National Conference of State Legislatures

ENVIRONMENTAL HEALTH SERIES

Revitalizing Environmental Health Services

June 2003, Volume 8

Overview

Most people don't realize the role that environmental public health practitioners play in their daily lives. These individuals ensure the safety of food and water, protect the public from chemical spills, control pests that carry diseases such as West Nile Virus, and prevent disease by ensuring proper sanitation. Yet, the environmental public health services system and its workforce has suffered in recent decades due to a lack of attention and other competing priorities. Health department services are not able to keep up with increasing demands; technology and information systems are outmoded; new and emerging threats such as hantavirus and West Nile virus threaten to overwhelm resources; and serious training inadequacies weaken the capacity of the environmental health services workforce at state, tribal and community levels.

To address this situation, the Centers for Disease Control and Prevention developed a *Strategy to Revitalize Environmental Health Services in the United States* to harness the ideas and energy of many public, private, and community-based agencies and organizations nationwide. State legislatures have a role to play in this revitalization strategy by providing state and local health departments and environmental health practitioners with the resources and tools they need to do their jobs effectively.

Background

Before exploring the current condition of environmental health services in the United States, it is important to first answer two questions: What is environmental public health? and What are environmental public health services?

What Is Environmental Public Health?

The World Health Organization (WHO) defines environmental health as " ... those aspects of human health, including quality of life, that are determined by physical, chemical, biological, social, and psychosocial factors in the environment. It also refers to the theory and practice of assessing and controlling those factors in the environment that can potentially affect adversely the health of present and future generations."[1]

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What Are Environmental Public Health Services?

Local health departments identified a range of activities within the realm of environmental public health services. These include, but are not limited to control and management of exposure to hazardous substances, ensuring the safety of public water supplies, "sick building syndrome" analysis and control, and protecting the public from foodborne illnesses and diseases spread by environmental vectors.

History of the Environmental Public Health System

Examination of the current public health system and how effectively it functions requires a proper perspective. How has the system evolved since its inception and how well does it function in relation to its responsibilities?

Two factors have shaped the modern public health system during the past 150 years:

1. The growth of scientific knowledge about the sources and means of controlling disease; and

2. Increasing public acceptance of disease control as both a possibility and a public responsibility.

Along with the growth of scientific knowledge, public authorities increased their responsibilities to include sanitation, immunization, vector control, regulation, health education and personal health care. Without the integration of scientific discovery and social action, the public health system would not be adequately equipped to protect the public's health.

The 17th Century Through the 20th Century

The seeds of the public health system that exists today were planted in the 17th century. In the late 1700s, several European cities appointed public authorities to adopt and enforce isolation and quarantine measures because of epidemics such as the plague, cholera and smallpox. Other public health duties included reporting and recording deaths due to plague.

Advances in public health were made during the 19th century. The "great sanitary awakening" identified filth as a cause of disease and as a vehicle for transmission. The spread of disease became rampant as the U.S. population increasingly moved to cities and working class neighborhoods degraded from overpopulation and overuse. Industrialization—with its overburdened work force and crowded dwellings—led to a population who was more susceptible to disease and who lived in conditions in which disease was more easily transmitted. Urbanization itself was considered a cause of disease.

The role of the state and local public health departments expanded greatly in the early 20th century as it became increasingly clear that individuals most often were the source of disease transmission. Several states established disease registries, and public health agencies shifted away from disease prevention to promotion of overall health through clinical care and public education.

The Sheppard-Towner Act of 1922 established federal guidelines for public health programs and provided funding to the states to implement programs that met the guidelines. Although the programs were federally initiated, they were fully state-run. The Act provided a strong government role in ensuring social welfare from the 1930s through the 1970s. State and local health agencies assumed greater roles in providing and planning health services, health promotion and health education and in financing health services.

