

► SPOTLIGHT ON SUCCESS STORIES FROM THE FIELD

Strengthening Environmental Public Health Emergency Preparedness Through Capacity Building: A Case Study From North Carolina

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Editor's Note: The National Environmental Health Association (NEHA) strives to provide relevant and useful information through the pages of the *Journal* for environmental health professionals. In a recent membership survey, we heard your request for information that spotlights successful environmental health programs across the different areas of environmental health and from different sectors of the profession. We listened and are pleased to offer a column that shines a spotlight on success stories from the environmental health field. These stories enable us to learn from our peers and provide an avenue to incorporate successful programs, innovative solutions, and unique approaches to our own programs and initiatives.

The findings and conclusions of this column are those of the authors and do not necessarily represent the official position of NEHA, the Centers for Disease Control and Prevention (CDC), or the Agency for Toxic Substances and Disease Registry (ATSDR).

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within local health departments to respond effectively to a wide range of public health emergencies (Murthy et al., 2017). These efforts are urgent given the growing frequency and severity of public health threats. Federal agencies such as the Centers for Disease Control and Prevention (CDC) and the Agency for Toxic Substances and Disease Registry (ATSDR) have collaborated with state and local entities to enhance infrastructure, provided funding, and supported coordinated planning efforts. In times of crisis, state public health officials must act quickly to support local responses, often relying on existing partnerships with federal and national partners. In this column, we elaborate on one such partnership between the North Carolina Department of Health and Human Services, Division of Public Health (NCDHHS DPH), CDC's National Center for Environmental Health (NCEH)/ATSDR, and the Association of State and Territorial Health Officials (ASTHO).

Key barriers continue to hinder public health preparedness efforts, especially those efforts focused on environmental health hazards. Challenges previously described in the literature persist, including inconsistent funding, underdeveloped risk communication strategies, and complex workforce constraints (Elgethun et al., 2023; Gamboa-Maldonado et al., 2012), as well as a lack of inclusion in larger community planning efforts (Brooks et al., 2019). One of the most persistent obstacles is the difficulty in sustaining preparedness initiatives during so-called "blue sky days"—

Emergency preparedness, response, and recovery have become an increasingly vital function of public

health systems at the federal, state, and local levels. Since 2001, significant efforts have been made to build and maintain capacity

periods without active public health threats—given many local environmental health staff are “funded to provide fee-for-service regulatory work such as permitting and compliance enforcement” (Elgethun et al., 2023). During these times, health departments prioritize essential services. Relying on finite resources for routine operations limits the ability to maintain focus or dedicate resources to preparedness programs, especially those programs addressing high-consequence and low-frequency disasters, such as direct impacts from a large hurricane.

To address these gaps, CDC’s NCEH/ATSDR has supported a variety of initiatives to bolster environmental health preparedness at the state health department level. Environmental health practitioners play a key role in preparedness activities, as many disasters have significant health impacts that are often within the purview of environmental health (Ryan et al., 2021). One such effort was the Hurricanes Ian and Fiona Supplemental Funding (Disaster Relief Supplemental Appropriations Act, 2023), which was designed to enable three states (North Carolina, South Carolina, and Florida) and one territory (Puerto Rico) to tailor emergency preparedness, response, and recovery strategies, with a focus on environmental health hazards, to their specific geographic and operational contexts. Between 2023 and 2025, NCEH/ATSDR, in partnership with ASTHO, supported NCDHHS DPH’s Environmental Health Section with targeted recovery resources to strengthen the state’s ability to respond to natural disasters, particularly hurricanes.

A key innovation of this initiative was the implementation of a temporary staffing model through ASTHO in early 2024. These staff were brought in at a time when there were no active emergencies, providing valuable time for the development of trainings and resources in advance of future emergency events. Rather than navigate the often time-consuming and resource-intensive state hiring process, NCDHHS DPH was able to onboard qualified temporary contract personnel through ASTHO and their partner staffing agency. Temporary staff were selected for their public health and emergency response backgrounds and trained on the job to meet the program’s specific demands. Depending on the health agency’s needs and requirements, temporary staff were either

remote or in person, enabling a wider applicant pool. Temporary staff responsibilities included developing guidance documents, planning tabletop exercises and trainings, and supporting emergency sheltering and environmental preparedness initiatives.

Between January 2024 and July 2025, the temporary staffing initiative yielded several measurable outcomes that underscore its effectiveness. Notably, the team developed and delivered one tabletop exercise and one hurricane training, produced eight emergency food service operations documents, and created nine sheltering resources. These outputs are particularly significant given that the emergency preparedness website (see sidebar), launched in June 2025, had accumulated more than 1,900 views by March 2026. Web traffic spiked during two emergency events: Hurricane Erin in August 2025 and a major winter storm in January 2026. These spikes demonstrate that the preparedness guidance and newly developed documents were actively referenced during these emergencies.

Furthermore, these resources have also been accessed in 15 other states outside North Carolina since 2018, underscoring the initiative’s impact in addressing a substantial gap in emergency preparedness materials and extending its reach beyond state borders. These deliverables demonstrate that the temporary staffing model not only met its objectives but also did so within a defined timeframe, providing the agency with a modernized, actionable, preparedness resource-based project. The project’s reach extended beyond North Carolina, sharing valuable information nationwide.

