



## Appendix B: Environmental Health

### Focus Area Name

Environmental Health (EH)

### Focus Area Contact Information

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**Approximate Average Annual Award:** \$1,700,000

### Funding Opportunity Description

#### 1. Background

Environmental health laboratories are essential to protecting the public's health from harmful exposures to environmental chemicals and in responding to diverse public health concerns. They apply advanced laboratory tests to determine people's exposure levels, assess disease risk, identify true hazards, assess the effectiveness of interventions, and respond to public health emergencies.

Environmental health laboratories face unique challenges as they work to identify harmful exposures to people and in the environment. These laboratories must integrate tests for an ever-growing number of compounds, adopt new technologies, and operate effectively within a complicated system that includes public health officials, regulators, policymakers, advocacy groups, and others. In order to overcome these challenges, environmental health laboratories need a national forum to address laboratory practices and emerging issues across the environmental health laboratory and other public health systems.

#### Healthy People 2020

This focus area supports the following Healthy People 2020 objectives:

**Environmental Health, Objective 20:** Reduce exposure to selected environmental chemicals in the population, as measured by blood and urine concentrations of the substances or their metabolites.

**Environmental Health, Objective 21:** Improve quality, utility, awareness, and use of existing information systems for environmental health.

**Preparedness, Objective 3:** Increase the proportion of Laboratory Response Network (LRN) laboratories that meet proficiency standards.

#### Other National Public Health Priorities and Strategies

- Public Health Emergency Preparedness and Response Capabilities: National Standards for State Local, Tribal, and Territorial Public Health  
<https://www.cdc.gov/cpr/readiness/capabilities.htm>

## 2. CDC Project Description

### a. Approach

#### I. Purpose

The purpose of the Environmental Health focus area is to improve national environmental health laboratory capability and practice and strengthen the role of environmental health laboratories within the environmental health and other public health systems. Competent, prepared, and well-integrated environmental health laboratories will improve the assessment of chemical and other exposures, helping to identify at-risk population groups and reduce or eliminate harm.

#### II. Outcomes

Activities in this focus area should achieve or contribute to the following intermediate outcomes (refer to section ii, "Outcomes," under Part II, A-2-a or the overall logic model in this NOFO for a full list of outcomes of this cooperative agreement):

##### **IO-1. Established communities of practice and other collaborative relationships among and between laboratories and other stakeholders**

- Stronger roles for environmental health laboratories in the planning and response for public health threats

##### **IO-2. Established information sharing across public health laboratories and with other key stakeholders**

- More training for public health laboratories (PHLs) in biomonitoring methods for exposure assessment and other public health needs
- More guidance for PHLs on new policies and methods related to assessment of environmental exposures, emergency laboratory response, and other urgent public health needs

##### **IO-3. Improved competence and engagement of public health laboratory workforce**

- Larger PHL workforce skilled in conducting biomonitoring measurements for exposure assessment, emergency laboratory response, and other public health needs
- Improved national environmental health laboratory capability

##### **IO-4. Enhanced practices, methods, technical capabilities, and infrastructure within the public health laboratory system**

- PHLs proficient in biomonitoring
- PHLs able to quickly detect and report human exposures to harmful chemicals, including chemical threat agents
- PHLs able to sustain environmental health laboratory testing during emergencies

##### **IO-6. Improved public health laboratory detection, surveillance, and response**

- Improved coordination of environmental health laboratory efforts among laboratories and partner organizations



**S4.2. Identify and address systems to improve the practice of laboratory quality and safety in public health laboratories**

- Convene committees, workgroups, or other meetings to develop and communicate guidance about science and policy issues for environmental health laboratories.

**S4.3. Identify and address emerging methodological and process improvements in public health laboratories**

- Develop guidance about policy, scientific, and management issues relevant to environmental health laboratories.

**S4.4. Provide technical assistance to state and local public health laboratories to support improvements in public health outcomes**

- Facilitate assessment and guidance for PHLs integrating new technologies or supporting new public health programs.
- Facilitate improvements in environmental health laboratory information technology and management infrastructure.

**S4.5. Identify and address gaps in laboratory infrastructure and capability to prepare and respond to public health threats**

- Monitor chemical threat and other emerging public health emergency capabilities in environmental health labs.
- Facilitate improvements in environmental health laboratory preparedness.
- Monitor trends in environmental health contingency planning.
- Collaborate with environmental health laboratories to develop contingency plans.

**b. Evaluation and Performance Measurement**

**I. CDC Evaluation and Performance Measurement Strategy**

The CDC Evaluation and Performance Measurement Strategy for this focus area uses the guidance from the overall CDC Evaluation and Performance Measurement Strategy described in this NOFO (Part II, A-2-b-i. CDC Evaluation and Performance Measurement Strategy), to address the following specific performance measures (including process measures and outcome measures) for this focus area.

