

Profile of State Environmental Health: Summary and Analysis of Workforce Changes from 2010-2012

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Introduction

The Association of State and Territorial Health Officials (ASTHO) is the national nonprofit organization representing public health agencies in the United States, its territories and freely associated states, and the District of Columbia and the over 100,000 public health professionals that these agencies employ. ASTHO's membership, the chief health officers of these jurisdictions and their staff, develop and influence public health policy and ensure excellence in state-based public health practice.

ASTHO's Environmental Health team supports and strengthens state public health's role in all facets of health protection from environmental health threats by forging sound policymaking through effective communication and coordination, regulation, partnership building, surveillance, and response to improve the collective practice of environmental public health services. These efforts are aimed at ultimately reducing morbidity and mortality associated with environmental health threats in the United States.

Background

Of the 10 great public health achievements of the 20th century, at least five—safer workplaces, control of infectious diseases, safer and healthier foods, fluoridation of drinking water, and the reduction in childhood lead poisoning—were the result of state and federal environmental health policies and interventions. Environmental health programs provide some of the most basic forms of public health protection.

An adequate supply of qualified environmental health professionals is critical to the nation's health. Any decline in the size and capacity of the environmental health workforce threatens the nation's ability to prepare for, respond to, and manage the myriad existing and emerging environmental health challenges. With the emergence of new environmental health issues brought on by a changing climate, a strong environmental health workforce is more important than ever. A confluence of workforce issues, including state budget cuts, decreased federal funding, high vacancy rates, high turnover, and an aging workforce, could jeopardize the ability of state health agencies to adequately safeguard the nation's health.

The purpose of this report is to provide a snapshot of the environmental health workforce and environmental health activities performed by state and territorial health agencies (S/THAs) as reported by Senior Deputies (SRDs) in 2012. Where possible, these findings will be compared to data collected from state environmental health directors (SEHD) in 2010.

ASTHO's SEHD peer group is comprised of environmental health leadership from S/THAs and DC. SEHDs are responsible for directing and overseeing state and territorial environmental health programs, such as food safety and sanitation, air and water quality, recreational sanitation and safety, waste management, toxicology, environmental epidemiology, and surveillance (**Table 1**).

ASTHO helps the SEHD group achieve these goals by providing opportunities for state environmental health leaders to network, share best practices, and collectively solve common problems.

Data Sources and Methods

2010 SEHD Survey

In 2010, ASTHO administered its second survey of the SEHD group to capture a snapshot of S/THAs' environmental health services performed. A total of 48 respondents (47 states and one territory) completed the survey. Respondents were asked to provide information about 17 environmental health programs, funding sources, workforce, emerging issues, and relevant legislative developments. In 2011, ASTHO published "Ensuring Healthy Communities, Volume 2: Results of the 2010 State Environmental Health Directors Survey," which provides a complete summary of the survey results.¹

2012 Profile Survey

In June 2014, ASTHO released the results the 2012 ASTHO Profile Survey. The findings are published in the report, "Profile of State Public Health, Volume 3."² Administered every two to three years, ASTHO's Profile Survey serves as the most comprehensive source of information about state public health agency activities, structure, and resources available. Surveying SRDs directly yields an agency-wide perspective that reflects overarching agency activities and capacity (**Table 1**).

In October 2012, ASTHO launched the third version, sending a link to the web-based survey to SRDs from the 50 states, DC, and eight territories and freely associated states. SRDs were asked to complete the survey by Dec. 1, 2012. However, the survey administration system was held open until May 2013 to allow as many states to complete the survey as possible. At the close of survey administration, the Profile Survey response rate was 96 percent among the 50 states and DC, and 92 percent among all states, territories, and freely associated states. Results from the five territories and freely associated states that responded to the survey will be published in a separate report.

Table 1. State and Territorial Health Leaders Selected to Complete the 2012 Profile Survey and the 2010 SEHD Survey

Senior Deputies	SRDs are the second in command to state and territorial health officials (S/THOs) and must be prepared to manage and lead at a high level from the beginning of their tenure. To facilitate this, ASTHO developed a comprehensive executive development initiative for SRDs to include mentoring/networking, development of reference materials and other tangible resources, and online and in-person learning opportunities that parallel and complement the suite of services that it offers to new S/THOs. ³
State Environmental Health Directors	SEHDs are the management officials in each S/THA who direct and oversee the majority of the environmental health programs, such as food safety and sanitation, air and water quality, recreational sanitation and safety, waste management, toxicology, and environmental epidemiology and surveillance. SEHDs are appointed designated by S/THOs. ⁴

Due to the different sources of the data (SRDs versus SEHDs), a direct comparison between the 2012 Profile Survey and the 2010 SEHD survey is not straightforward. Additional differences in the scope and format of these two surveys may account for some of the differences described in this report. However, generalizations can be made regarding notable shifts over time.

