

# Environmental Health Department Structure: Literature Review and Recommendations

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**Abstract** Local governmental environmental health programs play a critical role in safeguarding public health. Environmental health professionals administer a wide range of professional services, including food safety, septic systems, childhood lead poisoning prevention programs, air quality, water quality, healthy housing, and vector control. Despite the centrality of the environmental health workforce to modern life, a national standard or guidance does not exist for how local environmental health departments should be structured, staffed, and funded. This article aims to provide foundational information to support an effort to describe the characteristics of a minimum viable governmental environmental health department and provide recommendations on optimal structure, staffing, and funding.

## Introduction

Environmental health professionals are employed at local health departments (LHDs) or independent agencies throughout the U.S. They are responsible for ensuring food safety, air and water quality, and the safety of the homes and neighborhoods in which we live. Studies have shown significant associations between increased LHD activities and expenditures and decreased rates of environmental health-related diseases (Bekemeier et al., 2015; Fan et al., 2021). Despite the essential contributions of the environmental health workforce, there is an absence of national guidance for jurisdictions on the specific environmental health services that should be provided or the level of staffing or funding needed to fulfil these services. The lack of a national model makes it difficult for public health officials to justify requests for additional staffing, funding, equipment, and other resources—leav-

ing the nation's health, safety, and financial security at risk.

## Background

The environmental health profession comprises the second largest portion of the public health workforce after nursing (National Association of County and City Health Officials [NACCHO], 2020). In most cases, governmental environmental health services reflect local and state statutes, laws, and regulations. Funding for these services is largely local, generally derived from fee-for-service arrangements and supplemented by general funds and appropriations. The absence of a standardized nationwide funding scheme creates ambiguity among elected officials and decision makers when constructing an environmental health services program that reliably protects and promotes the health, safety, and economic prosperity of their communities.

## Profile of Local Environmental Health Departments

### Structure and Services Vary by Jurisdiction

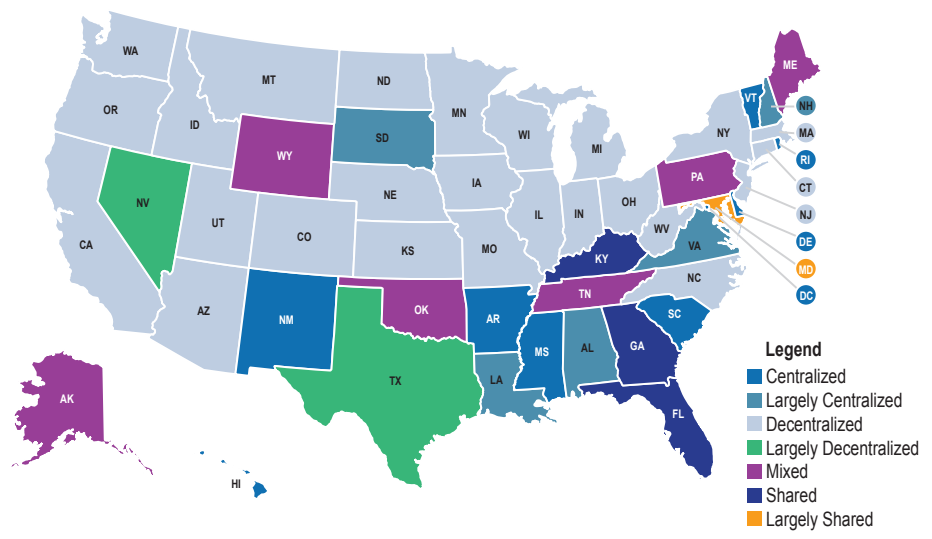
Environmental health services are provided by several distinct government agencies and private organizations working together. In 2019, 84% of LHDs had an environmental health program and 74% of LHDs employed environmental health workers (NACCHO, 2020). While the majority of environmental health programs provide a similar set of core services—including indoor air quality, environmental monitoring and epidemiology, risk assessment, water quality, and food protection—some environmental health services are more commonly provided than others. Urbanicity is a major factor in determining which services are provided, as most services are more likely to be provided by urban LHDs than those in rural areas (NACCHO, 2020).

### Staffing Challenges Persist

Many LHDs are significantly understaffed (de Beaumont Foundation & Public Health National Center for Innovations, 2021). There is no clear association, however, between staffing levels and LHD performance, and staffing needs differ between LHDs depending on such factors as services provided, number of regulated facilities, population density, and population risk status (NACCHO, 2011). The Voluntary National Retail Food Regulatory Program Standards from the Food and Drug Administration (2022) specifies the funding, staffing, and equipment required for a food inspection and surveillance program. The standards call for LHDs to employ one full-time equivalent

FIGURE 1

**State and Local Health Department Governance Classification Map**



Source: Tariq et al., 2019.

led by state employees, while others are led by local employees (ASTHO, 2014). A survey administered by NEHA found that 12 states and 5 territories operate under a centralized governance structure, 21 states have a decentralized structure, and 17 states have a mixed model (Tariq et al., 2019; Figure 1).