The benefit of this temporary staffing model was largely attributable to its focused scope and flexibility. By assigning temporary staff solely to the preparedness initiative and separating them from permanent staff workflows, the program ensured dedicated attention to deliverables. This arrangement allowed for uninterrupted progress on deliverables and faster implementation timelines. Moreover, bypassing traditional onboarding processes enabled the team to mobilize for rapid deployment and distribution of critical resources.

The project produced several key deliverables in support of state and local readiness. Drawing on both national best practices and North Carolina’s prior disaster experiences, the temporary staff developed guidance

documents specific to sheltering operations. Topics included environmental health evaluations of emergency shelters, considerations for children and childcare settings, food donation protocols, and responder resilience. These materials were distributed to local health departments across the state to enhance planning and operational readiness.

One of the most significant resources developed was an emergency water supply guidance document, created to address recurring public health challenges and frequent water outages during previous hurricanes (see the Restaurant Emergency Operations link in the sidebar). The guidance reflects a proactive approach to preparedness, addresses key regulatory concerns such as food safety during water disruptions, and provides actionable strategies for environmental health specialists and other frontline public health practitioners for future events.

Additionally, the team designed and facilitated a tabletop exercise simulating a water outage in retail food establishments. Based on real incidents from past emergencies in North Carolina, the scenario design guided public health officials and food industry partners through common regulatory and operational challenges, with practical solutions for both groups. The exercise was delivered during the 2025 meeting of the North Carolina Food Safety and Defense Task Force. Previous exercises either focused on emergency management and public health preparedness or on environmental health efforts related to outbreaks or food recalls, but have not provided emergency preparedness training. This exercise was a major milestone for NCDHHS DPH in that it integrated environmental health into routine preparedness activities.

North Carolina’s approach demonstrates a promising model for targeted capacity building in public health. Rather than attempting to stretch existing staff across competing priorities, North Carolina allocated dedicated resources to preparedness functions through an alternative, flexible staffing mechanism. This model not only ensured that essential guidance and training tools were developed but also preserved the capacity of full-time staff to continue meeting day-to-day responsibilities. Importantly, this initiative reflects broader principles of effective capacity building in public health to strengthen the competencies, systems, and infrastructure

required for local health departments, specifically through targeted resource allocation, adequate workforce availability, knowledge translation, and partner collaboration (Brownson et al., 2018). It also requires sustainable investment and institutional support to ensure that gains in preparedness are retained over time.

The partnership between CDC's NCEH/ATSDR, ASTHO, and NCDHHS DPH highlights how coordinated interorganizational collaboration can drive innovation and improve preparedness outcomes. Without the supplemental funding and technical assistance from NCEH/ATSDR and administrative support from ASTHO, it is unlikely that the state would have been able to complete this work, given existing resource constraints. The temporary staffing model proved to be an efficient, scalable, and replicable method for enhancing public health emergency preparedness. Contingent on future funding being made available to support similar collaborative efforts between federal, state, tribal, local, territorial, and national partners, this temporary staffing model could be implemented across other health agencies to build sustainable environmental public health emergency preparedness capacity. In doing so, it would safeguard communities against environmental health impacts associated with different emergencies.

In summary, North Carolina's experience with the Hurricanes Ian and Fiona Supplemental Funding Program underscores the importance of adaptable, flexible approaches to capacity building that leverage new models of administrative preparedness. By leveraging targeted investments in temporary staffing and interorganizational collaboration, the state was able to produce practical tools and trainings to strengthen both state and local preparedness efforts. As the landscape of public health threats continues to evolve, models such as this one can offer a valuable framework for building health department capacity to integrate environmental health into broader public health preparedness efforts aimed at protecting and serving communities. 🌸

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Valuable Online Resources From the North Carolina Department of Health and Human Services

Emergency Preparedness and Response: This website provides a central hub to access a variety of different resources, such as restaurant emergency operations, food product recalls, emergency sheltering, foodborne illness outbreaks, and disaster recovery. www.dph.ncdhhs.gov/programs/environmental-health/emergency-preparedness-and-response

Emergency Sheltering Resources and Guidance Documents: This webpage contains guidance documents and handouts on emergency shelter operations, including assessing shelters, childcare operations, and investigating norovirus outbreaks. www.dph.ncdhhs.gov/programs/environmental-health/emergency-preparedness-and-response/emergency-sheltering

Restaurant Emergency Operations: This webpage provides information and tools for permitted food establishments on how to operate during emergencies, such as severe weather and water supply emergencies. www.dph.ncdhhs.gov/programs/environmental-health/emergency-preparedness-and-response/restaurant-emergency-operations

Community Meals Food Safety Training: This webpage hosts the virtual course and supplemental materials for the Community Meals Food Safety Training. This training was designed to provide food safety information to individuals and groups interested in hosting meal events, such as fundraisers, church meals, or volunteer meals following a disaster. <https://foodsafety.ces.ncsu.edu/community-food-safety-resources/community-meal-events/community-meals-food-safety-training>

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