

## Introduction

*The emergence of many new issues and threats...Cryptosporidium in drinking water, hantaviruses, Escherichia coli O157:H7, West Nile virus, and most recently homeland terrorism...points to a need for a well-prepared environmental public health system.*<sup>i</sup>—  
Centers for Disease Control and Prevention

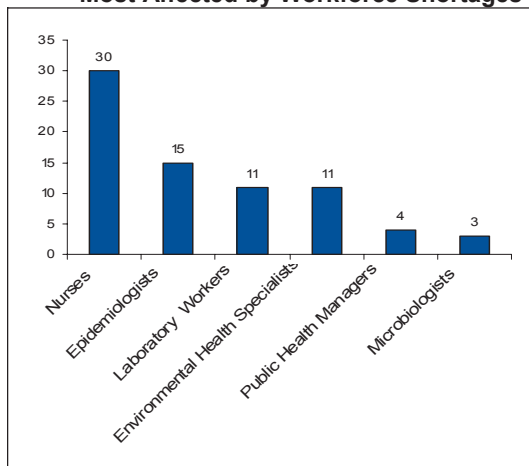
Public health agencies are juggling an ever increasing number of responsibilities despite the growing threat of a workforce shortage. In November and December 2003, the Association of State and Territorial Health Officials and the Council of State Governments (CSG) surveyed ASTHO members and published the results in the report, *State Public Health Employee Worker Shortage Report: A Civil Service Recruitment and Retention Crisis*.<sup>ii</sup>

One section of the report focused on the job categories most affected by personnel shortages. The four top public health job categories identified were nurses, epidemiologists, laboratory workers, and environmental health specialists. As shown in Figure 1, eleven of the 37 states that participated in the ASTHO/CSG survey identified environmental health specialists as a job category expected to be most affected by future workforce shortages in their state.

This issue brief provides an overview of the importance of environmental health specialists and the challenges facing states as they work to build and maintain an adequate environmental public health workforce. The term ‘environmental health specialist’ is a frequently used job classification in health agencies. However, as is common with many fields in public health,

the term does not adequately encompass the range of titles or qualifications of persons undertaking environmental health activities. For this reason, we will use the term ‘environmental health practitioners’ to cover the array of specialists, sanitarians, nurses, epidemiologists, chemists, biologists, statisticians, and health educators who are all critical to environmental public health.

**Figure 1: State Public Health Occupational Classes Most Affected by Workforce Shortages**



Source: ASTHO/CSG Survey 2003 (n=37 respondents could choose more than one profession)

## Environmental Public Health Practitioners

Qualified environmental health practitioners are on the front line of preserving national health and safety. Yet at a time when the environmental health workforce is most needed, they are too few in number to meet traditional roles as well as keep pace with mounting responsibilities and rapidly evolving technologies.

Historically, public health was environmental public health—preserving the purity of food and water, and ensuring basic sanitation. With the emergence of new threats, including West Nile

virus, SARS, monkeypox, bio/agro-terrorism, and disease clusters with suspected environmental links, the environmental health profession has had to evolve and illustrates the need for a strong, highly trained workforce.

Environmental health practitioners work within many different agencies, including public health, environmental protection, agriculture, and housing, depending on the state and the local organization. Examples of activities undertaken by environmental public health practitioners include<sup>iii</sup>:

- Inspecting, permitting, grading, and embargoing items such as food and imports.
- Conducting risk assessments and risk communication activities.
- Providing surveillance of exposures and health effects in a community.
- Seeking injunctions and other legal remedies.
- Sampling for environmental and human exposures, analyzing data, and assessing exposures.
- Conducting public education, information sharing, and outreach.
- Working with communities with potential environmental contaminations.
- Developing, implementing, and evaluating policies and programs.

