public health infrastructure was again stressed in a *Healthy People 2010* goal, "Ensure that Federal, Tribal, State, and local health agencies have the infrastructure to provide essential public health services effectively."[8] Tracking systems are a crucial part of the infrastructure because they provide necessary data to state and local health agencies. The information from tracking systems helps pinpoint health problems in high-risk populations and identify timely interventions for the public.

Advancement of the workforce and infrastructure will improve the EPHT Program's capacity to perform. Capacity reflects both the skill level of its people and the quality and availability of component surveillance systems. The extent and functionality of the Program is important because larger capacity brings increased access and quality of data, easier exchange of data, increased use of data, improved sharing of knowledge and lessons learned, and greater visibility of the Program.[8] As the Program grows, so does its sustainability and ability to affect every citizen positively.

Achieving Objectives of This Goal

The Program has accomplished several activities to promote Goal 2. In the first objective's scope, the Program plays a key role in training a national tracking workforce. Training is essential for funded partners and people who desire a general overview of EPHT. As mentioned by several stakeholders in focus group conference calls, people or programs that are new to EPHT efforts lack knowledge, skills, and abilities in the underlying concepts, methods, and sciences comprised by the Program.

The Program is in the process of creating an EPHT 101 course to establish a common understanding, which is central to communications and collaboration. This modular, Web-based course will be a mechanism for broad-based EPHT Program training. The Environmental Public Health Training Committee is leading this initiative with representatives

from CDC and Program grantees. The prospective audience for this course consists of workforce members new to EPHT, but it could be broadened to other federal, state, and local public health and environmental partners, healthcare providers, legislators, advocacy groups, and community groups. The course format will consist of presentation modules designed for online exercises as well as instructor-led presentations.

Proposed EPHT 101 Course Modules

- **The Environment and Health**
- **The National EPHT Initiative**
- **Basics of Public Health Surveillance**
- **Basics of Environmental Information Systems**
- **Structure of a National EPHT Network**
- **Hazards**
- **Exposure**
- **Health Effects**
- **Indicators**
- **Data Integration and Analysis**
- **Policy and Practice**
- **Communication**

Other Program activities focus on developing expertise for EPHT. For example, CDC works closely with the Council of State and Territorial Epidemiologists (CSTE) and has an active role in the planning activities at annual conferences. CDC sponsors pre-conference workshops and gives scholarships for state public health practitioners to these annual CSTE meetings. In addition, CDC supports academic Centers of Excellence that cultivate expertise by providing training courses and fellowships for students. Examples of curriculums include EPHT methods; indicator use and development; and data collection, evaluation, and communication. CDC has also funded an ASTHO and ECOS project that developed *A Primer for Environmental Public Health Tracking*. This document explores some of the common goals and differences between state health and environmental agencies. The goal of this initiative is to build workforce expertise by furnishing an educational tool that promotes stronger relationships.

The Program further advances this goal by facilitating infrastructure growth. Before the Network can be established, data must be available. Moreover, the data must be accessible, accurate, timely, representative, and clearly defined. Gathering such data for use in environmental and public health requires not only a competent workforce, but also the infrastructure that can support an ongoing, systematic tracking effort. This effort includes hardware and software for information systems and can also include items such as instruments for measuring contaminants in the environment or in people.

One illustration of data collection and capacity building is modeled by MDPH. In its EPHT asthma project, MDPH leveraged existing support from EPA to obtain data entry services to update student electronic health cards. The success of this local effort demonstrates an innovative way to enter data into an electronic reporting system and shows collaboration based on common partner interests.

Oregon's EPHT Program has taken a step further in achieving Goal 2. They surveyed local health departments and found that 60% of programs were addressing environmental health concerns outside the state required initiatives; however, most programs have very limited funding and resources. Oregon responded with a program of mini-grants given to local health departments for building environmental public health capacity. Oregon's innovative approach to supporting the public health workforce and infrastructure shows that with continued leadership, the Program and its grantees continue to make great strides in building EPHT.

The best method to determine human exposure to environmental factors is biomonitoring, which is the direct measurement of people's exposure to toxic substances in the environment by measuring the substances or their metabolites in human specimens, such as blood or urine. When biomonitoring data are combined with hazard and health tracking information, public health practitioners can more easily examine health effects caused or influenced by exposure to factors in the environment. To determine the human exposure levels at the state and local level, states will need to implement their own biomonitoring programs.[20]

Through support of their grantees, the Program works toward developing new surveillance systems. An example of incorporating training and infrastructure is demonstrated in Maryland. The Maryland DHMH enhanced capacity by purchasing new laboratory equipment to conduct bio-monitoring. Maryland's workforce was expanded and trained on how to use the equipment by CDC. The Maryland Public Health Laboratory will soon be able to test urine samples for the presence of 11 heavy metals, including arsenic, mercury, and lead, as well as pesticide metabolites.

Key External Factors

Funding to support grantee development of workforce and infrastructure is a critical external factor for the success of this goal. Stakeholders are concerned that the Program cannot be sustained without the people and resources to continue current and future work.

The Pew report acknowledges the importance of funding, and estimates that the annual cost for a nationwide health tracking network is $275 million.[6] Through this investment of approximately $1 for each person living in the United States, the report projected an annual reduction of $540 million in healthcare costs. Regardless of the cost estimate, a consistent level of adequate funding is imperative but not under the direct control of the Program.

Therefore, an investment in EPHT can best be maximized by combining of federal, state, and local workforce and infrastructure resources. In combining resources, stakeholders' efforts and progress toward building a sustained Program will grow. Successful implementation at state and local levels must demonstrate that, with adequate resources, real improvements in the health of communities can be realized to validate future funding. The Program recognizes the importance of local efforts to make capacity building achievable.

Cooperative agreements, managed through CDC's Procurement and Grants Office, includes accountability for both grantee and grantor.[21] These cooperative agreements are competitive, are judged by a scientific peer review group, and must be of sufficient scientific merit to warrant consideration and eligibility for funding. CDC mandates that EHTB staff guide, coordinate, and collaborate with grantees in programmatic activities.

