

## ▶ DIRECT FROM THE NEHA PREPAREDNESS COMMITTEE

# What Matters in Individual Health Preparedness

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**Editor's Note:** The National Environmental Health Association (NEHA) strives to provide up-to-date and relevant information on environmental health and build partnerships in the profession. In pursuit of these goals, NEHA is pleased to feature a column from the NEHA Preparedness Committee. NEHA has several committees comprised of subject matter experts that focus on environmental health topics including body art, climate change, food safety, preparedness, vector control, and more. These committees provide guidance, input, and expertise to NEHA leadership and staff, environmental health professionals, and partner organizations.

The conclusions of this column are those of the author(s) and do not necessarily represent the official position or views of NEHA or author affiliations.

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The National Environmental Health Association (NEHA) recognizes the important role of the environmental health workforce in public health preparedness, response, and recovery from emergencies and disaster-related events. NEHA established the Preparedness Committee to bring together subject matter experts to heighten the significance of environmental health within emergency preparedness. The committee comprises public and private sector environmental health and emergency management expertise. Committee activities include:

- providing guidance on NEHA preparedness programs and projects,
- identifying training gaps and emerging issues in environmental health preparedness,
- promoting and disseminating materials and resources developed by NEHA and the committee, and
- identifying environmental health preparedness funding and other opportunities to engage and support the workforce.

The mission of the NEHA Preparedness Committee is to serve as a resource for NEHA and all environmental health professionals in preparing for, responding to, and recovering from emergencies and disasters to create more resilient communities and to minimize death,

illness, and injury. The committee champions the efforts of environmental health professionals who respond to emergencies and disaster related events. While September is National Preparedness Month ([www.ready.gov/september](http://www.ready.gov/september)), the essential services that environmental health professionals provide before, during, and after disasters and disruptions are a year-round responsibility.

Environmental health professionals have critical roles before, during, and after disasters and other disruptions, including participating in community assessments (Ferré et al., 2019; Kurkjian et al., 2016), emergency shelter and other mass care site planning and operational safety (Cruz et al., 2017; Schnall et al., 2019), air and water quality (Phillips, 2018; Ratnapradipa et al., 2018), and informing reentry decisions in evacuated areas. Understanding what is most likely to kill, injure, or sicken people after disasters offers insight into not only community hazards and vulnerabilities but also effective self-preparedness.

Most disasters produce consistent patterns of death and injury (Issa et al., 2018; Uscher-Pines, 2007). Primary causes are directly attributable to the event itself and thus vary by event type (e.g., drowning in tropical storms and floods, direct trauma in earthquakes and tornados). Secondary causes vary less by event type as they are driven by common effects: loss of electrical power and shelter, transportation disruption, loss of healthcare access, attempted repair and restoration, and other disruption of daily routine (De Rubeis et al., 2021; Issa et al., 2018). Primary and particularly secondary causes can be difficult to attribute, typically leading to undercounting (Santos-Burgoa et al., 2018). Secondary causes of death, illness, and injury

can be divided into four broad categories: preexisting medical conditions, environmental degradation and unmediated environmental exposure, secondary trauma, and psychological effects. All of these causes relate to not only postevent outcomes but also can affect primary event survival.

Preexisting medical conditions include common noncommunicable diseases that are typically controlled by medication (e.g., cardiorespiratory ailments, diabetes, psychological disorders), require recurring procedures (e.g., hemodialysis for end-stage renal disease), and/or rely on regular oxygen administration, powered life-support equipment, or other adjuncts (Kelman et al., 2015; Murakami et al., 2018; Ryan et al., 2017). The common link is dependence on maintenance care, the disruption of which turns a chronic, relatively stable condition into an acute one at the worst possible time.

Environmental causes include unmediated exposure to the ambient environment, degraded air and water quality (Phillips, 2018), otherwise controlled infectious diseases (Chow et al., 2019; Ghosh et al., 2021; Murthy & Christian, 2010), and introduced toxicants such as carbon monoxide (e.g., Iqbal et al., 2012). Rarer vectorborne diseases also become more common after floods and hurricanes, such as Zika virus (Ahmed & Memish, 2017; Murthy & Christian, 2010). Secondary trauma includes motor vehicle collisions, electrocution, and other injuries, particularly those related to repair and short-term recovery (Brackbill et al., 2014; Ghosh et al., 2021). Psychological causes beyond preexisting conditions include disrupted lifelines and routine and extended effects (e.g., personal loss or displacement, prolonged disruption, seismic aftershocks and other subsequent events, and personal trauma) (Ferré et al., 2019; Kino et al., 2020).

The threshold for generating secondary health effects is low—it doesn't take a disaster, just an extended disruption. As most of these effects are recurrent and thus predictable, they can be prevented or at least lessened by a combination of awareness and deliberate action by governments, institutions, support services, and individuals. Identifying vulnerable populations is a start, ideally accompanied by maintaining a continuity of prescription medications and basic primary care and outpatient services

(Carameli et al., 2013; Desalvo et al., 2014; Dimentstein et al., 2020). Instead of focusing on generic emergency kits, encouraging and enabling individuals to identify their specific vulnerabilities to relevant hazards, establish a reserve of prescription medications (or suitable substitutes with clinician guidance), and become familiar with backup oxygen and power options for home life-support. Toxic and disease exposure—acute and long-term—associated with environmental degradation commonly relate to political and socioeconomic vulnerability well before and after specific incidents (Phillips, 2018).

Maintaining awareness of primary and secondary hazards, vulnerable populations, and the role of environmental health professional before, during, and after disasters and disruptions is an important component of community and individual resilience. As we consider our own self-care and vulnerabilities as environmental health professionals working in emergency response, we can continue to engage individuals at risk, look beyond short-term needs, and recognize individual perspectives and needs (Gowan et al., 2015; McColl & Burkle, 2012). 🚗

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## Useful Environmental Health Preparedness Resources

A range of preparedness resources and an expanded reference section for this column can be found on the NEHA Preparedness webpage at [www.neha.org/preparedness](http://www.neha.org/preparedness).

### General

- U.S. Department of Health and Human Services—Individual Resilience: [www.phe.gov/Preparedness/planning/abc/Pages/resilience-factsheet-responders.aspx](http://www.phe.gov/Preparedness/planning/abc/Pages/resilience-factsheet-responders.aspx)

### Food and Water

- Centers for Disease Control and Prevention—Food, Water, Sanitation, and Hygiene Information for Use Before and After a Disaster or Emergency: [www.cdc.gov/disasters/foodwater/index.html](http://www.cdc.gov/disasters/foodwater/index.html)
- U.S. Environmental Protection Agency—Emergency Disinfection of Drinking Water: [www.epa.gov/ground-water-and-drinking-water/emergency-disinfection-drinking-water](http://www.epa.gov/ground-water-and-drinking-water/emergency-disinfection-drinking-water)

### Medications

- *Consumer Reports*—When Disaster Strikes: What to Put in Your Medication Go Bag: [www.consumerreports.org/drugs/must-haves-for-your-medication-go-bag](http://www.consumerreports.org/drugs/must-haves-for-your-medication-go-bag)

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