The National Environmental Health Association (NEHA) represents more than 7,000 governmental, private, academic, and uniformed services sector environmental health professionals in the U.S., its territories, and internationally. NEHA is the profession's strongest advocate for excellence in the practice of environmental health as it delivers on its mission to build, sustain, and empower an effective environmental health workforce.

Policy Statement on Climate Change
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Climate change is affecting environmental health—the quality of air, food, and water in the communities where we live, work, and play (Centers for Disease Control and Prevention [CDC], 2020). The National Environmental Health Association (NEHA) recognizes climate change as a world-wide environmental health problem that has health and safety impacts to individuals and communities. Environmental health professionals improve and protect the public's health and create and sustain healthy communities. It is NEHA's responsibility to support the capacity of environmental health professionals to address the health impacts of climate change with risk assessment, adaptation, and mitigation planning.

NEHA's Policy Statement
NEHA supports federal, state, and local funding for local and state health departments and environmental and health agencies to provide technical assistance, education, and programs to accomplish the following:

- Conduct risk assessments and establish plans to anticipate risks for adaptation and build resilience for future generations. Using the audience segmentation techniques identified by Maibach and coauthors (2008) will help professionals improve individual risk perceptions.

- Incorporate green space and other technologies into the built environment to help reduce urban heat island effects since urban areas are usually warmer than adjacent rural areas (Seto, Güneralp, & Hutyra, 2012; U.S. Global Change Research Program [USGCRP], 2016). In the short- term, heat waves pose the greatest threat to the environment and human health due to the impaired air quality and heat-related illnesses in vulnerable populations (elderly, those with chronic diseases, low income, outdoor laborers, etc.) (Watts et al., 2015).

- Conserve and replenish water sources as they are limiting factors in all ecological cycles on Earth. In many regions, groundwater sources have been depleted and flooding and drought can affect both the level and quality of remaining surface water sources (Schewe

et al., 2014). In the intermediate-term (months or years), climate change poses increased risks of prolonged droughts with associated effects on crops and water resources. Droughts also significantly increase wildfire risks.

- Address the need for more funding and local data. In the long-term (decades or more), climate change poses an increased risk of changes in the area and volume of sea ice; of significant changes in sea levels, water temperatures, and water chemistry; of increased coastal flooding and erosion; of expansion of the range of disease vectors; and of the geographic spread of tropical diseases to new areas.

NEHA supports the following policies and actions for environmental health professionals:

- Take a multidisciplinary and global approach to addressing climate change. The Commission on Health and Climate Change has produced 10 policy recommendations that can serve as a broad reference base for environmental health professionals to make incremental change at their associated level of community (Watts et al., 2015).

- Create a "whole community" engagement approach to engage and empower the entire community, all levels of government, nongovernmental organizations, nonprofits, faith-based organizations, and private sector industries established through the Federal Emergency Management Agency and the Department of Homeland Security (Federal Emergency Management Agency, 2011).

- Strengthen community resilience to climate related events. Due to local culture and capacity, there is no single solution to climate change adaptation, but there are resiliency frameworks, such as this one developed by the U.S. Department of Health and Human Services, which can be used by environmental health professionals (Chandra et al., 2011).

- Collect baseline rates of disease and examine exposure-outcome associations to quantify the impacts of climate change on health and determine direct attribution (Marinucci, Luber, Uejio, Saha, & Hess, 2014). Climate change hazards may exacerbate existing health disparities over time due to the changing density and demographics of a population. Support surveillance activities to monitor the changes over time. The U.S. Environmental Protection Agency's (U.S. EPA) 30 Climate Change Indicators can help professionals to better examine and assess these risks in their own communities (U.S. EPA, 2020a).

- Reduce barriers, share best practices, and evaluate metrics through stakeholder engagement strategies similar to those seen in "A Comprehensive Review of Climate Adaptation in the United States" (Bierbaum et al., 2013).

- Work with Centers for Disease Control and Prevention's Climate and Health Program to assist health departments develop climate ready states and cities. Its five-step process framework, Building Resilience Against Climate Effects, anticipates impacts, assesses associated health vulnerabilities, and creates adaptive capacity to reduce exposures (Managan et al., 2014).

Analysis

In 1997, NEHA adopted a climate change position paper that acknowledged the gravity of climate change, as well as the need for legislation and research, concerted action and cooperation, and environmental and public health professionals to be a resource (Radtke, Gist, & Wittkopf, 1997). Since then, additional evidence of climate change has been documented and the seriousness of the policy debate over climate change has increased. This policy statement continues to address these objectives in addition to others.

This policy statement reviews current information on the status of climate change with particular emphasis on the implications for environmental and public health. It is intended to be used as a basis for environmental health professionals and their colleagues in related fields to initiate discussions within their communities in regard to the potential impacts and vulnerabilities of climate change (Radkte et al., 1997). Environmental health professionals are vital in developing climate change mitigation and adaptation measures.

NEHA recognizes climate change as a world-wide environmental health problem that may be caused in part by human influences. Climate change can cause serious health and safety impacts to individuals and communities. While sometimes referred to as "global warming," climate change is identified as any significant change in climate trends and measures lasting for an extended period of time, such as changes in temperature, precipitation, or wind patterns (U.S. EPA, 2020a). Greenhouse gases (carbon dioxide from burning coal, oil, and natural gas; nitrous oxide; and methane) in the atmosphere that absorb solar radiation, emitting it back to the Earth's surface, play a significant role in triggering the climate changes observed in recent decades (U.S. EPA, 2020b).