CDC accomplishes this task by facilitating information sharing, providing training and direct technical assistance, and monitoring grantee work through teleconferences, site visits, and semiannual reports. Included in these reports is documentation of efforts specified in the cooperative agreements. As the grantor, CDC must ensure that funds are obligated in a timely manner and applied to the intended purpose, and that contracted activities support the ultimate goals of the Program.

OMB requires use of a Performance-Based Management System (PBMS) for major information technology capital investments, so CDC anticipates that future grantees will utilize this program management tool. The PBMS will monitor scope integration, schedule, cost, program objectives planning, and earned value performance measurement of projects. By using progress reports and potentially using a PBMS, CDC can better manage the Program and improve performance.

Promoting and developing an effective and competent workforce is essential to building EPHT infrastructure. Even if all data are available and surveillance systems are in place, workforce members with the appropriate expertise are needed at all levels to translate data into information and plans into action. Program partners must have both the funding available to pay for the expertise and an adequate pool of trained candidates to employ. Cross-functional expertise in environmental and public health knowledge is imperative, yet few program staff members understand the issues within both disciplines. Thus, a paradigm shift must occur where crossover and integration of knowledge exists between public health and environmental disciplines.

Foundational knowledge, such as surveillance and assessment training, is lacking in many current public health curriculums. Establishing common, aligned courses will develop the knowledge base and shared language among environmental and public health practitioners entering the tracking workforce.

Tracking in Action

NYC HANES recently discovered a patient with a high level of mercury poisoning, which usually indicates mercury salt or elemental mercury exposure. Upon further investigation, the patient was found to be using a mercury containing skin lightener. NYC Department of Health and Mental Hygiene has launched a wider investigation into use of this skin lightener in NYC, and has issued alerts and press releases to healthcare practitioners. This biomonitoring effort, both the discovery and the response to the mercury exposure, was made possible by the EPHT Program.

GOAL 3:

DISSEMINATE INFORMATION TO GUIDE POLICY, PRACTICE, AND OTHER ACTIONS TO IMPROVE THE NATION'S HEALTH

OBJECTIVES AND ACTIVITIES

OBJECTIVE A:
Implement communications and outreach strategies to develop and deliver information to key audiences

- Provide forums to involve stakeholders in communications planning
- Host conferences and workshops to raise awareness and share information about Program impacts
- Develop communication products that address diverse information needs
- Test messages and delivery channels

OBJECTIVE B:
Facilitate and promote effective risk communication at the state and local level

- Provide technical assistance in communications and outreach
- Compile information on environmental risk perception and risk communication methods
- Facilitate transfer of effective risk communication strategies between funded partners

Importance of This Goal

Key audiences, including policy makers, environmental and public health practitioners, strategic partners, and the public, need a clear understanding of the EPHT Program and what it can accomplish to improve health. Communicating the message and benefits furthers the Program's success and growth; outreach helps members of the public understand that the EPHT Program has the potential to touch their lives.

In addition, the information provided through translation of Network data and dissemination is most effective when it is understandable and usable to audiences at the community level. Communication of the risks associated with hazards, exposures, and possible health effects is part of the Program's impact. The communication of risks necessitates management of the flow of information to individuals and organizations that can use it to improve community health.

Achieving Objectives of This Goal

This goal aims to address both the dissemination of information about the EPHT Program and information generated from the Program. With the acknowledgement of stakeholders, CDC facilitates the various communication efforts and ensures that partners, Congress, and the public understand the message and direction of the EPHT Program. The outreach methods not only relay information, but also influence and affect those people who receive the Program information.

To engage stakeholders and interested audiences, CDC establishes venues for dialogue and collaboration. Agencies and programs are also encouraged to participate and establish planning forums and to build their own communication mechanisms to relay the Program's vision, activities, and products. As part of the cooperative agreement, grantees are asked to host Planning Consortiums, which foster the

exchange of EPHT knowledge among community stakeholders. At these meetings, participants work to prioritize issues, identify new data sources, and fuel ongoing collaboration.

As another activity of the first objective, CDC hosts national conferences and workshops to involve stakeholders and share the outcomes and impact of the Program. These meetings enable partners, stakeholders, and interested parties to exchange knowledge and form relationships focused on environmental public health. Further details on EPHT events are on the Program's Web site.

Additionally, the Program has established a Program Marketing and Outreach (PMO) Workgroup to guide CDC and other stakeholders in developing and implementing an EPHT communications and outreach strategy. The PMO Workgroup involves the following partners: EHTB staff, grantees from state and local health departments and Centers of Excellence, funded and unfunded national partners, and CDC contractors. To promote the Program, the PMO Workgroup is increasing EPHT presence at workshops and conferences. The scope of the workgroup's activities includes identifying key audiences, identifying multiple dissemination channels, providing input on and reviews of key messages, and developing education and outreach materials (e.g., fact sheets).

For communication products to be developed, the EPHT Program must gather information about the needs of Network users. Likewise, a need exists to clearly identify and disseminate information about the Network so that audiences can understand potential uses and benefits, have clear expectations, and relate their communication needs back to Network developers. For example, CDC has funded the following outreach and educational activities through California's Department of Health Services:

- Publish newsletters, with subjects such as communities' perspectives on tracking, program updates, GIS to communicate information, and data sources for action.
- Maintain a tracking Web site with information on planning consortiums, pilot projects, needs assessments, outreach and training, and technical assessments.
- Talk to NGOs and local environmental and health agencies to identify their priority areas in California's EPHT needs assessment (more information available at www.catracking.com).

Another important consideration is the need to relay data and information in appropriate formats, venues, and channels. Because some information may contain complicated material and use scientific terminology, the communicated message should be understandable and apply to lay persons as well as to the scientific community. Not only must each piece of EPHT information be designed and targeted to the audience, but the mechanisms for disseminating this information must be tested.[22] EPHT Program information may take the form of, for example, newsletters or reports, but it may also take the form of electronic, graphics, or paper-based sources. In addition, the Program must continue to build partnerships with agencies and NGOs that already have the capacity, experience, and relationships in place to do this communication work.