By the 1970s, the financial effects of health care expansion began to be apparent as per-person health care expenditures increased from $198 in 1968 to $334 in 1970. This same time period saw the public sector share of this sum rise from 25 percent to 37 percent. Containing health costs had become a national objective. Although new health problems—from asthma and asbestos exposure to lead poisoning and cancer clusters—continued to surface, current political and social values encouraged fiscal constraint.

Public health has evolved from identifying health problems to developing the knowledge and expertise to solve these problems and mobilizing the necessary political and social support to implement a solution.

Where Is the Environmental Public Health System Lacking?

At one time, environmental public health services and sanitation were the backbone of public health. Because of the work in these areas—most notably through drinking and wastewater treatment—more than 80

percent of human diseases have been eliminated. Still, the system has suffered severe setbacks. In 1980, it was estimated that the environmental public health work force comprised about 235,000 practitioners. By 2000, the environmental public health work force was reduced to less than 20,000 workers.[2]

At the same time that the environmental public health work force is dwindling, the field of environmental public health is expanding. During the last 50 years, multiple new issues—indoor and outdoor air quality, childhood lead poisoning, asthma control, and hazardous chemical exposure and management—have emerged. New and complex technologies to address these concerns have been developed and are available to the environmental public health work force.

The Centers for Disease Control and Prevention (CDC), in conjunction with stakeholders from numerous agencies and organizations, has identified six areas—capacity building, research, leadership, communication and marketing, work force development, and strategic partnerships—in which environmental public health services will require vast improvements during the 21st century.

Response Capacity

According to the CDC, at this time, the nation's capability to prevent and respond to traditional, new and emerging threats and concerns of environmental public health, needs to be improved. One recommendation that will lead to improvement in this area is to evaluate the positive effect environmental health services has on health. The environmental health work force must be expanded to better identify, respond and deliver environmental public health services.

Research

Because the field of environmental public health continues to grow, and the nation needs to be prepared to address new and emerging threats, including terrorism, the CDC believes that the current research agenda is not sufficient.

The CDC has identified priority research areas that include defining the structure and size of the environmental public health work force required to address traditional, new and emerging threats and concerns; better defining the environmental antecedents of disease outbreaks; and developing new intervention strategies to prevent disease and improve livability.

Leadership

The Pew Environmental Health Commission report, *America's Environmental Health Gap*, challenged the nation to address the role of the environment as a precursor for disease. The report addresses the national leadership void in the field of environmental public health. It also points to the lack of leadership as a factor that has affected coordination with other components of public health. One consequence of this lack of leadership is the fragmentation of public health prevention efforts to reduce chronic and disabling diseases and conditions.

One method the CDC suggests for increasing leadership potential is the development of a National Environmental Health Service Corps, or fellowship program, to create a core capacity of well-trained specialists. After receiving specialized training and applied experiences in environmental public health program management, the new leaders would return to their work places and communities. This workforce would then be expected to apply the 10 essential services as a framework for the delivery of environmental public health services.

Communication and Marketing

An important communications challenge faced by the environmental health work force is to make the public and decision makers aware of the environmental public health components of public health agencies. Improving communications between environmental public health agencies, communities and policymakers enhances the significance and understanding of environmental public health among all stakeholders, including the general public. The National Environmental Health Association has identified communications training and risk communication as important skills for environmental public health professionals.[3]

Environmental public health services often are invisible to the general public until there is a problem, making it difficult to develop public support to improve environmental public health services. Environmental

public health agencies need to involve community members at each step of risk assessment and management to ensure ethical practice in public health.[4]

Integrating marketing principles into an environmental public health communication program provides powerful tools to influence the factors that contribute to social change: the individual, the environment and social policy.[5]

Work Force Development

The scope of work of the environmental public health work force is defined by its size, composition, performance standards and capabilities. It is important for a skilled work force to have cultural and linguistic competencies to understand the needs of, and deliver services to, diverse populations. These individuals also need technical competency in areas such as biostatistics, environmental and occupational health, the social and behavioral aspects of disease, and the practice of prevention.