State Health Agency Workforce

Occupational Classifications

ASTHO's 2012 Profile Survey captures a snapshot of the size of the state health agency (SHA) workforce, occupational categories, and information on vacancies, turnover rates, and projected retirements. The SHA workforce is made up of a variety of employees representing a broad spectrum of occupational expertise. **Table 2** depicts some of the most common occupational classifications that SHAs use and the average number of full-time equivalents (FTEs) for each. In both the 2010 and 2012 Profile Surveys, the occupational classifications at SHAs with the greatest number of employees include administrative or clerical staff, public health nurses, and environmental health workers. The 2012 Profile Survey provided respondents with the following description of "environmental health worker": environmental health specialists, scientists, and technicians, including registered and other sanitarians.

Occupational Classification	#	Average Number of FTEs
Administrative/clerical staff	39	395.3
Public health nurse	37	223.3
Environmental health worker	34	116.4
Public health manager	37	97.1
Lab worker	34	78.3
Social worker	26	75.9
Epidemiologist/statistician	37	52.0
Health educator	34	51.6
Nurse practitioner	13	42.1
Nutritionist	38	35.6
Public health informatics specialist	27	32.5
Preparedness staff	36	27.7

Staff Size

Based on the findings of the 2012 Profile Survey, ASTHO estimates the total number of FTEs for all states and DC to be 101,000.¹ As shown in **Table 3**, both the number of FTEs and the number of staff members have decreased by more than 5,000 from 2010 to 2012. These results are supported by data from ASTHO’s Budget Cuts Impact Research Brief series, which tracks the effects of budget cuts on the SHA workforce.⁵

Further evidence of shrinking SHA staff can be found in the data collected from the 2010 SEHD Survey. SEHDs were asked about workforce issues, including whether decreased funding had resulted in staff layoffs or a reduction in FTEs. Sixty-six percent of SEHDs reported that decreased funding had resulted in staff layoffs or a reduction in FTEs. SEHDs also reported that professional expertise had been lost due to forced early retirements.

	2010		2012	
	Mean	Total	Mean	Total
Number of FTEs (n=48)	2,117	101,623	2,001	96,070
Number of staff members (n=38)	1,994	75,778	1,862	70,768

Workforce Development

The 2012 Profile Survey reveals SHAs’ commitment to workforce development. Fifty-nine percent of SHAs reported having a workforce development plan that addresses staff training needs. Half of SRDs reported having a designated workforce development director within the health department. This type of leadership support for workforce development is very encouraging. However, there are other factors that can negatively impact the ability to participate in such a program. For example, in 2010, 75 percent of SEHDs reported that budget cuts prevented staff from attending professional development trainings.

Other Workforce Considerations

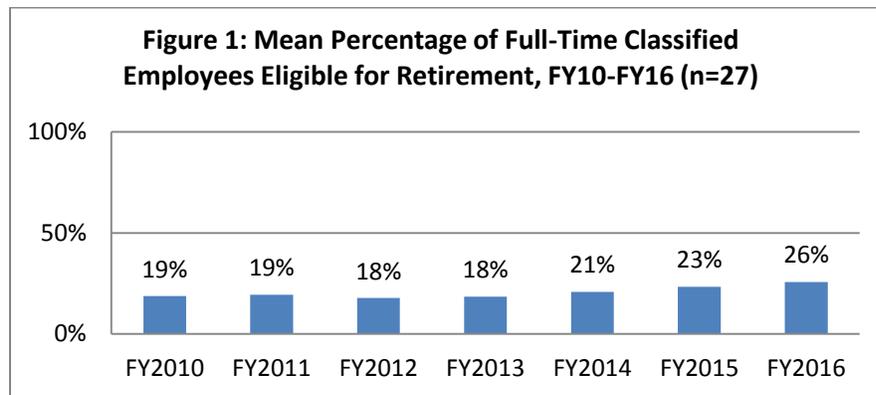
An Aging Workforce

In addition to decreasing state budgets and reductions in federal funding, there are other critical issues that impact SHAs. The aging of the public health workforce and an increasing number of employees eligible for retirement will create unique challenges for environmental health programs. It is estimated that between FY12 and FY16, the percentage of SHA employees that are eligible for retirement will increase from 18 to 25 percent (**Figure 1**).

