

Preparing for the Health Impacts of Climate Change in the Northeast



Temperature-Related Death and Illness

During extreme heat events, nighttime temperatures in the region's big cities are generally several degrees higher than surrounding regions, leading to higher risk of heat-related death. In urban areas, the hottest days in the Northeast are also often associated with high concentrations of urban air pollutants including ground-level ozone.

Extreme Events

Much of the historical development of industry and commerce in New England occurred along rivers, canals, coasts, and other bodies of water, these areas often have a higher density of contaminated sites, waste management facilities, and petroleum storage facilities that are potentially vulnerable to flooding. As a result, increases in flood frequency or severity could increase the spread of contaminants into soils and waterways, resulting in increased risks to human health. When coupled with storm surges, sea level rise can pose severe risks of flooding, with consequent physical and mental health impacts on coastal populations.

Water-Related Illness

Increased soil erosion and agricultural runoff—including manure, fertilizer, and pesticides—are linked to excess nutrient loading of water bodies as well as possible food safety or public health issues from food and waterborne infections. Warmer winters are expected to increase pressure from weeds and pests, demand for pesticides, and therefore the risk of human health effects from increased chemical exposures.

Food Safety, Nutrition and Distribution

Increased soil erosion and agricultural runoff—including manure, fertilizer, and pesticides—are linked to excess nutrient loading of water bodies as well as possible food safety or public health issues from food and waterborne infections. Warmer winters are expected to increase pressure from weeds and pests, demand for pesticides, and therefore the risk of human health effects from increased chemical exposures. Increasing prevalence of shell disease in lobsters and several pathogens in oysters have been associated with rising water temperatures; other pathogens that infect shellfish pose risks to human health.

Mental Health and Well-Being

When coupled with storm surges, sea level rise can pose severe risks of flooding, with consequent physical and mental health impacts on coastal populations.

Populations of Concern

Older or sicker individuals and those persons who are without access to air conditioning, living in older homes, socially isolated, or working outdoors are considered particularly vulnerable to the effects of heat. The combination of heat stress and poor urban air quality can pose a major health risk to vulnerable groups: young children, elderly, socially or linguistically isolated, economically disadvantaged, and those with preexisting health conditions, including asthma. Similarly, poor, elderly, historically marginalized, recent immigrants, and linguistically or socially isolated individuals as well as those populations with existing health disparities are more vulnerable to precipitation events and flooding due to a limited ability to prepare for and cope with such events.



CDC-Funded Jurisdictions

Maine Department of Health and Human Services

Extreme heat, extreme cold, and vector-borne diseases are the primary hazards addressed through Maine's program. The program has developed school and community-based educational interventions, as well as extreme-weather response plans for state and local agencies. Maine's program has developed a real-time data dashboard to track cases of tick borne disease, such as Lyme disease, and tick-related emergency department visits, which helps health officials understand the spread of ticks and how a changing climate affects the tick's lifecycle. The program is also working with the University of Maine Climate Change Institute to develop fine-scale climate models specific to Maine that inform local response planning.

Massachusetts Department of Health

The Massachusetts Department of Public Health (MDPH) Bureau of Environmental Health (BEH) has assisted local and state partners in preparing for the health impact of climate change, with a focus on inland flooding, heat, air quality, sea level rise, and extreme weather events. MDPH/BEH activities include a previous needs assessment of local health departments, development of a Climate Vulnerability Mapping Tool, risk-based assessment of climate related impacts (e.g., asthma, waterborne disease), identification of intervention and adaptation strategies, and evaluation of local climate and health action strategies using a Health Impact Assessment (HIA) framework. MDPH also works collaboratively with state agency partners to assess climate hazards and recommend specific adaptation strategies.

