

Understanding the Needs, Challenges, Opportunities, Vision and Emerging Roles in Environmental Health (UNCOVER EH)

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Protocol

Project Overview

Understanding the Needs, Challenges, Opportunities, Vision and Emerging Roles in Environmental Health (UNCOVER EH) is an assessment that will thoroughly examine the health department environmental health (EH) workforce and identify its challenges and the emerging issues it faces. The assessment consists of web-based survey (Appendix A) that will be sent to EH professionals to: 1) determine the current supply of EH professionals; 2) describe EH workforce demographics and professional roles; 3) assess gaps in current EH education and competencies and training needs; and 4) identify critical skills and resources needed to meet the evolving and emerging EH issues and challenges. The CDC Environmental Health Services Branch is partnering with the National Environmental Health Association (NEHA) and Baylor University on this important initiative.

The overall purpose of this effort is to identify, describe, and understand EH professionals’:

1. Demographics, skills and competencies, and potential training needs;
2. Areas of practice, primary responsibilities, and delivery of services; and
3. Grand challenges and emerging environmental health issues.

This assessment could provide information serving a wide range of purposes, such as:

1. Establishing uniform practice benchmarks and workforce competencies;
2. Allocating funds to support improvement of EH practice based on identified needs;
3. Informing decision-making about the practice, staffing, services, and activities; and
4. Supporting broader public health initiatives, such as workforce enumeration, health department accreditation, and academic and training efforts.

Introduction

Background

The EH workforce is an essential component of the public health workforce. Considering the significant role of the EH workforce, understanding its characteristics and identification of future needs in address emerging environmental issues is critically important. Additionally, the emergence of many new issues and threats, such as the Zika virus, points to a need for a well-prepared and adaptable environmental health workforce. Reduced funding and budget cuts have led to job losses and decreased services at state and local public health departments^{1,2}. These compounding factors reinforce the need to closely examine the EH workforce to ensure it is sufficient and well-prepared to meet the environmental health needs of the nation.

Justification

Describing and characterizing the public health workforce includes identifying gaps in staffing, training, and ultimately ensuring a sufficient workforce prepared to meet future challenges.⁵ Efforts are underway to describe these details for the general public health workforce and within specific discipline areas, such as public health nursing and epidemiology.⁶ A similar level of description and analysis is critical for environmental health, as a foundational area of public health that provides critical services and

important activities for promoting safe and healthful communities.⁷ EH's important role within the public health framework warrants assessment and analysis of the practice and practitioners in order to assure a workforce well positioned to address current needs and well prepared for future environmental health challenges. The survey will provide critical data on the 1) current supply of EH professionals; 2) EH workforce demographics and professional roles; 3) gaps in current EH education and competencies and training needs; and 4) critical skills and resources needed to meet the evolving and emerging EH issues and challenges.

Partners

The CDC is partnering with NEHA and providing funding through a contract to support their work and assistance with identifying EH professional respondents and communicating about the initiative and the results it produces. An intergovernmental personnel agreement was established with Baylor University to support the involvement of an academic consultant. The academic consultant provided valuable guidance for the design of the study and development of the survey instrument. The academic consultant has access to the survey software and will manage the administration of the survey and assist with the analysis of survey results.

Use of Study Findings

The study findings will be summarized in a comprehensive report that will be publicly available. Information provided in the report will serve as a reference for EH agencies, programs, and professionals interested in understanding national EH workforce and practice trends and future needs. Furthermore, the report may serve as an important resource for establishing EH workforce and practice benchmarks and informing decision-making to support and enhance the EH workforce and practice. Aside from the comprehensive report, specific research questions will be answered and these findings published in peer-reviewed journals. This research will provide new information on the EH workforce and the capacity of the national EH services system to meet current and future demands and challenges.