¹ State population and the mean number of FTEs per 100,000 population for states who responded were used to estimate the number of FTEs for states who did not report data in 2012.

Vacancies

Responses from SRDs in 2012 indicate that approximately 12 percent of SHA positions were vacant. The average number of vacancies at SHAs in 2012 is estimated to be 303. Despite a high number of vacancies, SHAs are only actively recruiting for, on average, 24 percent of positions. ASTHO’s “Budget Cuts Impact Research Brief Update” suggests that agencies are often unable to fill vacancies due to hiring freezes.⁵ Similarly in 2010 SEHDs indicated that professional expertise had been lost through the inability to fill vacancies due to hiring freezes.



Environmental Health Activities Performed by SHAs

Oversight

The 2010 SEHD Survey results revealed the wide variability in responsibility for environmental health programs that exist from state to state. In some cases, the S/THA shares environmental health program responsibilities with other state agencies. For example, a S/THA’s environmental health division may share responsibility for ensuring safe drinking water with the state department of environmental quality. In many cases, different divisions within the S/THA share responsibility with the environmental health director for particular environmental health activities, such as foodborne illness investigations. In 2010, 27 percent of SEHDs reported that their environmental health divisions had been reorganized or incorporated into a different program or agency.

Core Environmental Health Activities

State environmental health programs are very diverse, but there are certain program areas for which a large majority of SHAs have responsibility. The 2010 SEHD Survey revealed that more than 75 percent of SEHDs were responsible for performing at least one activity within these core program areas:

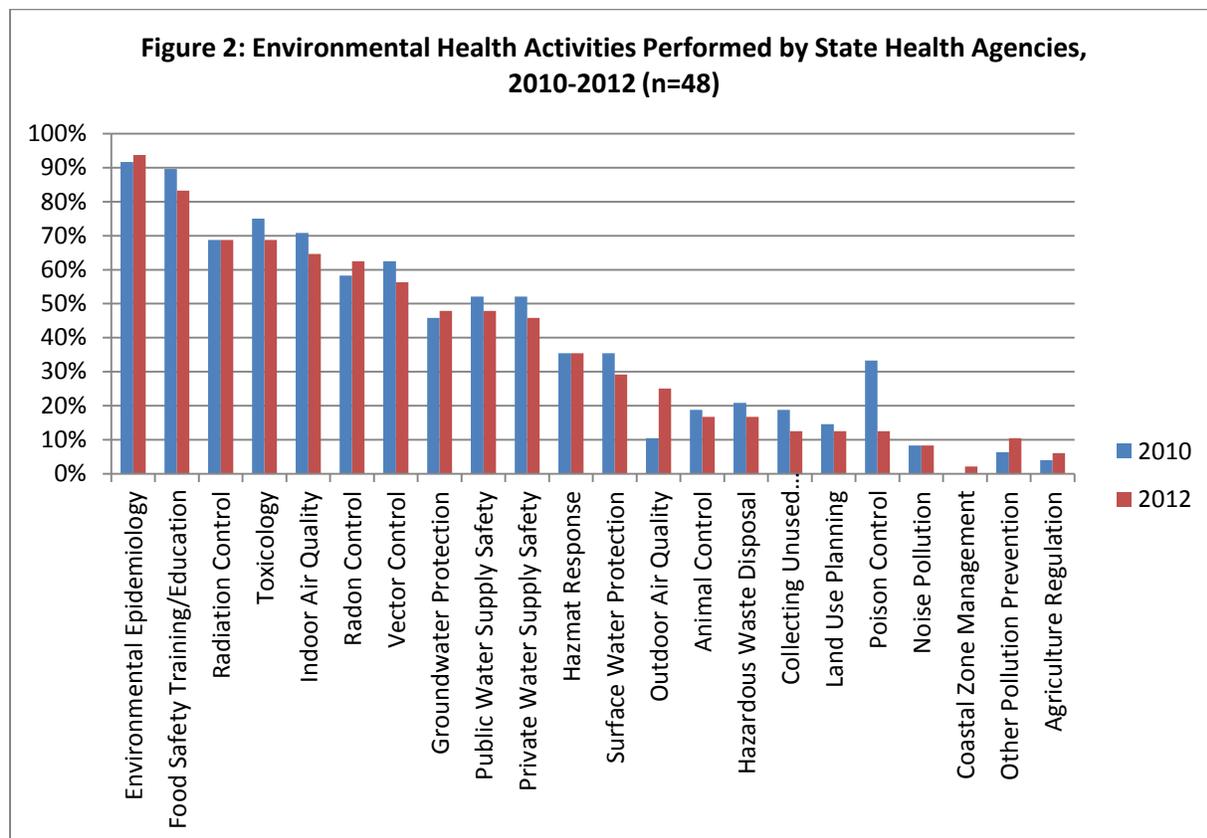
- Indoor air quality.
- Environmental monitoring.
- Risk assessment.
- Public water supply.
- Food protection.
- Recreational water.¹

