

## Public Health Impacts of Climate Change in Pennsylvania

The purpose of this document is to familiarize the public with the anticipated public health impacts of climate change threats. Pennsylvanians should be aware of the numerous avenues by which climate change may negatively impact their daily lives, including their health and well-being.

The table below outlines the anticipated public health impacts of five major climate change threats in Pennsylvania, identifies populations bearing a disproportionate vulnerability to these climate change threats, lists programs at the Pennsylvania Department of Health (DOH) related to these threats, and provides resources to learn more about the relationships between climate and health.

The public health impacts included here are predominately limited to physical outcomes. It is important to recognize that climate change poses great risks to both physical and mental health. Climate change induces perpetual stress that can manifest in adverse mental health outcomes, such as dementia, schizophrenia, post-traumatic stress disorder, depression, and anxiety. Although the mental health effects of climate change are only briefly mentioned in each public health impacts section below, they will be undoubtably wide-ranging and significant. Additionally, since research detailing specific mental health outcomes of particular climate change threats and events is still developing, we chose to group the mental health effects together. DOH is committed to ensuring that mental health will be a key part of our climate change response strategy.

Environmental justice communities, areas classified by low-income and minority populations, are disproportionately vulnerable to all climate change threats and their corresponding public health impacts. Due to historical environmental racism and structural determinants of health, people of color, geographically isolated populations, and low socioeconomic populations are more likely to live near environmental hazards, suffer from pre-existing conditions, and possess fewer resources to mitigate or safely respond to climate change effects.

The list of public health impacts is not fully comprehensive, but rather outlines those most prominent and wide reaching. References are provided below the table.

**Air Pollution & Allergens:** Excess of suspended air particles from natural and artificial sources with potentially harmful health effects.

**Extreme Weather Events:** Severe meteorological conditions or occurrences (e.g., tornadoes, hurricanes, and blizzards).

**Pathogen & Vector Distribution:** Expanded geographical spread of an infectious agent (pathogen or vector). Examples of pathogens include bacteria, viruses, microorganisms. Examples of vectors include mosquitos, ticks, and fleas.

**Precipitation Extremes:** Intense and frequent or minimal and scarce rain events (e.g., flooding and drought).

**Temperature Extremes:** Intense heat or cold/freezing weather conditions.

Climate Change Threats (in alphabetical order)	Public Health Impacts	Disproportionately Vulnerable Populations	Current DOH Programs	Learn More!
<b>Air Pollution &amp; Allergens</b>	<ul style="list-style-type: none"> <li>• New or worsened respiratory tract illnesses due to deforestation, increased vehicle emissions, and temperature inversions</li> <li>• More intense and frequent allergy symptoms due to increased ground-level ozone</li> <li>• Declines in cardiovascular health due to air pollution's role in prematurely aging blood vessels and clogging the coronary artery</li> <li>• Increases in cancer incidence due to a rise of toxic emissions circulating in the air</li> <li>• Preterm birth and low birth weight due to air pollution's disruption in development</li> <li>• Accelerated and premature death</li> <li>• New or exacerbated mental health conditions</li> </ul>	<ul style="list-style-type: none"> <li>• Small children</li> <li>• Older adults</li> <li>• Residents living in EJ areas</li> <li>• Pregnant persons</li> <li>• Outdoor workers &amp; athletes</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Asthma Control Program</a></li> <li>• <a href="#">Health Assessment Program</a></li> <li>• <a href="#">Environmental Public Health Tracking Program</a></li> <li>• <a href="#">Cancer Program</a></li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">How Climate Change Affects Your Health – Air Quality</a></li> <li>• <a href="#">Climate Change Decreases the Quality of The Air We Breathe</a></li> <li>• <a href="#">Tropical Deforestation and Global Warming</a></li> </ul>
<b>Extreme Weather Events</b>	<ul style="list-style-type: none"> <li>• Rise in respiratory and cardiovascular illnesses due to wildfire smoke</li> <li>• Disruption in access to health care services due to damaged transportation routes</li> <li>• Food supply shortages and malnutrition due to contamination via stormwater runoff and power outages</li> <li>• Increase in carbon monoxide poisoning due to improper use of portable generators during storms</li> <li>• Death and hospitalizations from extreme weather-related injuries</li> <li>• New or exacerbated mental health conditions</li> </ul>	<ul style="list-style-type: none"> <li>• Small children</li> <li>• Older adults</li> <li>• Residents living in EJ areas</li> <li>• Populations experiencing homelessness</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Emergency Preparedness and Response</a></li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Disaster Information</a></li> <li>• <a href="#">How Climate Change Affects Your Health – Extreme Weather</a></li> <li>• <a href="#">Eat Safe Food After a Power Outage</a></li> <li>• <a href="#">Pennsylvania Emergency Management Agency</a></li> </ul>