Procedure

Study Design

An online enumerative study will be conducted. A web-based survey instrument will be used for 100% of the responses. The survey is designed to collect only essential information to meet the objectives of the workforce assessment. The information being collected was reviewed by four EH experts and the instrument was piloted tested by six EH professionals. The survey instrument contains varying types of scaled, multiple choice, ranking measures along with open-ended questions. Those reviewers and testers provided recommendations for ensuring only necessary and important information is collected. Additionally, the survey was programmed with skip logic to ensure respondents are prompted to only respond to applicable items. The survey will be administered by a trained academic consultant, funded through an intergovernmental personnel agreement, at Baylor University using Sawtooth survey software to develop and distribute the electronic survey to the respondent universe. The academic consultant will download the data and prepare it for analysis. In the dataset, survey respondents will be coded for anonymity. Any potential personal identifiers will be removed from the dataset and the de-identified dataset will be provided to the CDC. The CDC will maintain the dataset on secure servers with controlled access at all times.

Study Population

The respondent universe represents a census of the public health department EH workforce. The best estimate of this entire workforce is 20,000 professionals. This estimate is based on results of public health departments profile studies^{3,4} and discussions with EH experts about workforce estimates and

identifying potential EH professionals not represented in these studies. The respondent universe includes the entire workforce because a census would allow stratification by level of government (state, tribal, local, territorial), level of position (director, supervisor, field staff), and experience and education. In addition, this effort will be an attempt at enumerating the STLT public health department EH workforce. Enumerating the workforce is essential for this collection of information and, once established, will contribute to future public health workforce and enumeration initiatives.

NEHA and Baylor University will identify and enumerate EH workforce members (respondents) in each state by identifying points of contacts at each health department and requesting that each contact email their roster of health department EH professionals to UNCOVER_EH@baylor.edu. A list of respondents and their business email addresses will be generated and used for recruitment and survey administration. Any contact information collected will be related to their role in the organization. CDC, NEHA, and Baylor University will maintain the list of respondent email addresses, along with any other contact information, that will remain confidential and stored on secure servers with controlled access. In addition, survey respondents will be coded for anonymity, and any personally identifiable information in open-ended responses will be removed. Respondents will be informed that submitting the survey indicates their agreement to participate in the study and they agree to the use of their responses. CDC will not have interaction with any participants.

Data Collection

Data collection for this study will be completed in two parts. The first part included beta-testing of the survey instrument. A convenient sample of 6 EH professionals beta-tested the survey. During beta-testing, efforts were made to identify any inconsistencies or errors in the survey. Identified inconsistencies and errors will be corrected before official launch.

During the second phase of the study, an e-mail will be sent to the contact at each health department requesting a roster of all EH professional. This roster will contain the name, e-mail address and phone number of the identified EH professional. The health department contact will also be asked permission to share the roster information with study collaborators at Baylor University and NEHA. Once the official roster is obtained, including e-mail addresses and contact information, an official invitation to participate in the study will be sent to each EH professional. The specific steps that will be followed during the second phase of the data collected is enumerated below.

The data collection procedure includes:

- Beta-testing the survey instrument. Six EH professionals beta-tested the survey to identify any inconsistencies or errors and note the amount of time necessary to complete the survey.
- Email sent to contact at each health department requesting a roster of EH professionals. Contacts will email their roster to UNCOVER_EH@baylor.edu.
- Enumeration and generation of email addresses for all health department EH professionals.
- Pre-survey email sent to all health department EH professionals, several days prior to sending the survey link, to inform them of the upcoming survey and encourage their participation.
- Invitation email inviting respondents to participate and directing them to the website where the survey is located.
- Each responder is assigned a unique identifier. This identifier is linked to their e-mail address
- Data collection by web-based questionnaire using Sawtooth software. The Sawtooth system will distribute three follow-up emails after the invitation email is sent.
- Follow-up email sent to non-respondents one week after invitation email.
- Follow-up email sent to non-respondents three weeks after invitation email.

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- Follow-up email sent to non-respondents one month after the invitation email.
- Once the data collection period has ended, all survey instruments will be collated.
- Linked unique identifier will be stripped from each instrument before uploading the data to SPSS for data analysis.

Data Analysis

Data will be analyzed using descriptive statistics, including the use of means and frequencies to describe the study population and inferential statistics, using Chi-square, to describe associations. Means will be calculated to describe descriptive information that is continuous in nature, for example years of employment and frequencies will be used to describe information that is categorical or dichotomous.

Statement of Hypotheses:

Inferential statistics will be used to further examine the relationships between certain workforce and practice characteristics, while qualitative approaches (content analysis) will be used to analyze responses to open-ended questions.