The 2012 Profile Survey revealed that the five environmental health activities performed by the greatest percentage of SHAs are environmental epidemiology (94%), food safety training and education (83%), radiation control (69%), toxicology (69%), and indoor air quality (65%).

Changes in Core Environmental Health Activities Performed by State Health Agencies

The 2012 Profile Survey results indicate that many SHAs report performing fewer environmental health activities than in 2010. Environmental health activities for which fewer SHAs reported performing activities include toxicology, indoor air quality, vector control, public and private water supply safety, surface water protection, animal control, hazardous waste disposal, collecting unused pharmaceuticals, and use planning, and poison control.² However, more SHAs reported conducting environmental epidemiology, radon control, groundwater protection, outdoor air quality, coastal zone management, other pollution prevention, and agricultural regulation activities in 2012 than in 2010.

A summary of the changes in core environmental health activities performed by SHAs between 2010 and 2012 is provided in **Figure 2** below. The following section describes some of these core environmental health activities more in detail.



² A full list of common activities performed within core environmental health program areas can be found in Appendix 1.

Indoor Air Quality

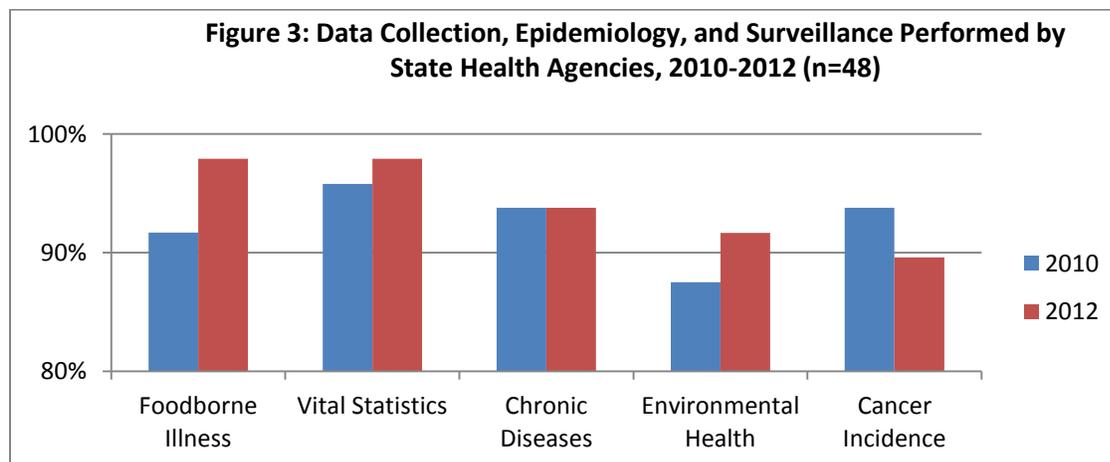
In 2010, 92 percent of SEHDs reported performing at least one indoor air quality activity. Responding to mold, moisture, and mildew concerns was the most commonly performed indoor air activity. Radon data collection and analysis was among the top five indoor air quality activities performed by state environmental health divisions in 2010.¹