## A Critical Public Health Job

*Because many environmental and health threats know no boundaries, we can afford no weaknesses in our line of defense. Either we are all protected, or we are all at risk.*<sup>iv</sup> —  
Centers for Disease Control and Prevention

America's environmental health depends on knowledgeable and experienced front-line environmental health practitioners who can

identify a threat, work to minimize the hazard—if not eliminate it—through innovative solutions, and offer assistance to those exposed or otherwise affected. In order for environmental health professionals to be effective in preventing and responding to threats, there must be a sufficient workforce possessing basic public health skills such as epidemiology, statistics, and communication skills, and thoroughly trained in a number of advanced technologies.

As identified in the CDC *A National Strategy to Revitalize Environmental Public Health Services*, environmental health practitioners are working in critical public health positions and facing a variety of challenges, including those listed below.<sup>v</sup>

**Environmentally Related Disease.** Many diseases are environmentally related and have the potential to affect the health and lives of millions. The 2004 multi-state foodborne outbreak of Hepatitis A demonstrated the severe health and economic affects environmental health threats can have. States' capacity to identify and stop sources of the outbreak and conduct public education and outreach helped to solve the crisis.

**Emerging Public Health Threats.** New public health threats, or the re-emergence of threats thought to be eliminated, are an ongoing challenge to public health. West Nile virus, a disease new to the Western Hemisphere in 1999, has killed, permanently disabled, or sickened thousands of persons since then. Sustainable state and local mosquito control programs, with the skilled workforce to operate these important vector control programs, remain an important public health priority.<sup>vi</sup>

**Increasingly Complex Issues.** Over time the field has been successful at reducing brute sources of pollution through environmental laws and regulations, and improvements in technology. Technological advances have enabled the detection of environmental hazards and human exposures to hazards earlier and in smaller amounts, but the ability to make definitive causal connections in most cases are often not possible. The ability to conduct surveillance, monitor trends, and communicate uncertainties was vitally

important in the investigation of a cluster of acute lymphocytic leukemia in children in Churchill County, Nevada.<sup>vii</sup>

## The Looming Shortage

*The events of September 11, 2001, and the subsequent anthrax attacks brought the role and responsibility of the public health workforce in emergency response efforts to the forefront in public understanding. We can only be prepared if we have an experienced workforce that is qualified to carry out our mission. — Richard A. Raymond, MD, Nebraska State Health Official*

The current workforce crisis could be described as a “perfect storm” that has created an enormous leadership void in public health policy development, program implementation, and fiscal responsibility. The ASTHO/CSG survey of state public health agencies identified several trends that point to chronic public health professional shortages in a majority of the states in the next 5-10 years.<sup>viii</sup>

- The public health workforce is rapidly aging. The average age is 46.6 years.
- Public health retirement rates are as high as 45 percent in some states.
- Current vacancy rates of up to 20 percent exist in some states.
- Public health employment turnover rates are 14 percent in some parts of the country.

Over a decade ago, the chronic shortage of environmental health practitioners was documented in the 1988 *Seventh Report to the President and Congress on the Status of Health Personnel in the United States*. The report noted that as of 1980 there were 235,000 people in the environmental public health workforce and identified an estimated need for an additional 137,000 environmental health practitioners.<sup>ix</sup> In the report *Public Health Workforce: Enumeration 2000*, the environmental health workforce was figured at

fewer than 19,500.<sup>x</sup> Clearly, the size of the workforce is shrinking as the need grows and the average age of the public health workforce increases.

To further exacerbate the situation, there is no ready source of skilled environmental health practitioners to replace current leaders in the field who are charged with handling public health policy and planning, fiscal management, and community experience. Succession planning to identify and groom the next generation of environmental health leaders is frequently difficult under current public personnel systems.