Inferential Hypotheses:

- (1) There is a statistically significant relationship between environmental health professional attributes, such as educational background and credentials, and their organization's characteristics such as population size served and level of government.

Research Hypothesis: There is an association between college degree attained and employer, defined by level of government.
Dependent variable: Employer (categorical)
Independent variable: Degree (categorical)
Statistical analysis: Chi square tests will be used to examine the association between environment health professional respondents' employer and degrees.

- (2) Environmental health professional attributes are associated with the specific environmental health programs in which they work.

Research Hypothesis: Environmental health professional credentials predict the programs in which they work.
Dependent variable: Program (binary)
Independent variable: Credentials (binary)
Statistical analysis: Logistic regression analysis will be used to examine the predictive value of credentials on environmental health programmatic responsibilities.

Qualitative Hypothesis:

- (3) Environmental health professionals require resources and support for ensuring effective programs exist to address current and future environmental health issues.

Open-ended text responses will be reviewed to identify primary constructs and themes. A code book consisting of content codes will be developed and used to further describe responses. Coders will record content codes in an excel spreadsheet, which will be organized and used for thematic analysis.

Dissemination Plan

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The results of these analyses will be summarized in a comprehensive report that will be publicly available. The information provided in the report will serve as a reference for EH agencies, programs, and professionals interested in understanding national EH workforce and practice trends and future needs. The report may serve as an important resource for establishing EH workforce and practice benchmarks and informing decision-making to support and enhance the EH workforce and practice. Findings of the analyses will be published in peer-reviewed journals. Widely distributed electronic announcements will notify the public and study participants when the results and comprehensive report are available.

Participant Risk/Benefit

Prior to participating in the study, each prospective respondent will receive information on the sponsorship of the study, their rights as participants, risks and benefits in participating, and contacts for more information (Appendix B). This information will be provided electronically, using the online survey platform. Because this study presents no more than minimal risk and involves no procedures for which written consent is normally required outside of the research context, signatures for informed consent will not be obtained.

Timeline

The survey will be disseminated to the EH health department workforce during 2017. The anticipated release of the survey is spring 2017; however, the duration of the OMB PRA review and approval process may result in a survey release date later in 2017. The following timeline is tentative and will be adjusted based on OMB review and approval for this information collection.

Tentative Timeline

Pre-survey email is sent to respondents	April 2017
Invitation email with a link to the survey is sent to respondents	April 2017
Follow-up email sent to non-respondents one week after invitation email	April 2017
Follow-up email sent to non-respondents three weeks after invitation email	May 2017
Follow-up email sent to non-respondents one month after the invitation email	May 2017
Collate data and prepare the dataset for analysis	June 2017
Upload the dataset to SPSS and begin data analysis	July 2017
Publish a comprehensive descriptive report of the findings	December 2017
Initiate communication efforts about the availability of the reports and findings	January 2018
Submit manuscripts for publication in peer-reviewed journals	March/April 2018

Conclusion

UNCOVER EH presents an unprecedented opportunity to assess and understand the EH workforce, the practice, and current and emerging issues and needs. An effort of this magnitude will result in a wide range of benefits to the EH workforce that span across all levels of government and beyond by reaching leaders and decision makers within non-governmental organizations, private industry, and other sectors. National level decision-makers and leaders will be provided with essential data for shaping the delivery of EH services and preparing the workforce to address current and future EH issues.

This study may have several limitations. First, the structure of EH varies among states and jurisdictions. This variation may impact the ability to identify respondents and reach all EH professionals. Second, this survey is subject to response biases that may influence a participant responses to survey measures. Third, non-response has the potential to impact external validity and generalizability of survey results.