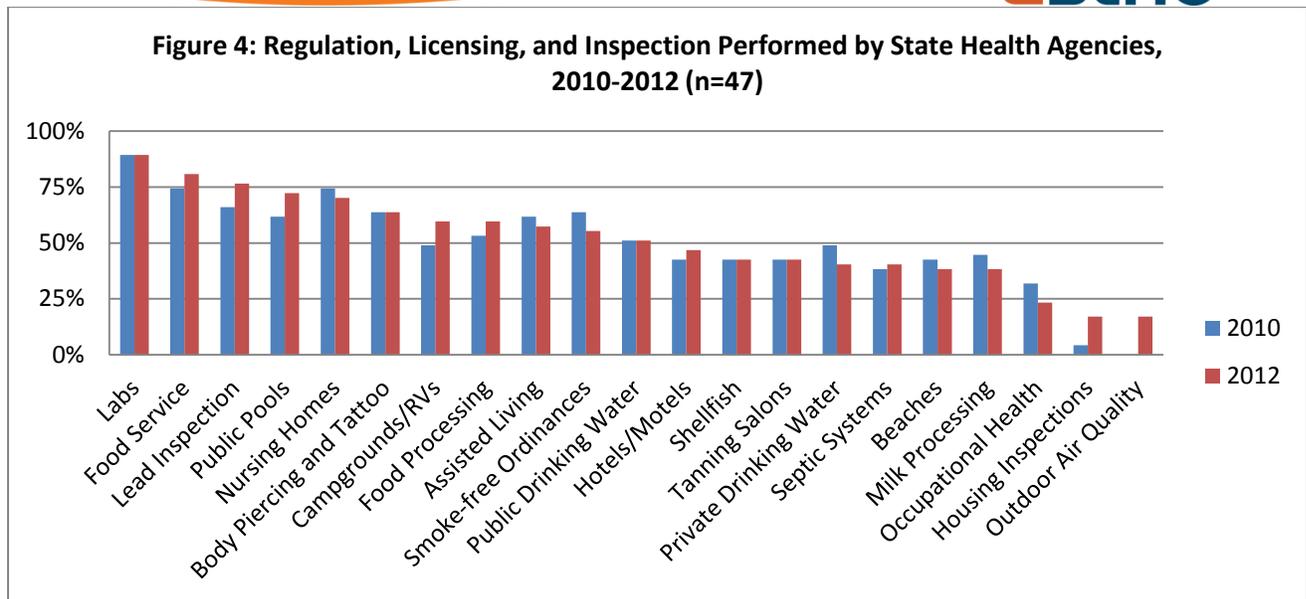
Fewer SHAs (65%) reported conducting indoor air quality activities in 2012 than in 2010 (71%) (**Figure 2**). In 2012, fewer SRDs (55%) reported conducting smoke-free ordinance regulation, inspection, or licensing activities than in 2010 (64%). Yet more SHAs reported performing radon control activities in 2012 (63%) than in 2010 (58%) (**Figure 2**).

Environmental Monitoring

The 2010 SEHD Survey results indicate that responsibility for environmental monitoring activities varies considerably. In 2010, more than 75 percent of SEHDs reported that their divisions performed at least one type of environmental monitoring activity. Fifty-six percent of state environmental health divisions responded to nuisance-type conditions, making it the most commonly performed environmental monitoring activity. Monitoring campgrounds was identified as the second most frequently performed environmental monitoring activity (52%). Vector control ranked as the third most common environmental monitoring activity (46%).¹

In 2012, more SHAs (92%) reported performing environmental health data collection, epidemiology, and surveillance activities than in 2010 (88%) (**Figure 3**). More SRDs also reported performing residential housing and hotels/motels regulation, inspection, or licensing activities in 2012 than in 2010. Similarly, more SRDs reported conducting campground/RV regulation, licensing, and inspection activities in 2012 (60%) than they did in 2010 (46%) (**Figure 4**). Fewer SHAs reported performing vector control activities in 2012 (56%) compared to 2010 (63%) (**Figure 2**).





Risk Assessment

In 2010, 85 percent of SEHDs indicated that their divisions performed at least one type of risk assessment activity. Environmental health assessments and consultations were identified as the most common risk assessment activities that they performed, followed by environmental-related disease surveillance and epidemiology (69%).¹ More than half of SEHDs reported performing several other risk assessment activities, including fish consumption advisories (65%), environmental toxicology (63%), chemical-specific advisories (56%), and environmental health indicator surveillance (54%). In 2010, SEHDs indicated that a majority of states house environmental exposure-related cancer cluster investigations outside of their state environmental health divisions.