**Funding Limitations**

LHDs receive funding from federal, state, and local sources, as well as from fines, licensing fees, and inspection fees. The amount of funding from each source as a percentage of total revenue varies depending on the size of population served and the governance structure of the health department. Most of the surveyed state and local public health officials have reported that current funding structures are not sufficient to provide foundational public health services (Leider et al., 2015). In general, environmental health programs receive a greater percentage of revenue from fees and fines and a lower percentage from federal sources than other LHD programs (University of Washington, 2021). Because their funding is so heavily dependent on fees, local environmental health programs might neglect specific activities that do not generate fees and are not mandated by the state (Meit et al., 2013).

**Workforce Demographics and Characteristics**

The environmental health workforce includes environmental health specialists, scientists, technicians, and sanitarians. Other health department employees whose work might contribute to environmental health include administrative staff, laboratory workers, epidemiologists, and preparedness staff (ASTHO, 2014).

As part of the Understanding the Needs, Challenges, Opportunities, Vision, and Emerging Roles in Environmental Health (UNCOVER EH) initiative, the Centers for Disease Control and Prevention, NEHA, and Baylor University jointly administered a national survey to environmental health professionals to assess characteristics, demographics, practice areas, and professional satisfaction of the environmental health workforce. Key demographic findings are reported in Table 1.

These demographics suggest that the environmental health workforce is slightly less racially diverse but has a more balanced male-to-female ratio than the overall U.S. workforce. Additionally, an aging workforce

lent (FTE) staff member for every 280–320 retail food inspections performed, which is a helpful measure but does not address the full menu of environmental health services.

The U.S. Bureau of Labor Statistics and the National Association of County and City Health Officials (2011) found that jurisdictions employ environmental health staff at ratios of 3.65 and 3.91 FTE environmental specialists per 100,000 population, respectively. While these numbers should not be considered staffing benchmarks themselves, they suggest that LHDs with a lower environmental health worker-to-population ratio are relatively understaffed. Due of the complexity of environmental health programs, however, more research and modeling are needed to understand not only current staffing levels but also optimal staffing levels.

A 2007 survey of city and county environmental health professionals in California found some of the greatest challenges facing environmental health departments were a lack of qualified candidates and an inability to fill vacant positions. Respondents noted a need for additional employee training, especially in nontechnical areas (Dyjack et al., 2007). A 2022 needs assessment of National Environmental Health Association (NEHA, 2022) members revealed that recruitment

and retention of environmental health professionals remain a professional priority.

The COVID-19 pandemic revealed additional environmental health workforce needs. Environmental health professionals have experienced increased responsibilities due to the pandemic. Furthermore, many reported a lack of sufficient staff to conduct the work needed, suggesting that there is a significant shortage of environmental health employees and limited capacity to respond to emergency situations at LHDs (NEHA, 2020).

**Governance Structure Variation**

The structure of a city or county health department varies widely throughout the U.S. Local health departments and independent environmental health agencies can be centralized, decentralized, mixed, or shared (Association of State and Territorial Health Officials [ASTHO], 2014; Tariq et al., 2019). In centralized states, the state or territorial health agency retains substantial authority over the activities of LHDs, and LHDs are primarily led by state employees. In comparison, in decentralized states, LHDs retain most of their authority and are led by local employees. In shared states, LHDs might be led by employees of the state or local government, and in mixed states, some LHDs are

might pose a problem for the profession, with approximately one quarter of respondents planning to retire within the next 5 years (ASTHO, 2014).

Few respondents indicated that their undergraduate field of study was environmental health. As a result, many environmental health program employees may lack formal academic training in environmental health sciences, which highlights the need for continuing workforce development.

Similar trends can be found at the state level. The 2017 Public Health Workforce Interests and Needs Survey (PH WINS), which encompassed a nationally representative sample of state and local public health workers, found that the public health workforce is predominantly white, female, and over the age of 40. PH WINS also assessed future training needs and identified the top priorities for the workforce as budgeting and financial management, systems and strategic thinking, and developing a vision for a healthy community (de Beaumont Foundation et al., 2017).

Many respondents indicated that they recognize their work is important but feel they lack sufficient training and that creativity and innovation are not rewarded. The survey also found that health departments could face high turnover rates in the next 5 years. The most frequently cited reasons for leaving are pay and lack of opportunities for advancement. A 2012 ASTHO survey also indicated a high number of vacancies, which health departments might be unable to fill due to budget cuts and hiring freezes (ASTHO, 2014).