Accredited undergraduate environmental health programs currently graduate only about 300 students each year, far too few to fill the need. Low undergraduate enrollment in environmental health is further aggravating the shortage. As a result, higher education institutions are struggling to keep qualified instructors.<sup>xi</sup>

## Options for Addressing Shortages

*Few national resources are committed to preparing future environmental public health professionals<sup>xii</sup>—Association of Public Health Laboratories*

The ASTHO/CSG survey asked public health agencies to identify the keys to improving the public health professional shortage. The 37 responding states responding indicated that they are investigating or trying a variety of approaches to retain and recruit environmental health practitioners including:

- Revising salaries (when the budgets allow).
- Providing time and reimbursement for training and continuing education.
- Implementing flexible schedules.
- Marketing environmental public health as an interesting career.
- Providing scholarships or loan repayment options.<sup>xiii</sup>

These themes were also echoed in the *National Strategy to Revitalize Environmental Public Health Services*.

## Conclusion

*High tech facilities, laboratory equipment, and disease detection systems are crucial to protect the public's health, but their real value hinges on the availability of sufficient experienced public health professionals who can analyze, interpret, and put to use the information they produce.—Mary C. Selecky, Secretary, Washington State Department of Health*

The work done by the environmental public health workforce affects every person, every day, at every moment. Whether it is the air we breathe, the water we consume, the food we eat, or the homes we live in—our safety is ensured by environmental health practitioners. An understaffed and ill-trained workforce can ultimately result in higher rates of death, disease, and costly clean up of environmental hazards and significant health care costs. Not only do state agencies need to recruit qualified professionals to perform the wide variety of duties required in environmental health, but the workforce needs to be highly-trained to anticipate, recognize, evaluate, and control these increasingly sophisticated and complex threats.

<sup>i</sup> *A Strategy to Revitalize Environmental Health Services in the United States*. United States Department of Health and Human Services, Centers for Disease Control and Prevention. Atlanta, GA. (May 2002), p. 1.

<sup>ii</sup> *Health Employee Worker Shortage Report, A Civil Service Recruitment and Retention Crisis*. Association of State and Territorial Health Officials and the Council of State Governments. (April 2004).

<sup>iii</sup> *A Strategy to Revitalize Environmental Health Services*, p. 29.

<sup>iv</sup> *Public Health's Infrastructure, A Status Report*. Prepared for the Senate Appropriations Committee by the Department of Health and Human Services, Centers for Disease Control and Prevention. p. ii.

<sup>v</sup> *A Strategy to Revitalize Environmental Health Services*, pp. 8-11.

<sup>vi</sup> *Public Health Confronts the Mosquito: Developing Sustainable State and Local Mosquito Control Programs (Interim Recommendations)*. Association of State and Territorial Health Officials. (July 2004)

<sup>vii</sup> *Churchill County (Fallon) Childhood Leukemia Update*. Nevada State Health Division. Available from:

<http://health2k.state.nv.us/healthofficer/leukemia/fallon.htm>.

<sup>viii</sup> *Health Employee Worker Shortage Report*, p. 2.

<sup>ix</sup> *Seventh Report to the President and Congress on the Status of Health Personnel in the United States*. Washington (DC): Department of Health and Human Services (US), Health Resources and Services Administration, 1988.

<sup>x</sup> *The Public Health Workforce: Enumeration 2000*. Washington (DC) Dept. of Health and Human Services (US), Health Resources and Services Administration (2000).

<sup>xi</sup> Alejandra Tres, Executive Director, Association of Environmental Health Academic Programs. [Personal communication April 20, 2004.]

<sup>xii</sup> *Public Health Laboratories Issues in Brief: Bioterrorism Capacity*, APHL. (August 2003), p.4.

<sup>xiii</sup> *Health Employee Worker Shortage Report*, p. 12.

*This issue brief was supported by cooperative agreement number U50/CCU313903-07 from the Centers for Disease Control and Prevention. For additional information please contact [publications@astho.org](mailto:publications@astho.org).*

*The Association of State and Territorial Health Officials is the national nonprofit organization representing the state and territorial public health agencies of the United States, the U.S. territories, and the District of Columbia. ASTHO's members, the chief health officials in these jurisdictions, are dedicated to formulating and influencing sound public health policy, and assuring excellence in state-based public health practice.*



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