In 2012, more SHAs (94%) reported performing environmental epidemiology activities than in 2010 (92%) (Figure 2), but fewer SRDs reported performing toxicology activities in 2012 (69% versus 75% in 2010) (Figure 2). In addition, fewer SHAs reported performing cancer incidence data collection, epidemiology, and surveillance in 2012 (90%) than they did in 2010 (94%) (Figure 3). However, the number of SRDs who reported performing shellfish regulation, inspection, or licensing activities remained stable at 43 percent between 2010 and 2012 (Figure 4).

Public Water Supply

Eighty-one percent of SEHDs reported performing at least one public water supply program activity in 2010. More than half of state environmental health divisions reported conducting waterborne illness investigations (63%). However, 31 percent of SEHDs reported that their environmental health division's share responsibility for waterborne illness investigations with another program area in their state agencies. Forty-two percent of SEHDs reported performing septic tank inspections. Based on qualitative data, many SEHDs indicated that the state department of environmental quality or natural resources was responsible for several public water supply activities.¹

Data from the 2012 Profile Survey indicate that the number of SHAs performing public drinking water regulation, licensing, and inspection activities remained stable at 51 percent between 2010 and 2012. More SHAs reported performing septic system regulation, licensing, and inspection activities in 2012 (40%) than in 2010 (38%) (**Figure 4**).

Food Protection

In 2010, 77 percent of SEHDs indicated that the environmental health division was responsible for performing at least one food protection activity. Foodborne illness investigations were the most common activity, performed in 63 percent of state environmental health divisions. Other common activities included restaurant inspection (58%), food security (52%), and recalls and alerts (50%).¹ Many respondents indicated that other state agencies were responsible for various food protection activities. For example, foodborne illness investigations were likely to be under the purview of the state bureau of epidemiology.

More SRDs reported performing food service and food processing regulation, licensing, and inspection activities in 2012 than in 2010 (**Figure 4**). However, milk processing regulation, licensing, and inspection activities may have decreased since 2010 (45%) as fewer SHAs reported performing these activities in 2012 (38%). Forty-five percent of respondents reported performing shellfish regulation, licensing, and inspection activities in both 2010 and 2012.

Recreational Water

Three-quarters of SEHDs reported having responsibility for at least one recreational water activity in 2010. Oversight of public swimming pools and spas was identified as the most common activity performed (69%), followed by oversight of beaches and other non-manmade recreational swimming areas (46%).

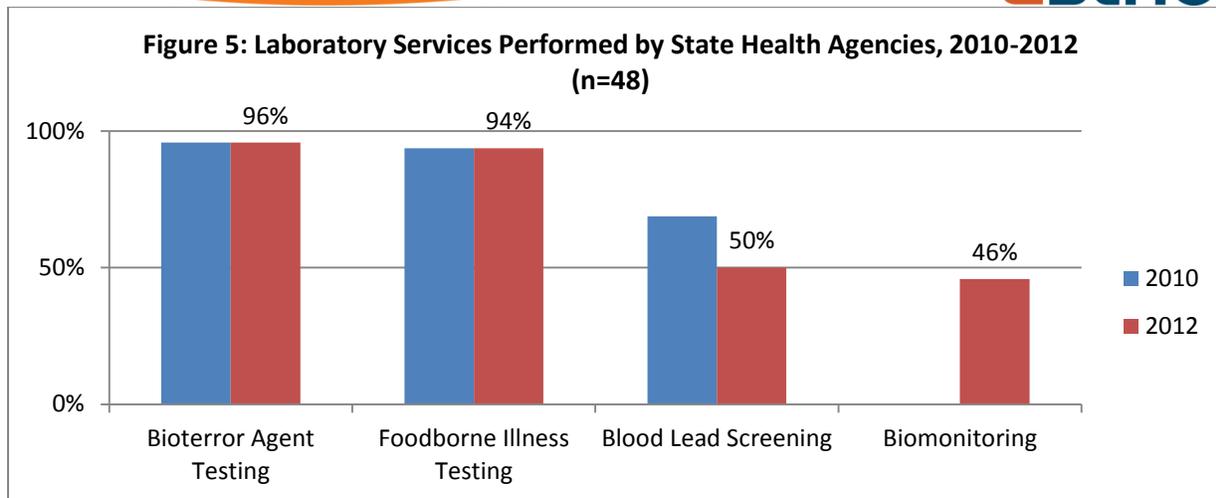
In 2012, 72 percent of SRDs reported performing swimming pool regulation, licensing, and inspection activities, up from 62 percent in 2010. Given the loss of EPA's Beach Grant Program in 2012,⁶ it is not surprising that fewer SHAs reported performing beach regulation, licensing, and inspection activities in 2012 (**Figure 4**).