Through this strategic plan, the Program is also charged with enhancing risk communication at the state and local levels. Communication research has demonstrated the difficulties in translating complex scientific data into information that is understandable, relevant, and usable by the public. Disseminating information while considering the complexities and uncertainties of risk will ensure effective risk communication. The issues involved with this Goal 3 objective include message development, common language terminology, and tailored audience reporting. Well-managed efforts will help ensure that EPHT messages are constructively formulated, transmitted, and received and that they result in meaningful actions.

CDC, therefore, has provided technical assistance in this matter. For example, through contracting with the Oak Ridge Institute for Science and Education (ORISE), training sessions on risk communication have supported the development of the Program. Building partnerships in developing risk communication, ORISE has led grantees in message mapping (e.g., 2002 EPHT Kick-Off Meeting, 2003 National Conference) and developing core Program messages. ORISE also participated in the planning and execution of a training session titled, "Issues and Challenges of Risk Communication and Public Participation in the Context of EPHT" at the 2004 October Workshop.

Program staff plan to incorporate risk communication as a component of the communication module in the EPHT 101 course and will continue to work with EPHT grantees to integrate expertise into activities. The Johns Hopkins Center for Excellence in EPHT has already developed an EPHT curriculum, which is available to interested stakeholders, on developing risk communication approaches that meet the needs of diverse communities. The University of California, Berkeley is conducting activities that will provide lessons learned on communicating EPHT effectively to legislators and that will train environmental justice advocacy groups.

Tracking in Action

The Washington State Department of Health is designing an internal decision support tool to develop and distribute fish consumption recommendations and to generate and document the underlying rationale for specific fish consumption advisories. These risk communication efforts will give local communities valuable information on protection from environmental hazards.

To date, additional communication and outreach channels used by the Program include the following:

EPHT Web site—The EPHT Program's Website is regularly updated with information, conference and meeting materials, and communication and partner resources. See www.cdc.gov/nceh/tracking.

EPHT Listserv—The listserv is a tool to encourage two-way communication between CDC and all of its EPHT partners. CDC can distribute information, and CDC partners can provide direct input to the Program. E-mail EPHT@cdc.gov.

Quarterly Newsletter—Beginning the third quarter of FY 2005, this quarterly newsletter delivers EPHT updates to all interested stakeholders.

E-mail Contact—The public may contact CDC by e-mail, which enables direct input to the Program. Any questions or comments can be directed to the EPHT e-mail address, EPHT@cdc.gov.

Brown Bag Sessions—A monthly Web-based meeting supplies a forum for partners to present details surrounding the work they have performed, obstacles, successes, and lessons learned. The format includes both detailed information and question/answer sections and is open to all interested participants.

Tracking-Focused Publications—In August 2004, the Program published the "National Environmental Public Health Tracking Program Mini-Monograph" in the peer-reviewed journal, *Environmental Health Perspectives*. The mini-monograph was the product of collaboration among CDC leaders and EPHT Program grantees. Additional publications are planned for the future.

EPHT Program Resource Library—The Resource Library is accessible through CDC's EPHT Web site. Resources include brochures, fact sheets, newsletters, photos, presentations, press releases, questions and answers, Web site links, and many other products. These products are from CDC, EPHT grantees, and external programs and organizations.

These communication methods are inclusive of all interested parties in EPHT and are not limited to funded grantees.

Key External Factors

Because some marketing and outreach activities are dependent on the combined efforts of EPHT Program grantees and partners, CDC fills both a leadership role and a coordinating role for guiding EPHT communication. Support for the Program and the distribution of its information, intervention resources, and success stories needs to come from all levels of national, state, and local EPHT programs and partners.

Engaging EPHT Program stakeholders at all levels is the result of good communication. The Program relies on its partners to both furnish and seek EPHT issues and activities. Through partners' efforts, the EPHT information is disseminated to the right channels. Engaging the audience

is an ongoing effort and must strike a balance among interesting, informative, and insightful. The Program is conscious of the information it provides, so that the audience is not overwhelmed with waves of information.

The EPHT Program is more effective when the public, environmental and public health practitioners, grantees, and stakeholders are engaged. Of course, communication requires engagement from both sides. While CDC may give stakeholders tools to communicate with the EPHT Program, stakeholders must take the initiative to use these tools and to establish a dialogue with each other. Active participation and input will garner success in the communication process.

Relaying lessons learned among EPHT Program stakeholders facilitates development of local, state, and national EPHT programs. For example, New York City (NYC), a local Program grantee, is developing a guidance manual for other state and local health departments that details the protocol, methods, and lessons learned from NYC Health and Nutrition Examination Survey (HANES). Also, the University of California, Berkeley facilitates a meeting of Western EPHT states to share information and discuss regional tracking issues.

Successful communication and outreach efforts will increase the visibility and awareness of EPHT in the national consciousness, thereby gathering the support needed for future funding and operational endeavors. Program efforts and guidance in communication and outreach efforts will help drive a unified, clear message about the EPHT Program.

Tracking in Action

Wisconsin's EPHT is working with the state's asthma program to develop an online report generation system for summarizing state hospital discharge data for asthma. This system will enable local health departments, state asthma coalition members, and advocacy groups to obtain customized reports detailing local, regional, and statewide data, and will form the basis for the state's EPHT module for asthma.