New York City Department of Health and Mental Hygiene

The New York City Climate and Health Program (NYC CHP) focuses on the health impacts of current and future climate-related hazards, primarily, extreme heat, extreme cold, and power outages. The program relies on several approaches to analyze the magnitude of these impacts and which populations and communities are most at risk to these impacts, develop, promote, or evaluate climate resilient policies and interventions, and communicate climate-health risk messages. In addition, the program works to ensure that health is a consideration in larger, multi-sectoral planning or resiliency initiatives by helping to prioritize local communities for climate mitigation and adaptation investments. To achieve program success, the program relies heavily on partnerships with internal sister agency programs.

New York State Department of Health

New York State (NYS) has primarily focused on the health impacts of heat, flooding, and heavy precipitation events. These climate hazards are being addressed through the development and implementation of adaptation activities in coordination with program partners. These adaptations include development of Heat and Health county profile reports, working with the National Weather Service to revise the thresholds for issuing heat advisories, providing air conditioners to vulnerable populations, creating a mapping application to display cooling center locations, tracking heat stress hospitalization and emergency department visits annually, publishing lessons learned from the response to Hurricane Sandy, and helping local governments take action to reduce greenhouse gas emissions and adapt to a changing climate.

Maryland Department of Health

The Maryland Climate Change Health Adaptation Program provides a health focus to climate response efforts across the state, through technical assistance, development of epidemiologic tools and data products, and education and outreach. The program primarily addresses extreme heat, air quality and respiratory illness, water-borne diseases, and extreme weather events, such as hurricanes and tornadoes. The program includes education and outreach for school age youth (K-12), minority groups, community health workers, and informal healthcare networks, as well as a climate change training curriculum for community health workers and extension workers.

New Hampshire Division of Public Health Services

The New Hampshire Climate and Health Program works to build community resilience to threats such as extreme heat and injury, flooding and injury, tick habitat, and vector-borne disease, with a focus on the elderly, lower-income communities, and individuals spending time outdoors. The program has funded interventions addressing home emergency preparedness among older adults and tick-safe practices among outdoor counselor and campers. The program has also created a heat-safety flyer for the elderly population, provides updates to the state-level extreme heat response plan, and funds the testing of shellfish in warming waters to reduce the risk of food-borne disease.

Rhode Island Department of Health

The Rhode Island Climate Change and Health Program primarily addresses community resilience, extreme heat, air quality and respiratory illnesses, flooding, sea level

rise, and vector-borne diseases. Vulnerable populations such as seniors, youth, outdoor workers, and residents in the urban core are the focus of the program's work. The program's adaptation activities include extreme heat messaging to outdoor workers, Lyme disease outreach to local communities, climate resiliency in the urban core communities, and climate preparedness in long-term care and assisted living senior housing.

Vermont Department of Health

The Vermont Climate and Health Program addresses key climate-related health risks including heat illnesses, poor air quality and allergenic pollen, vector-borne diseases, water-borne diseases, cyanobacteria, mental health impacts, and extreme weather events, such as flooding and storms. The high-risk populations include older adults, low income households, and residents with pre-existing health conditions. Some of the program's main adaptation activities include increasing hot weather preparedness, promoting home weatherization, and providing energy-saving shade trees. Many of the program's activities help to provide health co-benefits as part of statewide climate mitigation efforts focused on the transportation, housing, forestry, and energy sectors.

Vermont also received an additional mini-grant grant to implement two new Health in All Policies (HiAP) strategies: 1) Integrate heat-related climate, health, vulnerability, and adaptive capacity data into Vermont's Environmental Public Health Tracking Data Explorer. 2) Implement accountability structures for hot weather preparedness and response through a "Hot Weather Workgroup" of multi-sectoral partners.

Boston Public Health Commission

The Boston Public Health Commission developed heat awareness materials and translated them into ten languages to reach particularly at-risk populations and reduce health impacts during heat waves.

Seneca Nation of Indians

The Seneca Nation of Indians (located in what is now called New York) is working to address impacts from flooding and storm water, including prevention of vector-borne disease, by incorporating health into existing collaborative climate work. The mini-grant project focuses on health communication.