Other Key Environmental Health Activities

Lead Poisoning Prevention and Control

In 2010, 63 percent of SEHDs reported receiving federal funding for childhood lead prevention and control programs, making it the most frequent federally funded environmental health program in the states.¹ Sixty percent of SEHDs reported performing environmental inspection and enforcement of lead abatement activities in 2010.

Results from the 2012 Profile Survey indicate that more SHAs reported performing lead inspection regulation and licensing activities in 2012 (77%) than in 2010 (66%). However, far fewer SRDs reported conducting blood lead laboratory screening in 2012 (50%) than in 2010 (69%) (**Figure 5**). Similarly, fewer SRDs reported conducting blood lead treatment activities in 2012 (11%) compared to 2010 (20%).



It is important to note that dramatic cuts to the CDC’s Childhood Lead Poisoning Prevention Program budget resulted in the near-elimination of the program and stopped critical funding to state and local health agencies in 2012.⁷ Although the program was reinstated in early 2014, there are likely to be gaps in services provided between 2012 and 2014.

Outdoor Air Quality

Responses collected from the 2010 SEHD Survey indicate that outdoor air quality activities were performed in only a few state environmental health programs. Of the SEHDs who reported performing at least one outdoor air quality activity, a majority indicated that they participated in air quality alerts.¹

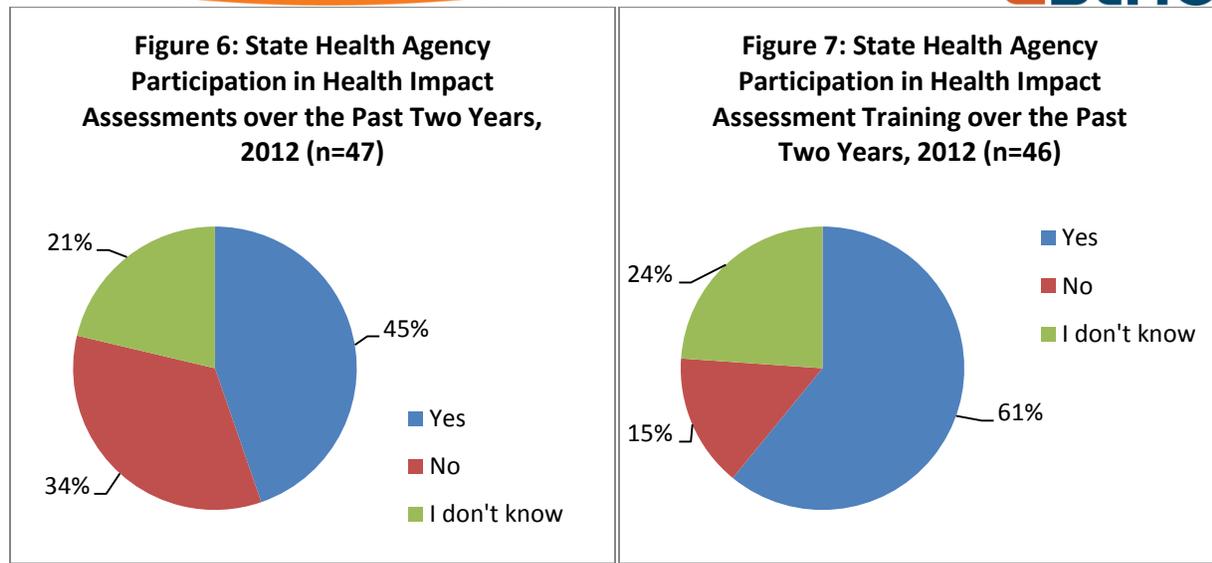
In 2012, more SHAs (25%) reported conducting outdoor air quality activities than in 2010 (10%) (**Figure 2**). Although it was not included in the 2010 Profile Survey, 17 percent of SHAs reported performing outdoor air quality regulation, inspection, or licensing activities in 2012 (**Figure 4**).