GOAL 4:

ADVANCE ENVIRONMENTAL PUBLIC HEALTH SCIENCE AND RESEARCH

OBJECTIVES AND ACTIVITIES		
OBJECTIVE A: Synthesize current state of EPHT knowledge • Review and assess EPHT methods and tools • Identify known associations and generate hypotheses between health and environment • Develop EPHT research agendas	**OBJECTIVE B:** Identify and facilitate EPHT analytic approaches • Develop and test methods and tools for the integration of health and environmental data • Facilitate and conduct surveillance analyses • Facilitate, design, and implement studies to test hypotheses	**OBJECTIVE C:** Translate science and research into public health practice • Analyze data and make recommendations for decision making • Evaluate the impact of environmental public health interventions

Importance of This Goal

The Program leads the translation of scientific information and research concerning the identification of health effects that may be associated with exposures to the environment. Research aids the formation of analytical models, the epidemiologic and environmental assessment of tools and methods, and the development of useful interventions. These efforts will encourage effective public health practice and reduce the burden of disease on the U.S. population.[1]

Although progress has been made in the science underlying EPHT, many unknowns remain. A fundamental purpose of the Program is to address those unknowns and explore the potential answers and their impacts. A continuum of science and research drives the development of surveillance systems, and in turn, these systems will generate hypotheses that influence future research.

Achieving Objectives of This Goal

The Program will need to conduct ongoing assessments of data collected and used within cities, states, and the nation. Program staff members are identifying and testing current methods and tools as well as determining common measures by compiling national scoping reports, reviewing grantee progress reports, and examining existing literature. The Program has also identified and assessed existing information systems at grantee and national levels using current guidelines and tools.

The Program must lead and promote development of analytic approaches for EPHT. According to Litt et al., 2004, "Analytical advances allow the identification and measurement of previously unrecognized threats[23]." Several projects currently being conducted by CDC in collaboration with other partners illustrate the types of analytic work that need to be done:

- In collaboration with EPA and the states of New York, Wisconsin, and Maine, the Public Health Air Surveillance Evaluation (PHASE) project is comparing and evaluating methods for estimating human exposure to ozone and particulate matter. The purpose is to develop and select methods that will provide useful, accurate data for EPHT.
- The Health and Environmental Linked for Information Exchange, Atlanta (HELIX-Atlanta) is a prototype for a local network. In partnership with federal, local, and

academic organizations, HELIX-Atlanta is developing and testing EPHT-applicable methods in five metropolitan Atlanta counties. Teams are focusing on the following topics: birth defects, cancer, developmental disabilities, respiratory effects, and drinking water safety. Team efforts include:

- testing and applying methods to address time and space factors,
- characterizing diagnoses, which will lead to standardization,
- applying, testing, and comparing geo-coding methods,
- applying small geographic area statistics, and
- applying rare event statistics.

The Program is collaborating with the Small Area Health Statistics Unit of the Imperial College of Science, London, and the state of Utah to examine the feasibility of adapting the Imperial College's Rapid Inquiry Facility (RIF) for use in the United States. The Rapid Inquiry Facility is a software tool developed for the United Kingdom by the Small Area Health Statistics Unit and enhanced in the European Health and Environment Information System project. The RIF is able to rapidly generate rates and relative risks for health effects, for specified age and year ranges, for geographical areas. It also produces unsmoothed and smoothed maps of relative risks, together with maps showing the demographic, socio-economic, environmental, and geographical characteristics of the area. The functionality of the RIF holds great promise for use in EPHT for evaluating the spatial and temporal relationships between environmentally related diseases and environmental hazards.

Among CDC grantees, EPHT Centers of Excellence are conducting epidemiology studies, and state and local demonstration projects are exploring data linkage. For example, the Berkeley Center of Excellence contracted with the University of California, Los Angeles to perform an epidemiologic study to examine the relations between air pollution data and asthma outcomes. The studies characterized exposures using various classifications for residence zip codes and proximity to monitoring stations.

Missouri's Department of Health and Senior Services partnered with the Tulane Center of Excellence to conduct an analytic study exploring the relations between demolition activity and children's blood lead levels. Methods for linking disparate data were used, such as GIS mapping to plot locations of demolitions and children with lead measurements, and statistical methods to analyze the effect of demolitions on elevations in blood lead levels. This project demonstrated the usefulness of GIS utility and capability in measuring environmental public health areas of need.

The Program created a Data Linkages Workgroup in March 2003 to compile and share practices that have been used in linking health effect, exposure, and hazard data. This workgroup, with representatives from the Program's grantees, developed a final report with recommendations for future data linkage activities outlining best practices and challenges.

The illustrations discussed here are just a sampling of current science and research efforts. CDC will gather and synthesize results from Program projects and workgroups. The ensuing recommendations for existing data systems, data elements, and data measures for the Network will lead to development of a research agenda. This agenda will support Network advancement by sustaining current efforts and driving future scientific efforts. As results and recommendations are produced, surveillance, public health practice, the Network, and research are improved.

Key External Factors

Studies should provide sound scientific evidence to test hypotheses and improve our understanding of the relationship between disease and exposure. But before studies can be conducted, high-quality and timely data must be available.

Barriers to collecting new data include determining the appropriate source of data, the best means to collect and manage data, and the available resources to carry out the many necessary activities for good surveillance. For existing data, barriers are related to access to geographic and temporal resolutions at needed levels, interoperability of electronic formats, and availability of user guidelines to ensure alignment with EPHT purposes in analyzing and interpreting data. Some of these limitations result from the fact that data needed for EPHT are often collected for other purposes (e.g., regulation, third-party payment) and do not meet EPHT needs. Accessibility barriers are often related to privacy restrictions.

After initial hurdles are overcome, key external factors in creating studies still exist. To protect human subjects, all research studies require the approval of the participating organization's Institutional Review Board (IRB). Upon approval, studies are limited because of the assumptions inherent in data selected and tests chosen. These factors inhibit study findings and their implications.

A common problem with epidemiologic studies is that study populations are often relatively small and the results can not be generalized for larger populations. Additional studies are often needed to address gaps, verify results, and provide consistent evidence of a possible causal link. Thus, recommendations provided through these studies will inform the development of future EPHT research agendas.

Throughout the process of supporting Goal 4, numerous partners can and should be involved. For example, EPHT grantees plan and perform methodological assessments and research studies. Collaborative efforts with other federal agencies have enabled expertise and resources to be shared, cross-disciplinary skills to be built, and mutual needs to be addressed. Stakeholder support, commitment, and involvement also provide direction for research and methodologic studies that occur within the Program.