Many states do not require that an individual have a degree, special education or certification to enter the environmental public health field. For the work force to be effective, however, CDC recommends that minimum competencies be defined by state agencies. Individuals who desire to practice in the field must be encouraged, or even required, to meet those competency levels through degree programs, continuing education and certification programs.

> "There has probably never been a time in the history of this country, when trained, competent, and efficient health officers were needed as much as they are now. It is unfortunate that in the absence of epidemics too little attention is paid to those whose duties require them to guard the public health."
>
> **Source:** *Journal of the American Medical Association*, editorial, 1893.

Strategic Partnerships

To revitalize environmental public health services, the environmental public health professionals and public and private agencies and organizations must interact and share information. Oftentimes, it involves developing formal agreements among stakeholders as they work toward common goals. Policy makers should be considered an important part of the strategic partnership network.

> **Siegel and Doner on Public Health**
>
> "Working with organizations is an important part of most social change efforts. Building and maintaining effective relationships with other organizations often is critical to achieving desired outcomes."
>
> **Source:** M. Siegel and L. Doner, *Marketing Public Health: Strategies to Promote Social Change* (Gaithersburg, Md.: Aspen Publishers Inc., 1998).

State Actions

States have acted, individually and collectively, to address the needs of the environmental public health community. Legislatures have introduced and passed legislation to strengthen the environmental public health infrastructure. State health organizations (the National Association of County and City Health Officials and the Association of State and Territorial Health Officials) have been instrumental in the effort to develop programs to support and advance the work of environmental public health in the states.

Legislation

Since the 2000 legislative session, 45 states have enacted environmental health-related legislation. These bills address topics ranging from toxics and pesticides to children's environmental health and indoor air quality. Some examples of enacted legislation follow.

In 2001, the California Legislature enacted SB 702 to add a chapter related to environmental public health to the Health and Safety Code (Cal. Health & Safety Code §§104324–104324.5). Specifically, this bill established an Environmental Health Surveillance System, which surveys environmental exposures and the diseases afflicting residents.

The Montana Legislature passed HB 582, which requires the Department of Public Health and Human Services to provide a feasibility report on the development of a chronic disease registry. The report was to include an assessment of current chronic disease-related data collection systems, the purpose of having a chronic disease registry, and the estimated costs of developing such a registry.

During the 2002 session, the Virginia General Assembly enacted SB 610 to establish a pilot project to develop a standardized Geographic Information System (GIS) model for sharing data. The project, conducted in conjunction with the Agency for Toxic Substances Disease Registry and the Centers for

Disease Control and Prevention, will enable the state to share data related to the spread of airborne toxics and pathogens.

The Association of State and Territorial Health Officials

The Association of State and Territorial Health Officials (ASTHO), in partnership with the federal Agency for Toxic Substances and Disease Registry (ATSDR) is attempting to enhance states' capacity for environmental public health education and communication. This partnership has enabled ASTHO to provide states with regional learning opportunities about environmental public health risk communications. ASTHO, with the financial support of ATSDR, produces *Health and Electronic Seminars* and the *Environmental Health News*, a monthly electronic newsletter.

The National Association of County and City Health Officials

The National Association of County and City Health Officials (NACCHO), with the support and partnership of CDC, developed the *Protocol for Assessing Community Excellence in Environmental Health* (PACE EH) program, a guidance tool to assist local health officials in planning and implementing community-based environmental health assessment. This assessment tool allows health officials to create an accurate and supportable profile of a community's environmental health status and to develop intervention strategies.

The PACE EH process improves decision making by using a collaborative, community-based approach to generating an action plan. This plan is based on priorities that reflect both the local environmental health status and an understanding of local values and priorities. There are three core processes: developing new relationships with community stakeholders; expanding understanding about the relationship between human health and the state of the environment; and redefining a leadership role for public health officials in environmental public health.