References

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2. Association of State and Territorial Health Officials. Budget Cuts Continue to Affect the Health of Americans. Available at <http://www.astho.org/budget-cuts-Sept-2014/>. Accessed September 7, 2016.
3. National Association of County & City Health Officials. 2013 National Profile of Local Health Departments. Available at <http://archived.naccho.org/topics/infrastructure/profile/upload/2013-national-profile-of-local-health-departments-report.pdf>. Accessed May 24, 2016.
4. Association of State and Territorial Health Officials. Profile of State Public Health, Volume Three. Available at <http://www.astho.org/Profile/Volume-Three/>. Accessed May 24, 2016.
5. Beck, AJ, Boulton, ML & Coronado, F. Enumeration of the governmental public health workforce, 2014. American Journal of Preventive Medicine. 2014; 47, S306-S313.
6. Center of Excellence in public health workforce studies. University of Michigan, <http://sph.umich.edu/cephw/projects.html>.
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APPENDIX A UNCOVER EH SURVEY INSTRUMENT

Welcome

You are invited to participate in this survey designed for environmental health (EH) professionals working at public health departments. The primary goal of this survey is to identify and describe EH professional characteristics, areas of practice, and identify workforce and practice needs.

The survey should take about 30 minutes to complete. Your participation is voluntary and you may decide to quit the survey at any time. If you do not want to participate in this survey, please click the appropriate exit button on the next page to opt out. You will not be emailed again. All information collected in this survey will be aggregated for analysis. This means that it is impossible to identify any individual or organization, or to link you and your responses. No personal information gathered in this survey will be shared with any other organization. By submitting the survey, you agree to participate in this study and agree to the use of your responses as outlined above.

We truly appreciate the time and effort you take to participate in this study.
Questions about the survey? Please send an email to UNCOVER_EH@baylor.edu for more information.

CDC estimates the average public reporting burden for this collection of information as 30 minutes per response, including the time for reviewing instructions, searching existing data/information sources, gathering and maintaining the data/information needed, and completing and reviewing the collection of information. An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to CDC/ATSDR Information Collection Review Office, 1600 Clifton Road NE, MS D-74, Atlanta, Georgia 30333; ATTN: PRA (0920-XXXX).

Priority Program for Protecting Public Health

Q1. In your opinion, which of these programs are the most important for protecting public health?
Select the top 3 programs.

- Drinking Water Protection
- Emergency Response
- Food Safety & Protection
- Hazardous Materials Response
- Healthy Housing
- Outdoor Air Quality
- Recreational Water Quality
- Vector Control
- Wastewater Management

Q2. Do you have any additional comments regarding public health priorities? If so, please enter them below.

Workforce and Profession Priorities

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In this part of this survey, we ask your opinions on which workforce and professional attributes you believe are most important. The following section contains a set of eight comparisons, each comprised of subsets from a list of eleven possible priorities.

Q3. Considering only the three items below for now, which do you consider of greater and lesser relative importance? (*Relatively **least** important-Relatively **most** important*)

Workforce

Recruiting qualified applicants

Retaining trained and skilled staff

Data

Implementing information technology systems

Increasing data accessibility and sharing

Analyzing data and using results

Support

Establishing technical workforce competencies

Determining evidence-based practices

Marketing to increase public awareness of the profession

Developing a standard definition of the profession

Increasing funding for non-fee generating services

Determining economic value or return on investment of services

Q4. Would you like to see a list of your individualized rankings?

No

Yes

Q5. How accurate do you feel the ranking results reflect your true priorities?

Excellent - the list closely reflected my true priorities

Good - the list reflected most of my priorities with only some minor discrepancies

Adequate - the list reflected some of my priorities but there were also obvious discrepancies

Poor - the list did not at all reflect my true priorities

Information about You

Q6. What is your age?

25 years or below

26-35 years

36-45 years

46-55 years

56-65 years

65 or above

Q7. What sex were you assigned at birth, on your original birth certificate?

Female

Male

Q8. Do you consider yourself to be Hispanic or Latino?

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- Hispanic or Latino
- Not Hispanic or Latino

Q9. What race or races do you consider yourself to be? Please select 1 or more of these categories.

- American Indian or Alaskan Native
- Asian
- Black or African American
- Native Hawaiian or other Pacific Islander
- White

Q10. What is your current annual salary?