Process measures for the strategies and activities in this focus area may include:

<b>Strategy/Activity</b>	<b>Process Measure</b>
<p><b>S2.2. Collaborate and build relationships among laboratory professionals and other stakeholders in public health, healthcare, and beyond</b></p> <ul style="list-style-type: none"> <li>• Develop partnerships to build national, state, and community infrastructure to conduct biomonitoring for harmful chemicals, including chemical threat agents and other emerging chemicals of concern.</li> </ul>	<ul style="list-style-type: none"> <li>• Number and type of partnerships to build to build national, state, and community infrastructure to conduct biomonitoring for harmful chemicals, including chemical threat agents and other emerging chemicals of concern.</li> <li>• Number and types of resources to foster a coordinated national approach to biomonitoring, laboratory response to</li> </ul>



<ul style="list-style-type: none"> <li>• Develop resources and partnerships to foster a coordinated national approach to biomonitoring, laboratory response to chemical threat agents, and other urgent public health needs.</li> <li>• Facilitate partnerships and educate stakeholders to increase the use of biomonitoring data to reduce harmful exposures in people.</li> <li>• Facilitate partnerships to improve the quality of tests conducted by environmental health laboratories for environmental chemicals, chemical threat agents, and other compounds of concern.</li> <li>• Develop relationships and engage with partner organizations including policymakers and advocacy groups.</li> </ul>	<p>chemical threat agents, and other urgent public health needs.</p> <ul style="list-style-type: none"> <li>• Number of educational resources and events for partners and stakeholders that increase use of biomonitoring data to reduce harmful exposures in people.</li> <li>• Number of partners engaged in improving environmental health testing quality.</li> <li>• Number and diversity of new and existing partner organizations engaged in and familiar with environmental health laboratory issues.</li> </ul>
<p><b>S2.3. Facilitate information exchange and dissemination among practitioners and other stakeholders</b></p> <ul style="list-style-type: none"> <li>• Disseminate guidance about policy, scientific, and management issues to PHL leadership and staff.</li> <li>• Disseminate best practices for both routine and emergency environmental health laboratory operations.</li> </ul>	<ul style="list-style-type: none"> <li>• Number of policy, science, and management guidance documents disseminated to environmental health laboratories.</li> <li>• Number of best practice documents for routine and emergency environmental health operations disseminated to PHLs.</li> </ul>
<p><b>S2.4. Educate the public and other stakeholders about the role of PHLs</b></p> <ul style="list-style-type: none"> <li>• Facilitate communication among PHLs, health care providers, partners, and policy makers about environmental health laboratory science, policy, technology, regulation, and practice.</li> </ul>	<ul style="list-style-type: none"> <li>• Number and breadth of connections made among diverse stakeholders regarding environmental health laboratory issues.</li> <li>• Number of educational resources disseminated to diverse stakeholders regarding environmental health laboratory issues.</li> </ul>
<p><b>S3.1. Identify training and workforce development needs among laboratory professionals in diverse settings</b></p> <ul style="list-style-type: none"> <li>• Conduct training and workforce development needs assessments to identify unique needs for environmental health laboratories.</li> <li>• Use needs assessment results to inform the development and delivery of training and workforce development resources for environmental health staff and leadership.</li> <li>• Apply best practices to all training and workforce development products,</li> </ul>	<ul style="list-style-type: none"> <li>• Number and type of training needs assessments that identify environmental health laboratory needs.</li> <li>• Number of trainings and workforce development products that apply best practices.</li> <li>• Number of evaluations of effectiveness of training products, resources, and events for environmental health laboratories.</li> </ul>