PACE EH can provide a starting point, as well as guidance, on the primary tasks in a community-based environmental health assessment. The outcomes and benefits of the process are as much related to completing the assessment as they are to establishing a leadership role for local health officials and building a sustainable, community-based decision-making process.

Federal Actions

The federal government has taken several steps to alleviate the deficiencies in the nation's environmental public health system. Congress and the Department of Health and Human Services have instituted changes in how the public health system uses to address environmental public health issues. The Brooking's Institution issued *Government's Greatest Achievements of the Past Half-Century* in November 2000; eight of the top 50 achievements were health related. These achievements included disease reduction, improved air and water quality, food and drinking water safety, and enhanced health care infrastructure.[6]

The Department of Health and Human Services (HHS)

The latest effort by HHS is the *Healthy People 2010* program. The goal of this endeavor is to "…ensure that federal, tribal, state, and local health agencies have the infrastructure to provide essential public health services effectively."[7] *Healthy People* defines the nation's public health infrastructure as the resources needed to deliver the essential public health services to every community.

Three Core Functions of Public Health

1. *Assessment* of information on the health of the community;
2. Comprehensive public health *policy development*; and
3. *Assurance* that public health services are provided to the community.

Source: U.S. Department of Health and Human Services, *Healthy People 2010*, 2nd ed. (Washington, D.C.: DHHS, 2000).

Congress and the Executive Branch

Since 2001, Congress has focused considerable attention on environmental public health issues. Legislation has been introduced to address nationwide health tracking, children's environmental health and urban asthma. Legislators understand the health effects of environmental pollutants and they are attempting to address the relationships of these pollutants to health issues.

Recent bills include SB 2054 and HB 4061, the Nationwide Health Tracking Act of 2002, which were introduced by Representative Nancy Pelosi and Senator Hillary Rodham Clinton during the 107th Congress. The bills amended the Public Health Service Act to establish nationwide and state health tracking networks to monitor, investigate and prevent increases in the incidence of certain chronic diseases and relevant environmental risk factors.

SB 855, the Children's Environmental Protection Act, introduced by Senator Barbara Boxer, would have amended the Toxic Substances Control Act to require the Environmental Protection Agency administrator to ensure that each environmental pollutant standard was modified to consider the effects on children and other vulnerable populations, with an adequate margin of safety.

HB 4824, the Urban Asthma Assistance Act, sponsored by Representative Edolphus Towns, highlights the problem of asthma and provides for various programs and activities to respond to asthma in urban areas.

Current bills include HB 852, the Environmental Health Research Act of 2003, sponsored by Representative Louise Slaughter, which authorizes the National Institute of Environmental Health Sciences to develop multidisciplinary research centers regarding women's health and disease prevention and to conduct and coordinate a research program on hormone disruption as well as other purposes.

Private Actions

Although various reports and evaluations describe the continuing deterioration of the national public health system, increased interest in public health has lead to the development of improvement plans in several states. The issue has gained the interest of private foundations as well, prompting the funding of major national programs to improve health, including a collaborative effort—*Turning Point*—between the Robert Wood Johnson Foundation and the W.K. Kellogg Foundation.

Goals of *Turning Point* include a better-trained public health work force, improved data and information systems, and more effective public health organizations.

The Pew Commission recommended the establishment of a nationwide health tracking network to " ... identify populations at risk and respond to outbreaks, clusters and emerging threats" while establishing "the relationship between environmental hazards and disease."[8] After the Commission's report was released, Congress directed the CDC to develop a coordinated environmental public health tracking network among all states. The network is to identify and track chronic diseases and their relationship to environmental factors.

Although progress is being made to outline a comprehensive set of public health standards based upon the delivery of the "Essential Public Health Services" (see sidebar below), the implementation of these standards requires the development of guidelines, better training of the work force and readily available technical assistance. In addition, a core of leaders is needed in environmental public health at the federal, tribal, state, territorial and local levels.