- Less than \$25,000
- \$25,000 - \$34,999
- \$35,000 - \$44,999
- \$45,000 - \$54,999
- \$55,000 - \$64,999
- \$65,000 - \$74,999
- \$75,000 - \$84,999
- \$85,000 - \$94,999
- \$95,000 - \$104,999
- \$105,000 - \$114,999
- \$115,000 - \$124,999
- \$125,000 - \$134,999
- \$135,000 - \$144,999
- \$145,000 or more
- Prefer not to say

Q11. Indicate which degree(s) that you have attained (check all that apply)

Select all that apply

- Associate Degree
- Bachelor's Degree
- Master's Degree
- Doctoral Degree
- None (If selected, skip to Q14)

Q12. What was your field of study or concentration? (*This will be asked for each degree selected*)

Select all that apply

- Agriculture and natural resources
- Architecture and related services
- Area, ethnic, cultural, gender, and group studies
- Biological and biomedical sciences
- Business
- Communication, journalism, and related programs
- Communications technologies
- Computer and information sciences
- Education

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- Engineering
- Environmental Health* (If selected, go to Q13)**
- Environmental Science
- Engineering technologies
- English language and literature/letters
- Family and consumer sciences/human sciences
- Foreign languages, literatures, and linguistics
- Health professions and related programs
- Homeland security, law enforcement, and firefighting
- Legal professions and studies
- Liberal arts and sciences, general studies, and humanities
- Library science
- Mathematics and statistics
- Military technologies and applied sciences
- Multi/interdisciplinary studies
- Parks, recreation, leisure, and fitness studies
- Philosophy and religious studies
- Physical sciences and science technologies
- Precision production
- Psychology
- Public administration and social services
- Public health* (If selected, go to Q13)**
- Social sciences and history
- Theology and religious vocations
- Transportation and materials moving
- Visual and performing arts
- Other_____

Q13. Was your program accredited by the following accreditation bodies?

- National Environmental Health Science & Protection Accreditation Council (EHAC)
- Council on Education for Public Health (CEPH)
- Both
- Neither
- Don't know

Q14. Which of the following professional registrations and credentials do you hold?

Select all that apply

- Certified Health Education Specialist (CHES)
- Registered Environmental Health Specialist / Registered Sanitarian (REHS/RS) (Go to Q15)
- Certified Professional - Food Safety (CP-FS)
- Professional Engineer (PE)
- Certified Safety Professional (CSP)
- Certified Installers of Onsite Wastewater Treatment Systems (CIOWTS)
- Certified Health Physicist (CHP)
- Certified Industrial Hygienist (CIH)

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- Certified in Public Health (CPH)
- Certified in Comprehensive Food Safety (CCFS)
- Healthy Homes Specialist (HHS)
- Certified Environmental Professional (CEP)
- Certified Professional Geologist (PG)
- Certified Hazardous Materials Manager (CHMM)
- Other _____
- None

Q15. If you are a Registered Environmental Health Specialist or Registered Sanitarian (REHS/RS), is your professional credential supplied by the National Environmental Health Association (NEHA) or a State? Select all that apply.

- NEHA
- State
- Other
- Not registered

Q16. Indicate the associations and professional organizations which you maintain membership (*Select all that apply; Enter names of up to four other associations or organizations if needed*)

- American Industrial Hygiene Association (AIHA)
- American Public Health Association (APHA)
- American Society of Safety Engineers (ASSE)
- National Environmental Health Association (NEHA)
- National Association of County and City Health Officials (NACCHO)
- Association of State and Territorial Health Officials (ASTHO)
- Association of Food and Drug Officials (AFDO)
- Other _____
- Other _____
- Other _____
- Other _____

Q17. How many years have you been in your current position?

Q18. How many years have you been with your current department?

Q19. How many years have you been in environmental health practice?

Q20. Prior to your current position, did you work at a different level of government (federal, state, tribal, local, and/or territorial)?

- No
- Yes

Q21. Do you plan to retire within the next five years?

- No
- Yes

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Q22. Do you plan to leave your department within the next year?

- No
- Yes, to retire
- Yes, for another governmental job in environmental health
- Yes, for another governmental job not in environmental health
- Yes, for a non-governmental job in environmental health
- Yes, for a non-governmental job not in environmental health
- Yes, for another job (please specify)_____
- I don't know

Q23. Which of the following best describes your current position?

- Program Director/Chief
- Supervisor/Manager
- Field Staff/Non-supervisory
- Other (please specify)_____

Q24. Which of the following best describes the title of your current position?