**Workforce Responsibilities and Development Needs**

In 2013, NEHA conducted a job task analysis (JTA) to determine required duties and tasks for Registered Environmental Health Specialists/Registered Sanitarians (REHS/RS). The JTA defines an REHS/RS as someone who “conducts inspections, investigations, and surveillance and response to environmental emergency situations to minimize illness, injury, and disease while increasing environmental public health awareness” (Professional Testing, Inc., 2020).

The current REHS/RS certification examination organizes required tasks into the following categories (Professional Testing, Inc., 2020):

**TABLE 1**  
**Environmental Health Workforce Demographics**

Demographic	Respondents (%)
Serves a population of <50,000	20
Serves a population of 50,000–1,000,000	50
Serves a population of >1,000,000	30
Identifies as White	86
Identifies as male	51
Holds a title of environmental health specialist or sanitarian	67
Is ≥46 years	54
Spends more than one half of the time working on non-environmental health programs	37

*Source: Gerding et al., 2019.*

- A. Performing environmental health surveillance, including planning surveillance activities and collecting and analyzing data.
- B. Conducting inspections, including reviewing regulations and standards, maintaining inspection equipment, and performing inspections of various facility types.
- C. Conducting investigations by performing epidemiology, lead, and other environmental health investigations and verifying risk abatement.
- D. Conducting compliance reviews by conducting plan reviews and determining permitting status.
- E. Providing environmental health information by collaborating with stakeholders, conveying environmental health risks, and implementing emergency response preparedness plans.

Research has shown that there is a need for increased workforce development programs and initiatives within state and local health departments. An assessment by the UNCOVER EH initiative sought to identify the highest priority needs for advancing the environmental health workforce. From the assessment, Gerding et al. (2020) found that environmental health professionals lack sufficient training and development opportunities, as well as standardized qualifications, educational requirements, and credentialing. As such, formal leadership training programs would provide professionals with specialized skills and enhance the impact of environ-

mental health programs. Moreover, standardized qualifications would provide a common identity for environmental health professionals, raise awareness of environmental health services, and increase the ability to generate evidence of the value of the environmental health profession.

Many environmental health departments do not have up-to-date equipment or technology, which can hinder the ability of environmental health professionals to conduct inspections and deliver essential services (Gerding et al., 2020). Additionally, environmental health data and management systems are inconsistent across jurisdictions, which limits the ability to identify the emergence of environmental health issues and evaluate the impact of services (Gerding et al., 2020). Furthermore, many environmental health departments report a lack of sufficient staff and a high number of vacancies; therefore, there is a need to raise awareness about the benefits of environmental health as well as generate financial and political support for the profession. Finally, health departments should form partnerships with other agencies and organizations and engage in cross-jurisdictional sharing of resources to increase capacity (Gerding et al., 2020).

**Conclusion and Recommendations**

Despite the importance of environmental health programs in protecting public health, there remains little standardized guidance

on how local environmental health departments should be structured, staffed, and funded. As a result, many local environmental health programs lack the ability to offer evidence-based recommendations on the staffing and resources necessary to provide essential services, which leaves communities at greater risk of environmentally caused diseases.

Based on the information in this review, the following recommendations are presented to develop a standardized local environmental health department structure:

1. Define the services and programs that environmental health departments should be structured and staffed to provide, including both required and recommended services. Equipment and technology required to carry out these services should also be identified.
2. Develop a new methodology to create staffing benchmarks that takes into account individual health department structure, setting, and provided services.
3. Establish a funding structure based on resources needed to retain sufficient staff,

maintain necessary equipment and technology, and perform essential services.

4. Establish a credentialing requirement for environmental health employees.
5. Prioritize identified workforce development needs, including budgeting and financial management, systems and strategic thinking, increased leadership development opportunities, and strengthening support for the environmental health profession.
6. Identify organizations and agencies that may be interested in partnering with the environmental health department and sharing resources and personnel.

The information contained in this review consists of existing reports, studies, and surveys. Additional research in the form of interviews and surveys with local environmental health professionals from urban, rural, and frontier communities is needed to gather intelligence on the funding, staffing, and resource needs of local environmental health programs. Interviews and surveys should be used to identify a methodology for determining staffing benchmarks for environmental health

departments. NEHA will use the results of this research to develop an environmental health program standard that accurately reflects the current challenges and future needs of the environmental health profession.

The activities performed by environmental health professionals—including assessment, assurance, policy development, surveillance, enforcement, and risk communication—are crucial for safeguarding community health and safety. Through this review, we aim to inform the development of an environmental health department standard that can be adopted by local health departments and independent environmental health agencies to ensure that jurisdictions are properly equipped and that residents have access to suitable environmental health services. ❀

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