The Essential Public Health Services

- Monitor health status to identify community health problems.
- Diagnose and investigate health problems and health hazards in the community.
- Inform, educate and empower people about health issues.
- Mobilize community partnerships to identify and solve health problems.
- Develop policies and plans that support individual and community health efforts.
- Enforce laws and regulations that protect health and ensure safety.
- Link people to needed personal health services and ensure the provision of health care when otherwise unavailable.
- Ensure a competent public health and personal health care work force.
- Evaluate effectiveness, accessibility and quality of personal and population-based health services.
- Conduct research to ascertain new insights into and innovative solutions to health problems.

Source: Public Health Functions Steering Committee, July 1995.

Tribal Resources

The Indian Health Service includes the Division of Environmental Health Services within the Office of Environmental Health and Engineering (OEHE). The mission of the Indian Health Service (HIS), in partnership with American Indian and Alaska Native people, is to raise Native Americans' physical, mental, social and spiritual health to the highest level.

The goal of the OEHE is to:

- Provide optimum availability of functional, well-maintained health care facilities and staff housing;
- Provide technical and financial assistance to Indian tribes and Alaska Native communities to promote a healthy environment through the cooperative development and continuing operation of safe water, wastewater, and solid waste systems and related facilities; and
- Assist each American Indian tribe and Alaska Native community to achieve its unique goals for obtaining health care facilities and establishing and maintaining a healthy environment.[9]

The components of HIS, including the Division of Environmental Health Services (DEHS) and the Office of Environmental Health and Engineering, works through shared decision making to enhance the health and quality of life of all American Indians and Alaska Natives to the highest possible level. This is accomplished by eliminating environmentally related disease and injury through sound public health measures. DEHS practitioners include sanitarians, environmental health specialists, environmental health technicians, health care safety officers, institutional environmental health officers, and injury prevention specialists. Their work covers a wide range of public health services and is divided into three programmatic areas: general environmental health; community injury prevention; and institutional environmental health.

Notes

1. U.S. Department of Health and Human Services, *An Ensemble of Definitions of Environmental Health*, www.health.gov/environment/DefinitionsofEnvHealth/ehdef2.htm, Nov. 20, 1998.

2. U.S. Department of Health and Human Services, *The Public Health Workforce: Enumeration 2000* (Washington, D.C.: DHHS, 2000).

3. National Environmental Health Association, *Registered Environmental Health Specialist/Registered Sanitarian Competencies and Examination and the Professional in Environmental Health: Responsibilities and Competencies* (Denver, Colo.: the Association, 1999).

4. National Research Council, *Understanding Risk: Informing Decisions in a Democratic Society* (Washington, D.C.: National Academy Press, 1996).

5. M. Siegel and L. Doner, *Marketing Public Health: Strategies to Promote Social Change* (Gaithersburg, Md.: Aspen Publishers Inc., 1998).

6. The Brookings Institution, *Government's Greatest Achievements of the Past Half Century* (Washington, D.C.: the Institution, November 2000).

7. U.S. Department of Health and Human Services, *Healthy People 2010*, 2nd ed. (Washington, D.C.: DHHS, 2000).

8. Pew Environmental Health Commission, *America's Environmental Health Gap: Why the Country Needs a Nationwide Health Tracking Network* (technical report) and *America's Environmental Health Gap* (companion report) (Baltimore, Md.: the Commission, 2000).

9. Indian Health Service: Office of Environmental Health and Engineering, www.his.gov/NonMedicalPrograms/DFEE/index.cfm, April 22, 2003.

The ***Environmental Health Series*** is produced by staff from the Environmental Health Project at the National Conference of State Legislatures in Denver. The Centers for Disease Control and Prevention (CDC) reviews each issue for accuracy and scientific integrity. For more information, visit www.ncsl.org/programs/esnr/toxics.htm or call (303) 364-7700.

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