

► DIRECT FROM ATSDR

Building Capacity Nationwide on Environmental Health and Protecting Communities From Harmful Chemical Exposures

Zheng Li, MPH, PhD
 Alan Yarbrough, MS
 Angela Ragin-Wilson, PhD
 Christopher Reh, PhD

Editor's Note: As part of our continued effort to highlight innovative approaches to improve the health and environment of communities, the *Journal* is pleased to publish regular columns from the Agency for Toxic Substances and Disease Registry (ATSDR) at the Centers for Disease Control and Prevention (CDC). ATSDR serves the public by using the best science, taking responsive public health actions, and providing trusted health information to prevent harmful exposures and diseases related to toxic substances. The purpose of this column is to inform readers of ATSDR's activities and initiatives to better understand the relationship between exposure to hazardous substances in the environment, its impact on human health, and how to protect public health.

The findings and conclusions in this column are those of the author(s) and do not necessarily reflect the views or official position of ATSDR or CDC.

Dr. Zheng Li is the director of the Office of Capacity Development and Prevention Services (OCDAPS) at ATSDR. Alan Yarbrough serves as the deputy director of OCDAPS. Dr. Angela Ragin-Wilson serves as the associate deputy director of ATSDR. Dr. Christopher Reh is the associate director of ATSDR.

Introduction

The Agency for Toxic Substances and Disease Registry (ATSDR) was established to serve as a science-based public health agency. ATSDR protects communities from harmful health effects related to exposure to natural and human-made hazardous substances. ATSDR helps to determine, prevent, and mitigate health effects in communities. To accomplish this goal, ATSDR responds to environmental health emergencies, investigates emerging environmental health threats, conducts research on the health impacts of hazardous waste sites, and builds capabilities of and provides actionable guidance to state and local health partners.

With evolving challenges in environmental health and emerging toxic substances, building capabilities, strengthening collaborations,

improving environmental health expertise, and strengthening the public health workforce nationwide is crucial. ATSDR works with communities, internal and external partners, and professional organizations to build their capacity to address issues related to environmental contamination.

ATSDR's activities include:

- Translating science into educational materials, tools, and actions that can be used to prevent or reduce exposure to hazardous materials and protect health
- Collaborating with partners to investigate hazardous environmental exposures in communities across the nation
- Providing environmental health and medical education and training to health professionals, healthcare providers, partners, and community members

This column provides an overview of ATSDR's key capacity development activities. The activities are organized into four major categories, each targeting a different group of partners (Figure 1).

Training and Tools for Environmental Health Professionals

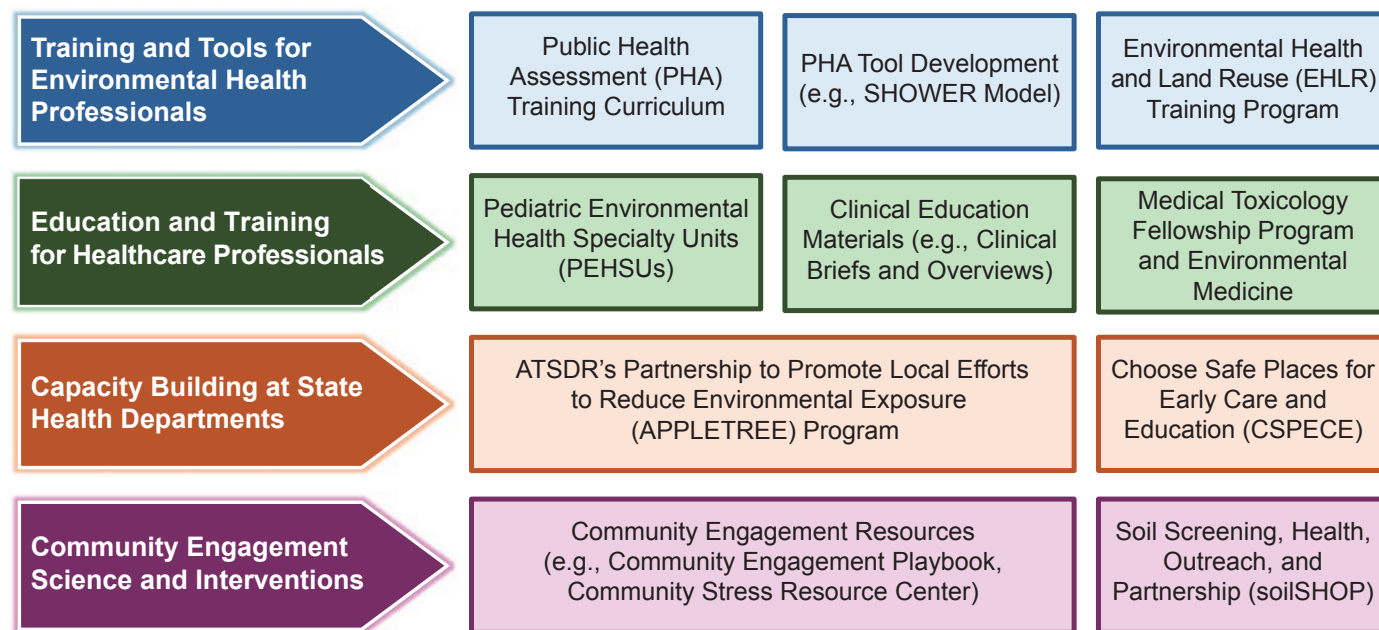
ATSDR and state partners conduct public health assessments (PHAs) to investigate exposure to environmental contaminants, evaluate potential health effects, and develop public health action plans to prevent and reduce these exposures in communities (ATSDR, 2025; Ulirsch & Li, 2022). To train environmental health professionals, ATSDR developed a comprehensive, accredited, online training curriculum on the PHA process (ATSDR, 2024a). The training covers learning about the site and the community, conducting scientific evaluations, and developing a public health action plan. The online training curriculum also provides a series of eight accredited modules based on a realistic environmental health case study. The training includes problem-solving exercises, comprehensive resources, and references to conduct PHAs (Figure 2).