The direct risks of climate change include extreme changes in weather, such as heat waves, storms, floods, and droughts. These may vary across geographic regions and populations, directly impacting the quality of air, food, and water in the communities where we live and work (CDC, 2020). Indirect risks are changes in the biosphere: food availability, air and water pollution, land use changes, and ecological changes. Changes in the physical environment will also put stress on social dynamics and population health (Watts et al., 2015). When these direct and indirect effects interact with social dynamics—health is impacted. The number of people who are at risk is amplified by the distribution of population, population density, and demographic changes (e.g., the distribution of age, gender, and socioeconomic status of people in a particular area) (Watts et al., 2015).

The 2016 Climate and Health Assessment (USGCRP, 2016) explains the impacts of climate change on human health giving scientific evidence for the relationship between the impacts and associated outcomes: temperature-related death and illness, air quality impacts, extreme weather events (droughts, fires, storms, flooding), vectorborne disease, water-related illness, mental health, food safety/nutrition/distribution, and populations of concern. Populations of concern are

those that are disproportionately vulnerable, such as low income, migrants, children, communities of color, indigenous peoples, older adults, pregnant women, and those with disabilities and/or preexisting medical conditions (USGCRP, 2016). In addition, the 2014 National Climate Assessment identifies the risks for 10 particular regions within the U.S. (USGCRP, 2014). Knowing these risks and decreasing vulnerabilities to them can be accomplished through joint collaboration and support efforts within and between regions (Watts et al., 2015).

NEHA and its Climate Change Committee recognize that many policy issues must be addressed by society to effectively mitigate climate change, but increasing focus on community engagement will help address climate change vulnerabilities and create resiliency from the "bottom-up." NEHA advocates for national, state, and local policies, regulations, research, and resources that will enhance the ability of environmental health professionals to mitigate, adapt, and prevent the environmental and health impacts of climate change and protect public health.

Justification

According to the World Health Organization, climate change will adversely affect health over the next several decades with some health effects already being felt in the U.S. Federal health care expenditures could increase due to climate-related impacts (U.S. Government Accountability Office, 2015). One example already occurring is the increase in frequency and severity of extreme heat events and the implications for human health (USGCRP, 2016). These health effects include increased respiratory and cardiovascular disease, as well as injuries and premature death (CDC, 2020).

The U.S. average temperature has increased by 1.3 °F to 1.9 °F since 1895 with most of the increase happening since 1970 (increase is not geographically uniform) (USGCRP, 2016). The percentage of people diagnosed with asthma has increased in the U.S. from 7.3% in 2001 to 8.4% in 2010 (CDC, 2020). An annual U.S. average estimates 65,299 emergency visits for acute heat illness during the summer months, which is an underestimate of heat-related visits (USGCRP, 2016).

U.S. deaths from temperature extremes based on death records from 2006–2010 found approximately 670 deaths per year resulting from extreme heat (USGCRP, 2016). Several extreme temperature events in the U.S. have led to increases in deaths, such as Kansas City and St. Louis in 1980, Philadelphia in 1993, Chicago in 1995, and California in 2006 (USGCRP, 2016). The number of deaths associated with temperature is usually greater than those recorded as temperature-related in medical records since they often do not record how heat exacerbates the cause of death, which is usually a stroke or a heart attack. For example, excess deaths during the 1995 Chicago heat wave—nearly 700—exceeded the number of deaths recorded as heat-related on death certificates—465 (USGCRP, 2016). The European heat wave in 2003 caused the most heat-related deaths, as it was estimated to have resulted in 30,000–70,000 premature deaths (USGCRP, 2016).

The benefits outweigh the economic consequences of delaying the implementation of climate change mitigation and adaptation policies. It will be costly either way, but the costs of delaying action is more costly as higher temperatures and higher CO_2 concentrations continue, as well as delays in policies that are implemented later will need to be more stringent and therefore more costly in future years (Furman & Podesta, 2014).

The key points to consider when determining the cost benefits include the following:

- Immediate action may reduce the cost of meeting climate targets. Mitigation costs increase by about 40% for each decade of delay.

- Delayed action may create substantial economic damages—0.9% of the estimated 2014 U.S. gross domestic product is approximately $150 billion and the next increase of one degree in mean annual temperature would incur an additional estimated annual cost of 1.2% of global output. These costs would incur year after year because of the damage caused by additional climate change as a result from delayed action (Furman & Podesta, 2014).

- Increases in change in the climate increases the need to act. Melting ice sheets causes sea levels to rise. Methane is released from thawing permafrost, which then accelerates global warming. These and other changes could have massive consequences and costs (Furman & Podesta, 2014).

- Enacting meaningful change in climate policy is a kind of climate insurance. Paying mitigation costs now reduces the odds of large-scale changes in climate. Climate policy is also an investment in cleaner air, energy security, and other benefits difficult to monetize like biological diversity (Furman & Podesta, 2014).

Addressing climate change can be an overwhelming and daunting task, but when all individuals in a community engage, prepare, and collaborate on effective climate change strategies, then partnerships and solutions arise. Evaluating baseline opinions, values, core beliefs, and identities of a community's diverse population will allow environmental health professionals to better understand how and where behavior change can produce maximum results. Promoting long-term planning for climate change is important. Communities must create and be examples of more efficient and sustainable lifestyles, such as using active and mass transportation, reducing waste, and conserving energy and water.

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