Tracking in Action

The Johns Hopkins Center of Excellence will examine the National Medicare Cohort as a tool for tracking the short-term effects of fine particles on respiratory health hospitalization in the elderly. The Center is also performing epidemiologic studies to investigate the impact of flame retardants on fetal health and the association of arsenic exposure with myocardial infarction and incident diabetes.

GOAL 5:

FOSTER COLLABORATION AMONG HEALTH AND ENVIRONMENTAL PROGRAMS

OBJECTIVES AND ACTIVITIES

OBJECTIVE A:
Engage health and environmental programs as partners in EPHT

- Create, strengthen, and sustain National EPHT partnerships
- Facilitate relationships among environmental and health agencies and programs

OBJECTIVE B:
Collaborate with EPHT partners to improve knowledge, resources, and accountability

- Identify common needs to promote resource sharing
- Maximize partner strengths to advance EPHT

Importance of This Goal

Inherent in all Program activities is promoting communication and cooperation with partners to build bridges between public health and environmental programs. The result of collaborative efforts includes a comprehensive ability to address public health concerns, which will lead to healthier communities.

As the government agency responsible for establishing a National EPHT Network, CDC relies on working with and serving a variety of partners, including but not limited to advocacy and community groups, professional associations, state and local health departments, state public health and environmental laboratories, healthcare practitioners, NGOs, federal organizations, and universities.

The goal of the Program is to help increase interaction among national, state, and local levels that result in greater knowledge and resource sharing and less separation of health and environmental activities. Few national and state health and environmental departments are organized within the same agency, so communications often lack coordination and efforts are frequently redundant. Directly aligning health and environmental programs will strengthen current EPHT work and present opportunities for future collaboration.

Achieving Objectives of This Goal

Environmental and public health workgroups and tracking stakeholders have historically met to share ideas and establish relationships even before the Program's inception. When CDC's EHTB was created in 2002, it led efforts to establish cooperative agreements and organized active communication channels with many of the National EPHT Program partners. CDC directs several collaborative activities through its fiscal and leadership support.

National EPHT conferences such as the one held in Philadelphia on March 22–24, 2004, and in Atlanta on April 20–22, 2005, engage stakeholders and enable participants to relay EPHT opportunities and challenges. These meetings provide input to CDC leadership, garner additional Program support, and generate an exchange of tracking knowledge. Partners actively participate in planning and presenting at these and other national conferences and workshops.

CDC gives interested stakeholders access to experts and serves to connect resources that aid in the Program's development. CDC has created relationships with NACCHO and ASTHO to promote and increase the EPHT knowledge base and link efforts among local public health officials

and state-based public health practitioners. Other stakeholder agencies such as ECOS, PSR, and NEHA mutually benefit from governmental partnerships as they participate in EPHT meetings and activities to further Program goals.

Collaborative partnerships in EPHT exist at the federal level as well. Through DHHS, CDC established an MOU with EPA and another MOU with NASA. As a result of these formal partnerships, collaborative EPHT projects and workgroups have formed. The CDC-EPA MOU has facilitated new interactions with regional partners, and CDC and EPA meet quarterly to discuss EPHT development, common needs, and alignment. Through cross-agency alliances such as these, the Program is working to achieve its goal of identifying shared resources, transferring knowledge, and disseminating applicable tracking data. The CDC-NASA MOU explores the utility of earth-system science, technology, and data for characterizing the relations among environmental hazards, human exposures, and potential health effects. Further details about both MOUs are located on the EPHT Program's Web site at www.cdc.gov/nceh/tracking.

One of the central roles of the Program is to build partnerships among its grantees and other stakeholders. For example, the Wisconsin Department of Health and Family Services through its partnerships with CDC, EPA, and two other grantee states, Maine and New York, is executing a collaborative data linkage project for air quality and asthma and cardiovascular disease that can be applied for demonstration at multi-state and national levels.

In another example, the Pennsylvania Department of Health (PADOH) partnered with the Pennsylvania Department of Environmental Protection (PADEP) to address emerging environmental problems throughout the state and work toward developing a coordinated, integrated EPHT surveillance network that includes both environmental and health outcome databases. PADOH began a collaborative relationship with EPA to link into the TRI (Toxics Release Inventory) database to obtain state-specific TRI data on a real-time basis.

The Program encourages the continued expansion of EPHT development through local and state collaborations. Both Oregon and California have recognized the value of such relationships. Through partnerships with local communities, mini-grant programs were used to expand state-based EPHT networks. Local public health agencies (LPHAs) support these mini-grant programs and provide the information and outreach link to community members.

Another group of cities and states along with CDC and EPA have established the State/Community HANES Intergovernmental Planning Project (SHIPP). This coordinated effort is developing guidance for states and local communities interested in conducting HANES activities to furnish health and exposure information about their residents. As evidenced through these examples, collaboration is a driving force for the EPHT Program. The Program depends on partners to provide data, build state tracking networks, advocate for the Program, and identify and create surveillance methods. The unique strengths of each stakeholder are needed to address the complex and comprehensive nature of the National EPHT Program.

Key External Factors

The Network can move forward only with the cooperation and support of the Program's multitude of partners. Partners are active in mobilizing support, collecting data, analyzing data, furthering research, creating linkages, and providing expertise. While the Program can work to establish and maintain partnerships, the relationships are only as strong as the dedication of all involved.

Funding is an external factor for the Program. In FY 2002 and FY 2003, CDC awarded $14.2 million and $14.6 million respectively to 20 state and local health departments and three schools of public health to (1) build environmental public health capacity, (2) increase collaboration between environmental and health agencies, (3) identify and evaluate environmental and health data systems, (4) build partnerships with NGOs and communities, and (5) develop model systems that link environmental and health data and that other states or localities can use.