In addition, ATSDR modernized the complex scientific evaluation processes and empowered health professionals to conduct health assessments in a consistent and transparent manner by developing innovative tools. One of the tools is the Shower and Household Water-Use Exposure (SHOWER) Model. The model evaluates inhalation and dermal exposure from bathing and showering in contaminated water in residential and communal settings (Burk et al., 2022).

The Environmental Health and Land Reuse (EHLR) Program is another broadly recog-

FIGURE 1

Overview of Capacity Development Activities Within the Agency for Toxic Substances and Disease Registry (ATSDR)



Note. SHOWER = Shower and Household Water-Use Exposure.

nized program aimed at promoting health, community involvement, partnerships, communication, and education related to land reuse (Berman et al., 2024). Land reuse sites are sites slated for redevelopment that might have chemical or radiological contamination. Through a collaboration with the National Environmental Health Association (NEHA), ATSDR developed an EHLR Basic Training in two modalities: virtual/live (maintained by ATSDR) and online/asynchronous (maintained by NEHA). ATSDR has provided training to federal, state, local, and tribal partners; commercial businesses; and domestic and international academic institutions.

Education and Training for Healthcare Professionals

Healthcare professionals carry out a pivotal role in community health. Their knowledge of environmental medicine and toxic substances, however, is often limited, which makes it difficult for them to recognize environmental exposures in patients and to provide counseling, care, and treatment related to exposure.

ATSDR develops educational products on environmental medicine to help train healthcare professionals on evaluating and treating individuals with environmental exposures and providing counseling on personal risk reduction strategies. A few recently developed resources include Per- and Polyfluoroalkyl Substances (PFAS): Information for Clinicians (ATSDR, 2024b; Wendel et al., 2024) and Clinician Briefs and Overviews on Ethylene Oxide (ATSDR, 2024c). ATSDR hosts a Medical Toxicology Fellowship Program and is working on integrating environmental medicine education into formal healthcare professional training. In addition, ATSDR supports Pediatric Environmental Health Specialty Units (PEHSUs), a national network of experts on health issues that arise from environmental exposures from preconception through adolescence.