- Environmental Health Specialist
- Sanitarian
- Environmentalist
- Environmental Health Technician
- Inspector
- Laboratory technician or analyst
- Environmental Scientist
- Other_____

Q25. Indicate your employment status?

- Full-time
- Part-time
- Seasonal
- Temporary
- Prefer not to say
- Other_____

Department Information

Q26. Who is your employer?

- Federal Government
- State Government
- Tribal Government
- Local Government
- Territorial Government
- Other (i.e., contract agency) _____

Q27. At which level does your department provide services?

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- State
- Tribal
- Local
- Territorial

Q28. What is the population size of the jurisdiction where your department provides services?

- Less than 10,000
- 10,000 – 49,999
- 50,000 – 99,999
- 100,000 – 499,999
- 500,000 – 999,999
- More than 1,000,000

Q29. In what state or territory is your department located?

Q30. What is the zip code where your department is located?

Q31. Do you think your organization has a comprehensive environmental health department (i.e., department consists of multiple programs such as food safety, drinking water protection, vector control, etc.)?

- No
- Yes

Programs and Services

Q32. What is the name of your organization’s comprehensive environmental health department?

- Environmental Health Services
- Environmental Public Health
- Environmental Protection
- Other (please specify)_____

Q33. Do you work in any programs that do not have an environmental health focus (i.e., public health nursing or immunization programs)?

- No
- Yes

Q34. In the past year, approximately what percentage of your time did you spend on environmental health programming and services relative to your other activities?

___Percent of time spent on other activities outside environmental health
___Percent of time spent on environmental health programs and services

Q35. Which of the following environmental health program areas do you work in or provide services?

- Animal Control
- Body Art (Tattoo)
- Campgrounds & RVs
- Children’s Camps

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- Collection of Unused Pharmaceuticals
- Cosmetology Businesses
- Day Care/Early Child Development Facilities
- Emergency Preparedness and Response
- Food Safety and Protection
- Hazardous Waste Disposal
- Hazmat Response
- Health Related Facilities
- Healthy Homes
- Hotels/Motels
- Indoor Air Quality
- Injury Prevention
- Land Use Planning
- Lead Prevention
- Milk Processing
- Mobile Homes
- Noise Pollution
- Occupational Health
- Outdoor Air Quality
- Poison Control
- Pollution Prevention
- Private or Onsite Drinking Water
- Public Drinking Water Systems
- Public Swimming Pools
- Radiation Control
- Radon Control
- Other Recreational Water (e.g., beaches)
- Schools
- Onsite Wastewater (e.g., Septic Systems)
- Smoke-Free Ordinances
- Solid Waste
- Special Events/Mass Gatherings
- Tobacco Retailers
- Toxicology
- Vector Control
- Other_____
- Other_____
- Other_____

Q36. Of the time you spend specifically working in environmental health, approximately what percentage of your time is spent on these programs annually? *(This question will appear for each EH program selected)*

Q37. Of the program areas you work in, which do you think are of the highest relative importance? Please **select three programs or services** that you view as most important. *(List the EH programs selected)*

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Q38. One of your top three programs or services was: [program]. In your opinion, what is the single most important reason why it is important? *(Ask this question for each of the most important EH programs selected, also ask this for responses when 3 or fewer programs are selected)*

Select one

- Addresses community needs
- Decreases disease rates
- Fulfills a mandated requirement
- Generates fees/revenue
- Improves quality of life
- Increases community satisfaction
- Protects public health
- Other (please specify)

Q39. One of your top three programs or services was: [program]. What is the best measure of impact for this program? *(Ask this question for each of the most important EH programs selected, also ask this for responses when 3 or fewer programs are selected)*

Select one

- Community health status
- Revenue generated
- Hospital admission rates
- Community satisfaction
- Inspection violations
- Inspection scores
- Number of inspections conducted or services provided
- Support from leadership (i.e., board of health or health commissioner)
- There is no measurement of impact for this program
- Other_____

Q40. One of your top three programs or services was: [program]. What are your primary activities in this program? Select all that apply *(This question will appear for each EH program selected)*

Select all that apply

- Conduct research or in-depth studies
- Develop and establish policies
- Disease or hazard surveillance
- Educate the public
- Engage in partnerships with the community, stakeholders, or other agencies
- Investigate disease outbreaks or respond to emergencies
- Issue permits or licenses
- Maintain databases or electronic information systems for environmental health data
- Monitor community health status and environmental conditions
- Partner with colleges or universities to sponsor student internships
- Partner with colleges or universities for research services
- Perform inspections
- Provide training (e.g., food handler's courses)
- Respond to complaints

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- Other_____

Training

Q42. Have you completed any training courses in the last year?