In FY 2003, CDC provided additional funding of $4.2 million for Program efforts. Through this appropriation, ten more projects were funded in nine states and one city. Congressional appropriations of $17.5M in FY 2002, $27.5M in FY 2003, and $27.4M in FY 2004 demonstrate Program support, but do not eliminate fiscal risk, because

CDC relies on obtaining future funding that is not guaranteed. Future decreases or flatline in funding could significantly limit the collaborative development of stakeholders and the scope and scale of programs.

Having dialogue with unfunded partners is also necessary in building a national network. The Program works hard to keep the interested parties abreast with current issues and to include the parties in EPHT activities. As new partnerships are not solely dependent on the Program, unfunded partners must take initiative and be mutually responsible for communicating within their own programs and with EPHT stakeholders.

To grow involvement and increase the Program's support, the diverse perspectives of stakeholders are needed. By understanding that the benefits to their organization and constituents directly align with their involvement, stakeholders will engage in their role to build and promote the EPHT Program. Feeling a sense of ownership and mutual benefit in achieving common goals will aid in the sustainability and momentum of the Program. Without this mutual support, EPHT Program development will be hindered.

Timeline

Establishing milestones for progress

Developing the National EPHT Program requires an integrated strategic plan and the collaboration of partners. The Program has created a timeline to plan for the annual milestones, FY 2005–2010. These milestones are guided by the goals and objectives stated within this strategic plan and will support the vision and mission of the Program. Conferring the ability to track achievements and review progress, these milestones will be redefined, as necessary, to meet the evolving needs of the Program considering available resources and priorities.

FISCAL YEAR

2005	• Fund up to five Academic Partners for Excellence in EPHT for methods development and/or training • Implement EPHT 101 training course • Identify National EPHT Network standards and specifications (update annually) • Disseminate EPHT Research Agenda • Deploy outreach strategy • Launch EPHT communications library • Expand partnership to at least two additional organizations/agencies (repeat annually) • Publish EPHT mini-monograph in scientific literature • Convene National EPHT Conference (repeat annually) • Complete state/local data linkage project initiated in FY 2002
2006	• Collate and disseminate information about lessons learned from completed state/local/national projects • Establish recommendations for initial set of methods and tools for National EPHT Network (update annually) • Disseminate National EPHT Network Implementation Plan version 1.0 • Fund state/local health departments to construct state/local networks • Begin construction of CDC gateway for National EPHT Network • Disseminate EPHT Communications Plan version 1.0 • Evaluate outreach strategy • Begin implementation of at least two regional training courses per year • Complete state/local data linkage projects initiated in FY 2003
2007	• Expand the number of state/local health departments funded to construct local/state networks (contingent on funding levels and annually thereafter) • Establish trading partner agreements between CDC and current state/local/federal partners (update annually) • Produce EPHT annual report • Evaluate communications activities • Update EPHT Research Agenda
2008	• Facilitate deployment of state/local networks • Launch awareness campaign to promote use of the Network • Deploy National EPHT Network • Publish EPHT monograph in scientific literature
2009	• Evaluate National EPHT Network design, functionality, and content • Publish EPHT annual report • Begin development of 2010–2015 strategic plan
2010	• Disseminate National EPHT Network Enhancement Plan • Update EPHT Research Agenda

Appendix

EPHT STAKEHOLDERS

CDC would like to acknowledge the organizations and agencies whose representatives have participated in EPHT strategic planning meetings and focus groups that contributed to this plan:

EPHT Program Partners

AAP—American Academy of Pediatrics

AARDA—American Autoimmune Related Disease Association

ACC—American Chemistry Council

ALA—American Lung Association

Alabama Department of Public Health

Alaska Health and Social Services

AMA—American Medical Association

American Association of Poison Control Centers

American College of Preventive Medicine

APHA—American Public Health Association

APHL—Association of Public Health Laboratories

ASTHO—Association of State and Territorial Health Officials

AWWA—American Water Works Association

CDC—Centers for Disease Control and Prevention

- **ATSDR**—Agency for Toxic Substances and Disease Registry
- **EPO**—Epidemiology Program Office
- **NCBDDD**—National Center on Birth Defects and Developmental Disabilities
- **NCCDPHP**—National Center for Chronic Disease Prevention and Health Promotion
- **NCHS**—National Center for Health Statistics
- **NCEH**—National Center for Environmental Health
- **NIOSH**—National Institute of Occupational Safety and Health
- **PHHPO**—Public Health Practice Program Office
- **OD**—Office of the Director
- **NCIPC**—National Center for Injury Prevention and Control

CEHI—Children's Environmental Health Institute

Colorado Department of Public Health and Environment

CSTE—Council of State and Territorial Epidemiologists

Delaware Health and Social Services

ECOS—Environmental Council of the States

EPA—U.S. Environmental Protection Agency

Family League of Baltimore City

Georgia Division of Public Health

HSN—Healthy Schools Network

Indiana State Department of Health

Iowa Department of Public Health

Lockheed Martin Technology Services

MICAH's Mission

Michigan Department of Community Health

MOD—March of Dimes Birth Defects Foundation

Mothers for Clean Air

NAACCR—North American Association of Central Cancer Registries

NACCHO—National Association of County and City Health Officials

NASA—National Aeronautics and Space Administration

NCSL—National Conference of State Legislatures

NEHA—National Environmental Health Association

NRDC—Natural Resources Defense Council

PSR—Physicians for Social Responsibility

Rhode Island Department of Health

South Carolina Department of Health and Environmental Control

Texas Department of Health

TFAH—Trust for America's Health

The Sarcoidosis Awareness Network

University of New Mexico

U.S. Department of Housing and Urban Development

U.S. Public Interest Research Group

USGS—United States Geological Survey

EPHT Program Grantees

CENTERS OF EXCELLENCE—
Schools of Public Health

- **Johns Hopkins University**
- **Tulane University**
- **University of California, Berkeley**