Building Capacity at State Health Departments

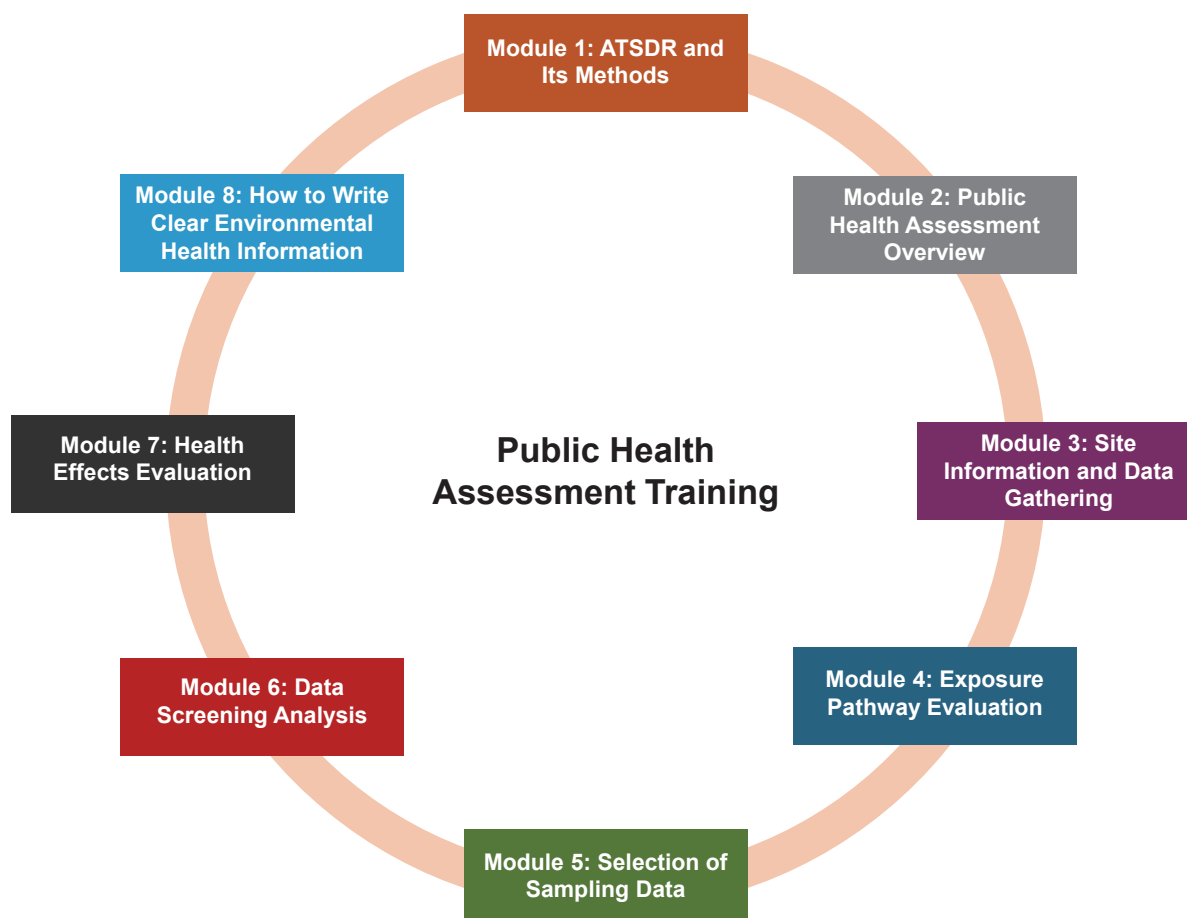
Launched in 1987, ATSDR's Partnership to Promote Local Efforts to Reduce Environmental Exposure (APPLETREE) cooperative

agreement is a flagship program dedicated to building capacity to assess and respond to community exposure to hazardous substances (Henry & Cowins, 2023). The current program (2023–2028) supports 30 state health departments by providing funding, training, guidance, and technical assistance. APPLETREE helps ATSDR's public health partners identify exposure pathways associated with environmental contamination, review health outcome data when appropriate, and provide information to affected communities and health professionals about possible health effects and ways to reduce or stop exposure to harmful chemicals.

In the U.S., over 8 million children are enrolled in day care centers and other early childcare centers. Most states, however, do not have formal processes to assess properties for harmful chemicals. In response, ATSDR created the Choose Safe Places for Early Care and Education (CSPECE) Program. The program helps towns, cities, and states adopt practices that will make sure early childcare and education centers are located away from chemical hazards (Henry & Cowins,

FIGURE 2

Online Public Health Assessment Training Program and Its Modules From the Agency for Toxic Substances and Disease Registry (ATSDR)



2023). ATSDR also developed online tools and resources to help everyone involved with establishing new early care and education centers choose safe locations. As part of the APPLETREE program, we provide funding, technical support, and guidance to help states start their own safe siting programs.

Community Engagement Science and Interventions

Community engagement is critical to the success of public health activities and programs. ATSDR has developed numerous resources, trainings, and programs to strengthen community engagement science and practices. Effectively engaging communities is key to addressing their environmental health con-

cerns and expanding the reach and impact of our programs and activities. For example, ATSDR created a full suite of resources and tools for Soil Screening, Health, Outreach, and Partnership (soilSHOP) events (ATSDR, 2024d). During soilSHOP events, ATSDR and public health partners test and screen for contaminants in soil samples that community members gathered from their gardens and outdoor areas.