- No
- Yes

Q43. What were the topics of training you completed in the last year?

Open-text Field

Q44. How was the training delivered?

Select all that apply

- In-person/Classroom
- Conference attendance
- College Course
- Online/Web-based Course
- Recorded Webinars
- Live Webinars
- Other_____

Q45. Does your agency support travel to attend training?

- No
- Yes

Q46. Provide any comments regarding your training needs

Open-text field

Leadership and Core Competencies

Q47. How often do you engage in the following activities? (*Routinely—Sometimes—Never*)

- Decision-making that influences program planning
- Problem solving and critical thinking
- Collecting and analyzing data
- Communicating risk to the public
- Evaluating the effectiveness of services and activities
- Collaborating with other governmental agencies and staff
- Participating in community-based initiatives or events

Satisfaction

Q48. What is your level of satisfaction with the following items? (*Strongly agree-agree-neutral-disagree-strongly disagree*)

- I have opportunities for career progression
- I have opportunities to apply my talents and expertise
- I have opportunities to demonstrate my leadership skills

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- I have opportunities to contribute to program planning

Current and Future Needs

Q49. What new programs would you immediately initiate to address current needs?

Open-text field

Q50. What modifications would you immediately make to existing programs to address current needs?

Open-text field

Q51. Are there any eliminated programs you would immediately reinstate?

Open-text field

Q52. Within the next 5-10 years, what environmental health issues or challenges will require new or modified programs?

Open-text field

Q53. What resources or tools will you need to do your job in the future? (Think broadly when responding to this question. Responses may reflect environmental health technical needs or other areas such as program management, leadership, etc)

Open-text field

Q54. Are you a graduate of the CDC's Environmental Public Health Leadership Institute (EPHLI)?

- No
- Yes

Q55. Do you think leadership training is important for environmental health professionals?

- No
- Yes

Conclusion

Q56. Would you like to receive an email when a summary of our survey results is available?

- No
- Yes

Q57. If you have any other comments have additional comments about the environmental health practice and workforce, please enter them below.

APPENDIX B
INTRODUCTORY EMAIL

Dear [Salutation] [FirstName] [LastName],

In a few days you will receive an email that invites you to participate in a ground breaking initiative, **UNCOVER EH** (Understanding the Needs, Challenges, Opportunities, Vision and Emerging Roles in Environmental Health).

The National Environmental Health Association, Baylor University, and the Centers for Disease Control and Prevention are conducting this survey to understand and describe the environmental health profession, areas of practice, and identify workforce and practice needs. All of the information collected by this survey will be aggregated for analysis. This means that it is impossible to identify any individual or organization, or to link you and your responses.

We are writing you in advance because many people like to know ahead of time that they will be contacted regarding surveys. You were contacted because you are an environmental health professional working at a public health department.

Efforts of environmental health professionals like you are critical to protect public health and the environment, yet these efforts often go unnoticed until problems occur (e.g., foodborne outbreaks, vector borne diseases, contaminated water supplies, disasters). Given the importance of environmental health to ensure healthy communities, it is very timely to understand the challenges faced by environmental health professionals to provide solutions to these needs.

This survey is voluntary. However, you can help us very much by taking approximately 30 minutes to complete this survey. It is very important to hear from environmental health professionals from across the nation to assure that the survey results are as accurate as possible. The survey will take thought and reflection.

It's only with the generous help of individuals like you that our understanding of the environmental health profession can be successful. **When the survey arrives, please take the time to complete it.**

If you have questions about the survey, please send an email to UNCOVER_EH@baylor.edu to request more information.

Thank you for your time and consideration of this request.