<p>resources, and events (e.g., CDC Quality Training Standards and Laboratory Competencies).</p> <ul style="list-style-type: none"><li>• Monitor and evaluate effectiveness of training and workforce development products, resources, and events regularly and consistently.</li></ul>	
<p><b>S3.3. Facilitate the development and delivery of training and workforce development resources</b></p> <ul style="list-style-type: none"><li>• Use needs assessment results and guidance from CDC to develop and deliver training and workforce development opportunities for environmental health laboratory staff, including those on laboratory methods and/or emerging issues.</li><li>• Collaborate with CDC to review training and workforce development products, resources, and events.</li><li>• Collaborate with CDC to establish fellow and host site eligibility requirements and performance expectations.</li><li>• Provide guidance and technical assistance to fellows and host sites.</li><li>• Manage operations and funds to support fellows.</li><li>• Coordinate with the recipient Training and Workforce Development Program regarding cross-cutting and program-specific data generation to contribute to fellowship program monitoring and evaluation activities.</li></ul>	<ul style="list-style-type: none"><li>• Number and diversity of training opportunities for laboratory staff, including laboratory methods and/or emerging issues.</li><li>• Number of trainee and/or fellowships for environmental health laboratories.</li></ul>
<p><b>S4.2. Identify and address systems to improve the practice of laboratory quality and safety in public health laboratories</b></p> <ul style="list-style-type: none"><li>• Convene committee, workgroups, or other meetings to develop and communicate guidance about science and policy issues.</li></ul>	<ul style="list-style-type: none"><li>• Number of committees, workgroups, and meetings to develop and communicate science and/or policy guidance for environmental health laboratories.</li></ul>
<p><b>S4.3. Identify and address emerging methodological and process improvements in public health laboratories</b></p>	<ul style="list-style-type: none"><li>• Number of guidance documents about policy, scientific, and management issues relevant to environmental health laboratories developed.</li></ul>



<ul style="list-style-type: none"> <li>• Develop guidance about policy, scientific, and management issues relevant to environmental health laboratories.</li> </ul>	
<p><b>S4.4. Provide technical assistance to state and local public health laboratories to support improvements in public health outcomes</b></p> <ul style="list-style-type: none"> <li>• Facilitate assessment and guidance for PHLs integrating new technologies or supporting new public health programs.</li> <li>• Facilitate improvements in environmental health laboratory information technology and management infrastructure.</li> </ul>	<ul style="list-style-type: none"> <li>• Number of resources coalesced, developed, disseminated, and/or provided to assist environmental health laboratories in implementing new technologies or programs.</li> <li>• Number of resources coalesced, developed, disseminated, and/or provided to assist environmental health laboratories with improvements in information technology or management infrastructure.</li> </ul>
<p><b>S4.5. Identify and address gaps in laboratory infrastructure and capability to prepare and respond to public health threats</b></p> <ul style="list-style-type: none"> <li>• Monitor chemical threat and other emerging public health emergency capabilities in environmental health laboratories.</li> <li>• Facilitate improvements in environmental health laboratory preparedness.</li> <li>• Monitor trends in environmental health contingency planning.</li> <li>• Collaborate with environmental health laboratories to develop contingency plans.</li> </ul>	<ul style="list-style-type: none"> <li>• Number of resources coalesced, developed, disseminated, and/or provided to assist PHLs with improvements in chemical threat and other emerging public health emergency capabilities.</li> <li>• Number of resources coalesced, developed, disseminated, and/or provided to assist PHLs with improving or establishing environmental health laboratory contingency plans.</li> </ul>

Outcome measures for this focus area may include:

Outcome	Outcome Measure
<p><b>IO-1. Established communities of practice and other collaborative relationships among and between laboratories and other stakeholders</b></p>	<ul style="list-style-type: none"> <li>• Number of PHLs actively participating in a biomonitoring laboratory network and/or other environmental health-related networks and communities of practice.</li> <li>• Number of environmental health laboratories with active relationships with epidemiologists, policy makers, communicators, preparedness directors, and/or other environmental health system stakeholders.</li> <li>• Number and relevance of public health topics that networks, collaborative relationships, and/or communities of practice address.</li> </ul>



<b>IO-2. Established information sharing across public health laboratories and with other key stakeholders</b>	<ul style="list-style-type: none"><li>• Number of PHLs participating in training in biomonitoring methods for exposure assessment and other public health needs.</li><li>• Number of PHLs using or implementing guidance on new policies and methods related to assessment of environmental exposures, emergency laboratory response, and other urgent public health needs.</li><li>• Number of environmental health stakeholders using or implementing guidance.</li></ul>
<b>IO-3. Improved competence and engagement of public health laboratory workforce</b>	<ul style="list-style-type: none"><li>• Number of PHL staff able to conduct biomonitoring measurements for exposure assessment, emergency laboratory response, and other public health needs in accordance with established standards for competence and quality.</li><li>• Percent of PHLs with expanded analytical capability for exposure assessment, emergency laboratory response, and other public health needs.</li></ul>
<b>IO-4. Enhanced practices, methods, technical capabilities, and infrastructure within the public health laboratory system</b>	<ul style="list-style-type: none"><li>• Number of PHLs with expanded laboratory and programmatic capability and capacity for biomonitoring.</li><li>• Number of PHLs able to more rapidly and accurately detect and report human exposures to harmful chemicals, including chemical threat agents.</li><li>• Number of PHLs with established and exercised protocols to sustain environmental health laboratory testing during emergencies.</li></ul>
<b>IO-6. Improved public health laboratory detection, surveillance, and response</b>	<ul style="list-style-type: none"><li>• Number of environmental health laboratory initiatives that incorporate environmental health stakeholder and other partner organizations.</li><li>• Number of emerging environmental exposure assessments that integrate PHLs into the environmental health response.</li></ul>
<b>IO-7. Improved quality and safety in public health laboratories</b>	<ul style="list-style-type: none"><li>• Percent increase in the number of PHLs conducting high-quality and safe biomonitoring practices.</li></ul>