We also educate community members about lead soil contamination and share tips for reducing potential exposures. Another example of a community engagement resource is the Community Engagement Playbook (ATSDR, 2024e). The playbook was designed for public health professionals

and state, territorial, local, and tribal partners to guide them through the phases of effective community engagement.

Conclusion

Over the past four decades, ATSDR has successfully collaborated with partners to address environmental concerns and protect communities from environmental hazards. Capacity building at multiple levels is critical in accomplishing our mission to protect the communities we serve. Strengthening capacities remains essential for detecting, preventing, and reducing harmful environmental exposures. It also remains essential to protect communities across the nation from hazardous substances. 🌿

Corresponding Author: Zheng Li, MPH, PhD, Director, Office of Capacity Development and Prevention Services, Agency for Toxic Substances and Disease Registry, Atlanta, GA. Email: zjli@cdc.gov

References

- Agency for Toxic Substances and Disease Registry. (2024a). *Public Health Assessment Training*. <https://www.atsdr.cdc.gov/pha-training/php/training/>
- Agency for Toxic Substances and Disease Registry. (2024b). *PFAS information for clinicians—2024*. <https://www.atsdr.cdc.gov/pfas/hcp/clinical-overview/>
- Agency for Toxic Substances and Disease Registry. (2024c). *Clinician brief: Ethylene oxide*. <https://www.atsdr.cdc.gov/environmental-medicine/hcp/clinicianbriefeto/index.html>
- Agency for Toxic Substances and Disease Registry. (2024d). *ATSDR soilSHOP Toolkit: About soilSHOP*. <https://www.atsdr.cdc.gov/soilshop/>
- Agency for Toxic Substances and Disease Registry. (2024e). *Community Engagement Playbook*. <https://www.atsdr.cdc.gov/community-engagement-playbook/php/about/index.html>
- Agency for Toxic Substances and Disease Registry. (2025). *Public Health Assessment Guidance Manual (PHAGM)*. <https://www.atsdr.cdc.gov/pha-guidance/index.html>
- Berman, L., Unkart, S., Lewin, M., Labbo, R., Bare, G., Wooden, A., Erdal, S., Bing, L., Casteel, S., Amar, O., Jones, T., & Begay, L. (2024). Development, evaluation, and long-term outcomes of environmental health and land reuse training—Part 1: Developing environmental health and land reuse trainings for the environmental health workforce and their community partners. *Journal of Environmental Health*, 86(10), 16–22.
- Burk, T., Mellard, D., Ulirsch, G.V., & Li, Z. (2022). Public Health Assessment Site Tool and affiliated applications: A key resource for evaluating the health impact of community exposure to hazardous chemicals. *Journal of Environmental Health*, 85(4), 40–42.
- Henry, A., & Cowins, J. (2023). APPLETREE: Building local capacity to respond to environmental exposures. *Journal of Environmental Health*, 85(10), 26–27.
- Ulirsch, G.V., & Li, Z. (2022). New web-based Public Health Assessment Guidance Manual: A foundational tool for evaluating exposure and public health impacts in communities. *Journal of Environmental Health*, 85(2), 38–41.
- Wendel, A., Hansen, L., & Bernstein, A. (2024). PFAS information for clinicians from ATSDR. *Journal of Environmental Health*, 86(10), 32–34.

You Are Seeing This Ad—Your Customers Will, Too!

Three reasons to advertise right here in the *Journal of the Environmental Health*:

- **20,000+ readers** interested in environmental health
- **Delivered directly to email inboxes** from a trusted source
- **Clickable and trackable links** from your ad to your website

We also have special rates for first-time advertisers and long-term contracts.



National Environmental
Health Association

Contact sales@neha.org or 303-802-2133.

▶ THE PRACTITIONER'S TOOL KIT *continued from page 43*

- Bond, R.G., Michaelsen, G.S., & DeRoos, R.L. (1973). *Environmental health and safety in health-care facilities*. Macmillan Publishing Company, Inc.
- Ehlers, V.M., & Steel, E.W. (1965). *Municipal and rural sanitation* (6th ed.). McGraw Hill.
- National Center for Healthy Housing, & American Public Health Association. (2014). *National healthy housing standard*. https://www.apha.org/-/media/files/pdf/factsheets/national_healthy_housing_standard.pdf
- Powitz, R.W. (2023). *A brief history of the sanitarian* [Presentation]. R.W. Powitz & Associates, P.C. <https://www.sanitarian.com/current-publications>
- Rosen, G. (2015). *A history of public health: Revised expanded edition*. The Johns Hopkins University Press.