**APPENDIX C
INVITATION EMAIL**

Dear [Salutation] [FirstName] [LastName],

We are writing to invite you to participate in a ground breaking initiative, **UNCOVER EH** (Understanding the Needs, Challenges, Opportunities, Vision and Emerging Roles in Environmental Health). You are receiving this invitation because you are an environmental health professional at a state, tribal, local, or territorial public health department.

The National Environmental Health Association, Baylor University, and the Centers for Disease Control and Prevention are conducting this survey to understand and describe the environmental health profession, areas of practice, and identify workforce and practice needs. All of the information collected by this survey will be aggregated for analysis. This means that it is impossible to identify any individual or organization, or to link you and your responses.

Efforts of environmental health professionals like you are critical to protect public health and the environment, yet these efforts often go unnoticed until problems occur (e.g., foodborne outbreaks, vector borne diseases, contaminated water supplies, disasters). Given the importance of environmental health to ensure healthy communities, it is very timely to understand the challenges faced by environmental health practitioners to provide solutions to these needs.

This survey is voluntary. However, you can help us very much by taking approximately 30 minutes to complete this survey. It is very important to hear from environmental health professionals from across the nation to assure that the survey results are as accurate as possible. The survey will take thought and reflection.

To access the survey, you can proceed to the link below:
[SurveyHyperlink]

We use cookies in this survey, which allow you to stop and re-start the survey where you left off.

All information collected in this survey will be aggregated for analysis. The aggregate data analysis will mean that it is impossible to identify any individual.

If you have questions about the survey, please send an email to UNCOVER_EH@baylor.edu to request more information.

Thank you very much for helping with this timely study of challenges, needs and opportunities for environmental health.

APPENDIX D
FIRST REMINDER EMAIL

Dear [Salutation] [FirstName] [LastName],

Last week we sent you a message with a link to the UNCOVER EH survey. If you have already completed the survey, please accept our sincere thanks. We are especially grateful for your help because it is only by asking people like you to share your views that we can understand the environmental health workforce and the current status of profession.

If you have not yet completed the UNCOVER EH survey, we urge you to do so in order that the results reflect the full spectrum of the environmental health workforce. The survey is voluntary. However, you can help us very much by taking approximately 30 minutes to complete this survey. It is very important to hear from environmental health professionals from across the nation to assure that the survey results are as accurate as possible.

To access the survey, you can proceed to the link below:
[SurveyHyperlink]

APPENDIX E
SECOND REMINDER EMAIL

Dear [Salutation] [FirstName] [LastName],

A few weeks ago, you were invited to participate in a survey on challenges, needs and opportunities in environmental health.

Efforts of environmental health professionals like you are critical to protect public health and the environment, yet these efforts often go unnoticed until problems occur (e.g., foodborne outbreaks, vector borne diseases, contaminated water supplies, disasters).

Our goal is to understand and describe the environmental health profession, areas of practice, and identify workforce and practice needs.

To date, we have not received a completed survey from you. This survey is voluntary. However, you can help us very much by taking approximately 30 minutes to complete this survey. We realize that this is an important commitment of your time – to properly understand the environmental health workforce and its challenges and needs, it is very important that we hear from a wide range of individuals. Thus we very much hope that you can help us in this effort.

To access the UNCOVER EH survey, you can proceed to the link below:

[SurveyHyperlink]

Thank you very much for helping with this timely study of challenges, needs and opportunities for environmental health.

**APPENDIX F
FINAL NOTICE**

Dear [Salutation] [FirstName] [LastName],

Over the past month, you have received several invitations to participate in a ground breaking survey for environmental health professionals.

To date, we have not received a completed survey from you.

The survey is voluntary. However, you can help us very much by taking approximately 30 minutes to complete this survey. In order to assure that the survey results are as accurate as possible, and to understand challenges, needs and opportunities that can contribute knowledge for solutions to meet these needs, it is crucial to hear from environmental health professionals across the nation.

Please help us to ensure that the results from this important survey are as complete as possible.

To access the survey, you can proceed to the link below:
[SurveyHyperlink]

This is the final reminder you will receive as the survey will be closing shortly.

Please do take the time to help us with this study of challenges, needs and opportunities for environmental health.