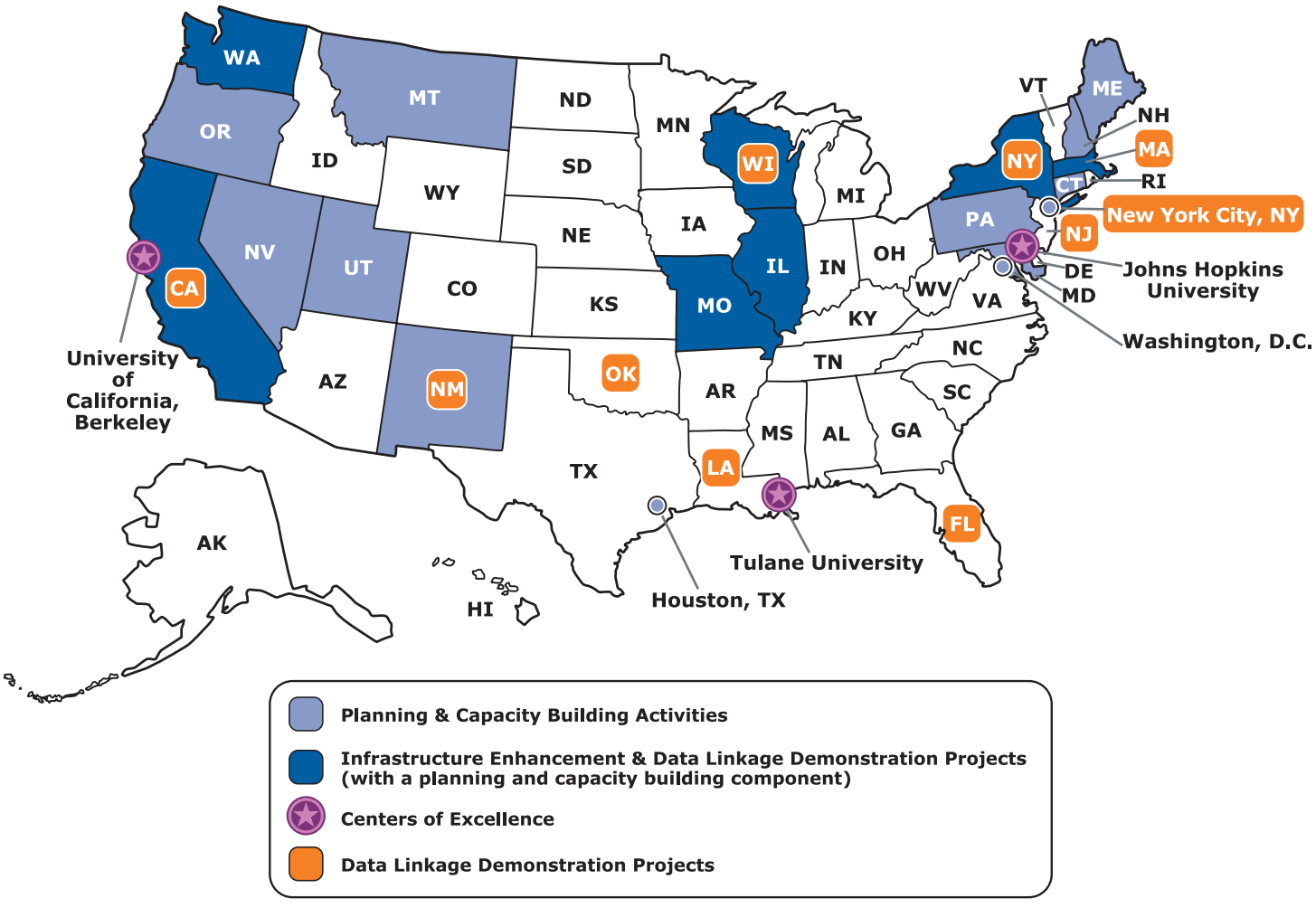
CITIES—
Local health departments

- **Houston, Texas**
- **New York City**
- **Washington, D.C.**

STATES—
State health departments

- **California**
- **Connecticut**
- **Florida**
- **Illinois**
- **Louisiana**
- **Maine**
- **Maryland**
- **Massachusetts**
- **Missouri**
- **Montana**
- **Nevada**
- **New Hampshire**
- **New Jersey**
- **New Mexico**
- **New York**
- **Oklahoma**
- **Oregon**
- **Pennsylvania**
- **Utah**
- **Washington**
- **Wisconsin**

CDC's Environmental Public Health Tracking Program Grantees



Glossary

CREATING A COMMON VOCABULARY

Assessment—One of the three core functions of public health. Comprises monitoring, diagnosis, and investigation.

Biomonitoring—The assessment of exposure through direct measurement of environmental chemicals in human specimens, such as blood or urine.

Capacity building—The building of infrastructure systems, workforce, and fiscal resources to assist state and local health departments in developing effective, state-of-the-art environmental public health programs to improve the response to current and emerging health threats and to expand the science base in environmental public health to improve public health practice.

Cooperative agreement—The legal instrument that reflects an assistance relationship between the federal government and the recipient in which substantial programmatic involvement is anticipated by the federal agency in support of the recipient's activities during performance of the contemplated activity.

Environmental hazards—Situations or conditions in which something in the environment, such as radiation, a chemical, or another pollutant, can cause human illness or injury. People can be exposed to physical, chemical, or biologic agents from various environmental sources through air, water, soil, and food.

Environmental Health Tracking Branch—The Environmental Health Tracking Branch, housed within the Division of Environmental Hazards and Health Effects of CDC's NCEH.

Environmental Protection Agency—The U.S. EPA provides leadership in the nation's environmental science, research, education, and assessment efforts. It works closely with other federal agencies, state and local governments, and Indian tribes to develop and enforce regulations under existing environmental laws. EPA is an active partner in CDC's National EPHT Network initiative through a Memorandum of Understanding with the DHHS.