Recent Trends in Environmental Health

Health Impact Assessment

Health impact assessment (HIA) is a growing field that helps decisionmakers weigh the potential health effects of proposed regulations, projects, and programs. In 2010, 23 percent of SEHDs reported having performed an HIA in the past three years.¹

In 2012, 45 percent of SRDs reported participating in an HIA in the past two years (**Figure 6**). An even greater percentage of SRDs reported participating in HIA training during the preceding two years (**Figure 7**).



Biomonitoring

S/THAs were asked about their biomonitoring activities for the first time in the 2012 Profile Survey. Forty-six percent of respondents reported that their agencies performed biomonitoring activities (Figure 5). ASTHO will repeat this question in the next edition of the Profile Survey to identify trends in biomonitoring activities. It is important to note that SEHDs have identified biomonitoring as a priority area for 2014, and will be addressing this topic via a workgroup.

Conclusion

The S/THA workforce is large and diverse, and the environmental health workforce is no exception. Although environmental health workers, along with public health nurses and administrative staff, represent the top three greatest occupational classifications at SHAs, tough economic times have forced many SHAs to reduce staff through layoffs, forced early retirement, or hiring freezes. Whatever the cause, a shrinking public health workforce places additional strain on an already vulnerable and fragmented environmental health system.

Another challenge for environmental health is an aging workforce, as many workers are or will be eligible for retirement over the next several years. Considerable time and resources are needed for new environmental health professionals to become prepared for their professional responsibilities. A loss in environmental expertise only magnifies the inability of so many environmental health professionals to participate in training and professional development because of budget constraints.

The results of the 2012 Profile Survey and the 2010 SEHD Survey provide much-needed information about how SHAs manage and administer environmental health programs. Changes in environmental health activities can occur for a variety of reasons, including evolving priorities, response to legislative mandates, loss of federal funding, health agency reorganization, and consolidation of activities in different divisions. Certainly, any variance in reported activities could also be attributed to the different survey tools used for this analysis. Regardless, it is critical to track changes in environmental health services and activities performed by SHAs.

Acknowledging these challenges, ASTHO continues to support state, territorial, and national environmental health workforce development efforts to build the overall public health system's capacity and infrastructure. Where possible, ASTHO aims to highlight examples of states' success in doing more with less. Future surveys will build on the data collected by the Profile Survey and ASTHO's continued engagement with the SEHD Peer Group.

Next Steps

In the upcoming year, ASTHO will continue to raise awareness about the critical services provided by the environmental public health workforce, as well as continue to track changes in the environmental health services and activities that S/THAs conducted. In addition, ASTHO will continue to promote state, territorial, and national environmental health workforce development efforts and continue to support the CDC National Center for Environmental Health in its environmental public health workforce development initiatives.

¹ ASTHO. "Ensuring Healthy Communities, Volume 2: Results of the 2010 State Environmental Health Directors Survey." 2011. Available at <http://www.astho.org/Programs/Environmental-Health/State-Environmental-Health-Directors/Materials/Ensuring-Healthy-Communities,-Volume-2/>. Accessed 7-9-2014.

² ASTHO. "Profile of State Public Health, Volume 3." June 2014. Available at <http://www.astho.org/Profile/>. Accessed 7-9-2014.

³ ASTHO. "State and Territorial Health Agency Needs for a Changing Climate: A Summary and Analysis of ASTHO's 2009 and 2012 Climate Health Needs Assessments." December 2012. Available at <http://www.astho.org/Programs/Environmental-Health/Natural-Environment/Climate-Change/2012-Climate-and-Health-Survey-Report/>. Accessed 7-9-2014.

⁴ ASTHO. "State Environmental Health Directors Factsheet." 2011. Available at www.astho.org/Display/AssetDisplay.aspx?id=7234. Accessed 7-9-2014.

⁵ ASTHO. "ASTHO Budget Cuts Impact Research Brief Update." November 2013. Available at <http://www.astho.org/budget-cuts-Nov-2013/>. Accessed 7-9-2014.

⁶ Phillips S. "EPA Budget Cuts Could Mean Less Funding to States, Beach Protection, and Superfund Site Clean-up." February 2012. Available at <http://stateimpact.npr.org/pennsylvania/2012/02/13/proposed-epa-budget-cuts-funding-to-states-beach-protection-and-superfund-site-clean-up/>. Accessed 7-9-2014.

⁷ National Center for Healthy Housing. "Congress Revives National Lead Poisoning Prevention Program at CDC." January 2014. Available at <http://www.nchh.org/tabid/139/default.aspx?ContentID=189>. Accessed 7-9-2014.