AIR QUALITY

NEHA PROGRAMS

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.[8] 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

More than 4 in 10 americans live in counties that have monitored unhealthy air pollution.[1]

8 million annual deaths globally due to air pollution.[2]

Air pollution increases the risk of heart disease death by 5-15%.[3]

Exposure to traffic-related pollutants increase the risk of asthma hospitalizations.

The annual cost associated with asthma morbidity and mortality due to mold $16.8 billion.[7]

Allergy season has increased by 19 days in the southwest and 16 days in the Northwest U.S.[5]

Over the past decade as many as 2,500 people annually died prematurely in the U.S. from short-term wildfire smoke exposure.[6]

POOR AIR QUALITY HARMS HEALTH

Climate change worsens the quality of the air we breathe due to increased carbon dioxide in the atmosphere. Increased carbon dioxide causes heat and pollutants to be trapped below. Greenhouse gases also increase surface temperatures, which additionally decreases air quality. Health effects caused by poor air quality contribute to school and work absences, along with decreased workplace productivity. Residents that live in cities with higher air pollution have more mortality and shorter life expectancy. Air pollution is made up of a complex mixture of smoke, ground-level ozone, particulate matter, carbon dioxide, carbon monoxide, and more. The poor air quality caused by climate change can affect many aspects of human health. For example:

- Exposure to pollutants can cause respiratory and cardiovascular illness, and overexposure can lead to death
- Carbon monoxide poisoning from generator use as a result of power outages
- Worsening health disparities among people of color and people in impoverished communities
- Increase in allergens due to the longer pollen seasons
- As drought increases in frequency and severity, dust levels also increase
- As temperature rise, use of air conditioners in homes and businesses also increase, causing increases in air pollution from fossil fuel-based electricity production

	AIR POLLUTION	MOLD	POLLEN	WILDFIRE SMOKE
Climate Impacts	*Carbon dioxide and monoxide, particulate matter and ground level ozone reduce air quality*	*Growth of fungus caused by flooding disasters*	*Pollen seasons are growing longer and more intense due to warmer temperatures*	*Burning trees, building materials and homes effect health through smoke and gases*
Health Outcomes	*Trigger heart and lung diseases*	*Allergic reactions and trigger asthma*	*Allergic reactions and allergy induced asthma*	*Trigger heart and lung diseases*
Environmental Health Workforce Role	*Monitor and regulate emissions*	*Educate and respond following a flood/storm*	*Widely disseminate air quality and pollen alerts*	*Assess soil after a wildfire to monitor contamination of effected areas*

ENVIRONMENTAL HEALTH WORKFORCE ROLE

AIR QUALITY

EH professionals play an essential role in preventing and reducing public health risks of air quality. Poor air quality increases the need for preparedness and response from EH professionals. An EH professional specializing in air quality has the appropriate education and training needed to support local air quality impacts and protect human health.

In order to address the health threats of air quality and pollution, EH professionals must be able to:

- Investigate and assess exposure to hazardous air pollution agents
- Provide recommendations, interventions, and policies to protect and control air pollution hazards to health
- Maintain air pollution monitoring systems
- Implement existing pollution controls to meet the standards
- Facilitate cross-sectoral engagement including community members, air pollution control districts, climate change coalitions, and industry to gain insight and support from these local leaders
- Interpret air quality and health research utilizing science
- Understand the impact of air quality on health outcomes
- 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 air quality impacts due to their in-depth knowledge of the relationship between air pollution, health, and the environment.

ASSESSMENT

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

- Assess local air pollution data and investigate current community health needs by identifying air hazards and the effect on human health. For example, monitoring daily pollen count or particulate matter and contributing factors.
- Analyze poor air quality and the effect on health by identifying causal factors and following up through planning interventions for vulnerable communities.

POLICY DEVELOPMENT

EH professionals support community efforts to address air pollution through policy.

- Weave climate and air quality health adaption into current organizational structures and implement mitigation practices to reduce air pollution.

ASSURANCE

Environmental health professionals have an essential role in protecting the public's health by ensuring local air pollution preparedness, management plans, and recovery actions.

- Include all forms of media to alert the public of poor air quality, such as phone, social media, television, and daily paper media.
- Integrate governments, the environmental health workforce, and community member's involvement and focus on environmental health for all.

RECOMMENDATIONS

- EH organizations should support work to mitigate climate impact by reducing greenhouse gas emissions and enforcing air quality regulations.
- Health departments should support efforts to create air pollution policies and forge partnerships that assure equitable access to clean air.
- Health departments should utilize CDC's Building Resilience Against Climate Effects Framework to estimate the burden of health outcomes and vulnerabilities associated with exposure to poor air quality.
- Academic EH programs should develop a highly skilled and well-trained workforce to monitor air quality.
- Members of the EH workforce must collaborate to share information and resources on air pollution adaptation and mitigation activities; for example, EH resources can be found at neha.org.
- 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.

Resources

1 American Lung Association. (2019). State of the Air. Retrieved June 26, 2019, from https://www.lung.org/assets/documents/healthy-air/state-of-the-air/sota-2019-full.pdf.

2 World Health Organization. (2019, June 19). Air pollution. Retrieved from https://www.who.int/airpollution/en/

3 (Brook et al., 2009)

4 EPA, 2008: Review of the Impact of Climate Variability and Change on Aeroallergens and Their Associated Effects. EPA/600/R-06/164F. 125 pp., U.S. Environmental Protection Agency, Washington, D.C.

5 Climate Central. (2019, March 27). POLLEN PROBLEMS: Climate Change, the Growing Season, and America's Allergies. Retrieved from https://www.climatecentral.org/news/report-pollen-allergies-climate-change

6 Brown, M. (2019, June 25). Smoke from US wildfires boosting health risk for millions. Retrieved from https://www.apnews.com/903ca717a11f44de9f007844f05f5279

7 Mudarri, D. H. (2015). Valuing the Economic Costs of Allergic Rhinitis, Acute Bronchitis, and Asthma from Exposure to Indoor Dampness and Mold in the US [Review]. Journal of Environmental and Public Health,2016, 11-12. Retrieved from https://irp-cdn.multiscreensite.com/c4e267ab/files/uploaded/Valuing the Economic Costs of Allergic Rhinitis_Allergic Bronchitis and Asthma from Exposure to Indoor Dampness and Mold in the US_2016.pdf

8 "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/.