Environmental public health—The science of protecting humans from environmental factors that can adversely affect health or the ecologic balances essential to long-term health and environmental quality. Such factors include air, food, and water contaminants; radiation; toxic chemicals; disease vectors; safety hazards; and habitat alterations. According to the World Health Organization and *Healthy People 2010*, "Environmental health comprises those aspects of human health, disease, and injury that are determined or influenced by factors in the environment."

Environmental Public Health Tracking—The Congressionally-mandated national initiative that will establish a Network to enable the ongoing collection, integration, analysis, and interpretation of data about the following factors: (1) environmental hazards, (2) exposure to environmental hazards, and (3) health effects potentially related to exposure to environmental hazards. In fiscal year 2002, Congress appropriated CDC funding to begin developing the nationwide environmental public health tracking network and to develop capacity in environmental health within state and local health departments.

Essential Public Health Services—Developed by the National Public Health Performance Standards Program (NPHPSP) in a collaborative effort to enhance the nation's public health systems. Seven national public health organizations (APHA, ASTHO, CDC, NACCHO, NALBOH, PHF, and NNPHI) have partnered to develop national performance standards for state and local public health systems. The goal of the program is to improve the quality of public health practice and the performance of public health systems.

Exposure—Proximity and/or contact with a source of a disease agent in such a manner that effective transmission of the agent or harmful effects of the agent may occur.

Family Educational Rights and Privacy Act of 1974—A federal law that protects the privacy of student education records. The law applies to all schools that receive funds under an applicable program of DOE.

Geographic Information System (GIS)—Software technology that enables the integration of multiple sources of data and the displaying of data in time and space. GIS technology is expected to be a primary tool employed in the nationwide environmental public health tracking network.

Goals—Broad achievements necessary to reach the vision and conduct the mission.

Hazard—A factor that may adversely affect health.

Health effects—Chronic or acute health conditions that affect the well-being of an individual or community. Health effects are measured in terms of illness and death.

Healthy People 2010—A document specifying health objectives to be accomplished by the year 2010; promulgated by the U.S. Department of Health and Human Services. The goal is to eliminate the gaps in health status among racial and ethnic groups. For more information, visit the Internet site www.health.gov/healthypeople.

Health Insurance Portability and Accountability Act of 1996—Legislation responsible for improving efficiency in healthcare by standardizing electronic data interchange and instituting measures to protect the security and privacy of personally identifiable healthcare information.

Indicator—Identifies and communicates a system's status. An environmental public health indicator (EPHI) provides information about a population's health status with respect to environmental factors. It can be used to assess health or a factor associated with health (i.e., risk factor, intervention) in a specified population through direct or indirect measures.

Linkage project—For the purpose of CDC's National Environmental Public Health Tracking initiative, a project that demonstrates (a) an approach for linking (on an individual or ecologic level) existing health effect surveillance data with exposure and/or hazard data as part of ongoing surveillance activities, (b) a sustainable effort to build capacity, and (c) the utility of this linked data in guiding public health policy and practice.

Monitoring—Performance and analysis of routine measurements, aimed at detecting changes in the environment or health status of population.

National Center for Environmental Health—The CDC center that investigates and increases knowledge about the relation between human health and the environment and uses this knowledge to develop national public health programs and policies

for preventing health effects. CDC's EPHT Network is housed within NCEH. NCEH coordinates with other CDC centers, institutes, and offices and the Agency for Toxic Substances and Disease Registry to pool resources and expertise on cross-cutting issues concerning National EPHT and surveillance systems.

National Electronic Disease Surveillance System—A CDC electronic information system architecture for use in the states that can automatically gather health data from a variety of sources on a real-time basis, assist in the ongoing analysis of trends and detection of emerging public health problems, and facilitate monitoring of community health. Initially designed to be used for communicable disease surveillance, it can be applied to National EPHT activities. NEDSS now falls under CDC's larger Public Health Information Network (PHIN).

National Environmental Information Exchange Network—An EPA nationwide initiative to build locally and nationally accessible, cohesive, and coherent environmental information systems. It is a partnership between state environmental departments and the EPA that is revolutionizing the exchange of environmental information efficiently and securely over the Internet.

National Public Health Performance Standards Program—A national partnership initiative that has developed national standards for state and local public health systems and for public health governing bodies.

Objectives—Key actions necessary to accomplish goals and fulfill the mission.

Performance measure—The outcome or output that must ultimately be accomplished for the program area to be deemed a success.

Pew report—The Pew Environmental Health Commission report, *America's Environmental Health Gap*, published in 2000, that pointed to the need to establish a strengthened national focus on environmental public health. See www.pewenvirohealth.jhsph.edu/html/reports/ trackingcompanion.pdf.

Prevention communication—Messages to the public about how to reduce risk for adverse health effects from exposure to disease-causing agents and chemicals.

Public health—The art and science dealing with preventing disease, prolonging life, and promoting health through organized efforts of society including preventive medicine and sanitary and social science.

Public Health Information Network—An architectural framework that enables consistent exchange of response, health, and disease tracking data between public health partners through defined data and vocabulary standards and strong collaborative relationships. PHIN is composed of five key components: detection and monitoring, data analysis, knowledge management, alerting, and response. See www.cdc.gov/phin.

Public health surveillance—The ongoing systematic collection, analysis, and interpretation of outcome-specific data used to plan, implement, and evaluate public health practice.

Risk assessment—A system used to evaluate the potential or actual exposure to a biologic or environmental agent.

Stakeholder—A person or organization with an interest in a system or topic.

Strategic partnership—The close working relationship among affected organizations to ensure the success of an endeavor.

Strategic planning—A disciplined effort to produce fundamental decisions and actions that shape and guide what an organization is, what it does, and why it does it, with a focus on the future.

Sustainable development—Growth and development within a society that is intended to meet the needs of the present without compromising the ability of future generations to meet their own needs.

Systems management—A scheme for operating an organization with rules and precepts.

Trading Partner Agreement—An agreement that establishes the basis for a long-term relationship between two entities that will be conducted on a transactional or release basis.

Tracking—See *Environmental Public Health Tracking*.

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