## II. **Applicant Evaluation and Performance Measurement Plan**

The recipient will be required to submit a detailed Evaluation and Performance Measurement plan within the first 6 months of award and work with CDC staff to ensure that the evaluation plan is feasible and consistent with proposed focus area activities, the intent of this NOFO, and CDC's evaluation approach.

### c. **Collaborations**

The recipient is expected to use or develop strategic partnerships that best suit their needs in order to maximize the use of resources and improve the sustainability of the listed activities.

#### **With CDC funded programs**

General guidance for collaborations with CDC funded programs is described in section a, "With other CDC programs and CDC-funded organizations," under Part II, A-2-iii-1 (Collaborations) in this NOFO. The recipient is expected to collaborate with CDC's National Center for Environmental Health and Division of Laboratory Sciences, Center for Preparedness and Response, Division of State and Local Readiness, and other relevant programs to establish program priorities and activities. The recipient may consider collaboration with state programs previously or currently funded by CDC to share expertise, challenges, and successes related to environmental health and related public health systems, including those funded by CDC to conduct state-based biomonitoring, build and strengthen the ability to respond to public health incidents (Public Health Emergency Preparedness and Chemical Laboratory programs), assess and develop a state network to track and report environmental hazards and related health problems (Environmental Health Tracking Program), and prevent opioid overdoses. The recipient may also consider collaborating with state programs that receive funding through the Agency for Toxic Substances and Disease Registry's (ATSDR) State Cooperative Agreement Program to build capacity to assess and respond to site-specific issues involving human exposure to hazardous substances in communities in the United States.

#### **With organizations external to CDC**

General guidance for collaborations with organizations external to CDC is described in section b, "With organizations not funded by CDC," under Part II, A-2-iii-1 (Collaborations) in this NOFO. The recipient may also consider collaboration with PHLs not currently funded by CDC to share expertise, challenges, and successes related to environmental health, biomonitoring, emergency laboratory response, and opioid overdose prevention. The recipient may also consider appropriate collaboration with and support from environmental health and other public health stakeholders to accomplish diverse activities. Potential collaborators may include, but are not limited to other federal or state agencies, academic institutions, professional organizations, non-profit organizations, advocacy groups, community groups, public health or environmental officials, and health care providers.

### d. **Target populations**

The primary target population of this focus area is environmental health laboratory professionals supporting state, local, and territorial public health programs. The secondary target population is stakeholders in environmental health and related public



health systems (such as preparedness, injury prevention), including epidemiologists, community members, policy makers, and others.

**e. Organizational Capacity**

Refer to section c, “Organizational Capacity of Recipients to Implement the Approach” under Part II, A-2 (CDC Project Description) in this NOFO. The recipient should demonstrate considerable partnership experience and work effectiveness in the environmental health community and related public health systems. The recipient should also demonstrate expertise and long-standing relationships in the environmental health laboratory science field, substantial experience in conducting the proposed activities, and existing staffing and infrastructure to achieve outcomes.

**f. Work Plan**

The recipient is required to provide a work plan for this focus area that provides both a high-level overview of the entire five-year period of performance and a detailed description of the first year of the award. The work plan should follow the general guidance provided in section d, “Work Plan” under Part II, A-2 (CDC Project Description) in this NOFO, and address the specific strategies, activities, outcomes, and performance measures of this focus area. After the award is made, the proposed work plan (including the evaluation and performance measurement plan) may be adjusted in collaboration with the CDC Technical Monitor(s) to ensure integration of the strategies and activities and achievement of the period of performance outcomes.

**g. CDC Program Support to Recipient**

CDC’s National Center for Environmental Health and Division of Laboratory Sciences will provide technical expertise, monitoring and program support for this focus area as described in section f, “CDC Program Support to Recipients” under Part II, A-2 (CDC Project Description) in this NOFO. CDC technical monitors will meet with the recipient’s environmental health staff monthly (and on an ad hoc basis for emerging issues) via conference call to discuss project progress and future actions. In addition, CDC may participate in all relevant stakeholder and other meetings, either in-person or by teleconference.