



DROUGHT



Emergency Preparedness and Response to Climate Change: The Role of the Environmental Health Professional

The National Environmental Health Association (NEHA) aims to raise awareness of the impacts of climate change. These changes, including the effects of extreme weather events on infrastructure and human health, have increased the need for preparedness and response across every sector of public health, especially environmental health (EH). EH professionals play an integral role in mitigation, preparedness, response, and recovery. Clearly, NEHA's mission, *to advance the environmental health professional for the purpose of providing a healthful environment for all*.

Climate change is the greatest threat to global health.⁷ It affects human health through air quality, extreme heat, drought, wildfires, extreme storms, floods, vector borne illnesses, and changing local weather patterns.

Though global, the effects of climate change are inherently local. All people are susceptible to physical and mental health impacts; however, certain groups carry a heavier burden. These populations include children, people of color, older adults, people with disabilities, and people in impoverished communities.

! FAST FACTS !

In 2012, the most geographically extensive drought to affect the U.S. covered over **50%** of the country, cost **\$31 BILLION** and affected the health of millions.¹

Increased water reuse cycle increases exposure to infectious diseases like salmonella. CDC estimates Salmonella causes about 1.2 million illnesses, **23,000 HOSPITALIZATIONS**, and **450 DEATHS** in the United States every year.³

For the state of California alone, the current western drought has cost over **\$4.9 BILLION** thus far and has contributed to the loss of more than **21,000 JOBS**.¹




CLIMATE CHANGE AND DROUGHT

Increased temperature can lead to increased transfer of water from the land to the atmosphere, which results in drier soils and less runoff. As the soil dries out, it absorbs more heat, which increases the air temperature. A drier climate decreases crop yield through water shortages. Drought can affect many aspects of human health. For example:

- Drought conditions can decrease air quality and increase extreme heat events and the potential for wildfire smoke exposure
- A dry climate increases the need for water reuse cycle in agricultural operations. Water recycling is reusing treated wastewater for beneficial purposes such as agricultural and

landscape irrigation, industrial processes, toilet flushing, and replenishing a groundwater basin. This process threatens food safety by increasing the possibility of food contamination²

- As crops continue to dry out, reduced crop yield and crop health threaten food insecurity for consumers
- Drought causes economic losses to businesses that rely on water, for example, farms, forestry, and landscape companies.¹ If farming is a predominant part of a community's economy, job loss and decreased productivity could be detrimental to health

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| Climate Impacts | Increases risk of wildfires and dust | Increase of water reuse cycle | Decrease in nutrient content in crops and crop yield |
| Health Outcomes | Allergies, cardiovascular diseases, asthma and other respiratory issues | Exposure to infectious disease like E. Coli and Salmonella | Malnutrition and mental health effects such as stress, anxiety and depression |

POPULATIONS VULNERABLE TO DROUGHT



Farmers



Tribal
Communities



Preexisting Health
Conditions



Children



Outdoor
Workforce



People of
Color



ENVIRONMENTAL HEALTH WORKFORCE ROLE

EH professionals play an essential role in response to extreme drought conditions and reduce public health risks of poor air quality, loss of crop yield, and extreme heat exposure. Drought increases the need for preparedness and response from EH professionals. An EH professional who acts on extreme drought conditions has the appropriate education and training needed to support local impacts and protect human health.

In order to address the health threats of droughts, EH professionals must be able to:

- Provide recommendations, interventions, and policies to protect and control drought hazards related to health
- Facilitate cross-sectoral engagement including community members, climate change coalitions, and industry to gain insight and support from these local leaders
- Develop water use reduction strategies and management plans ⁶
- Investigate hazardous foodborne pathogens and maintain food safety standards
- Complete drought vulnerability and risk assessments ⁵
- Interpret drought and health research utilizing science and understand the impact of drought on health outcomes
- Monitor local water and soil quality to prevent the spread of disease and crop nutrients
- Understand the impact that systems, social and structural inequities, institutional power and structural racism can have on climate change

EH professionals are uniquely qualified to respond to drought impacts due to their in-depth knowledge of the relationship between drought conditions, health, and the environment.



RECOMMENDATIONS

- EH organizations should support work to mitigate climate impact by reducing greenhouse gas emissions and enforcing drought-related air quality regulations.
- Health departments should support efforts to create drought-related air pollution policies and forge partnerships that assure equitable access to clean air.
- Health departments should utilize CDC's Building Resilience Against Climate Effects (BRACE) Framework to estimate the burden of health outcomes and vulnerabilities associated with extreme drought conditions and exposure to drought-related poor air quality.

Resources

- 1 Centers for Disease Control and Prevention. (2017, March 7). When Every Drop Counts: Protecting Public Health During Drought Conditions | EHS | CDC. Retrieved from <https://www.cdc.gov/nceh/ehs/publications/drought.htm>
- 2 The Water Project. (n.d.). E. Coli - Health Implications in Recreational and Drinking Water. Retrieved from <https://thewaterproject.org/water-scarcity/health-implications-of-e-coli>.
- 3 Centers for Disease Control and Prevention. (n.d.). Salmonella Homepage | CDC. Retrieved October 2, 2019, from <https://www.cdc.gov/salmonella/index.html>.
- 4 Environmental Protection Agency. (n.d.). Water Recycling and Reuse | Region 9: Water | US EPA. Retrieved from <https://www3.epa.gov/region9/water/recycling/>.



DROUGHT



ASSESSMENT

EH professionals identify, assess, and help recommend solutions for drought vulnerabilities.

- Complete drought vulnerability and risk assessments to analyze the threats from potential drought hazards to the population, infrastructure, and environment.

POLICY DEVELOPMENT

EH professionals support community preparedness efforts to address drought through policy.

- Create action plans to adapt to extreme drought conditions and address the causal factors of droughts.
- Design and develop proper water recycling features to reduce health impacts and risks from infectious diseases.

ASSURANCE

EH professionals have an essential role in protecting the health of the public by ensuring drought preparedness, management plans, and recovery actions.

- Include all forms of media to alert the agriculture sector of drought conditions and water shortages, such as phone, social media, television, and print media.
- Disseminate water quality and water reduction alerts to the community.

- Academic EH programs should develop a highly skilled and well-trained workforce to monitor drought conditions and impacts on human and EH.
- EH professionals should undergo the Environmental Health Training in Emergency Response (EHTER) training. The Awareness Level training focuses on EH responders' role to prepare for, respond to, and recover from air pollution emergencies, and the Operations Level involves hands-on operation practice and response to simulated events.

- 5 United Nations Convention to Combat Desertification. (n.d.). Capacity Development to Support National Drought Management Policies. Retrieved from https://www.ais.unwater.org/ais/pluginfile.php/571/mod_page/content/88/UNCCD.pdf.
- 6 Environmental Protection Agency. (2019, May 30). Water Management Plans and Best Practices at EPA. Retrieved from <https://www.epa.gov/greeningepa/water-management-plans-and-best-practices-epa>.
- 7 "WHO Calls for Urgent Action to Protect Health from Climate Change – Sign the Call." World Health Organization, World Health Organization, 14 Apr. 2016, www.who.int/globalchange/global-campaign/cop21/en/.