<p><b>Pathogen &amp; Vector Distribution</b></p>	<ul style="list-style-type: none"> <li>• Rise in gastrointestinal symptoms and skin irritations from increased harmful algal blooms (HABs)</li> <li>• Expansion of geographic spread of vectors carrying diseases, such as Lyme disease and West Nile virus</li> <li>• Increases in bacteria-related food poisoning</li> <li>• Rise in water-borne diseases due to land development waste, pesticides, fertilizer, and animal waste polluting water sources</li> <li>• Rise in food-borne diseases (for example, due to higher mercury concentrations in seafood)</li> <li>• Rise in vector-borne diseases due to increased contact between humans and wildlife and the spread of invasive species via new agricultural practices, such as overgrazing and land conversion</li> <li>• New or exacerbated mental health conditions</li> </ul>	<ul style="list-style-type: none"> <li>• Small children</li> <li>• Older adults</li> <li>• Residents living in EJ areas</li> <li>• Pregnant persons</li> <li>• Agricultural and outdoor workers</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Division of Infectious Disease Epidemiology – Vector-Borne Diseases</a></li> <li>• <a href="#">Environmental Health Capacity Program – Harmful Algal Bloom Project</a></li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Tick Prevention</a></li> <li>• <a href="#">Lyme Disease</a></li> <li>• <a href="#">HABs</a></li> <li>• <a href="#">Climate Impacts to Agriculture: Weeds, Diseases, and Pests</a></li> </ul>
<p><b>Precipitation Extremes</b></p>	<ul style="list-style-type: none"> <li>• Increases in respiratory tract illnesses, such as asthma and pneumonia from mold in flooded buildings and increased suspended particulates from dry soil conditions</li> <li>• Spread of water-borne diseases due to contaminated water supply from sewage overflow and post-flooding standing water</li> <li>• Declines in food and water supplies due to disruptions in agriculture and water systems</li> <li>• Forced migration due to inhabitable housing and flooded environments</li> </ul>	<ul style="list-style-type: none"> <li>• Small children</li> <li>• Older adults</li> <li>• Residents living in EJ areas</li> <li>• Populations experiencing homelessness</li> <li>• Residents living in flood-prone areas</li> <li>• Agricultural workers</li> <li>• Private well owners</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Bureau of Family Health</a></li> <li>• <a href="#">Emergency Preparedness and Response</a></li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Getting Ready for Flooding Emergencies</a></li> <li>• <a href="#">Floodwater After a Disaster or Emergency</a></li> <li>• <a href="#">Be Ready! Floods</a></li> <li>• <a href="#">Health Implications of Drought</a></li> <li>• <a href="#">Drought Impacts on Public Health</a></li> </ul>

	<ul style="list-style-type: none"> <li>• Malnutrition due to low crop yields from limited growing seasons</li> <li>• Rise in infectious diseases due to poor hygiene as a result of water conservation attempts</li> <li>• Death and hospitalizations from injuries, drownings, and electrocutions</li> <li>• New or exacerbated mental health conditions</li> </ul>			
<b>Temperature Extremes</b>	<ul style="list-style-type: none"> <li>• Rise in cases of dehydration, muscle cramps, and nausea due to extreme heat</li> <li>• Rise in cases of frostbite and hypothermia due to extreme cold</li> <li>• New or exacerbated cardiovascular, respiratory, and cerebrovascular diseases due to the physical strain extreme temperatures put on the body</li> <li>• Malnutrition due to extreme heat hindering agricultural productivity</li> <li>• Injuries or death from slipping on ice or snow or ice-related vehicle crashes</li> <li>• New or exacerbated mental health conditions</li> </ul>	<ul style="list-style-type: none"> <li>• Small children</li> <li>• Older adults</li> <li>• Residents living in EJ areas</li> <li>• Populations experiencing homelessness</li> <li>• Individuals with pre-existing chronic conditions</li> <li>• Outdoor workers &amp; athletes</li> <li>• Residents living in urban areas</li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Bureau of Family Health</a></li> <li>• <a href="#">Environmental Public Health Tracking Program</a></li> </ul>	<ul style="list-style-type: none"> <li>• <a href="#">Extreme Heat Can Impact our Health in Many Ways</a></li> <li>• <a href="#">Hot Weather Safety Tips</a></li> <li>• <a href="#">Avoid, Spot, Treat: Heat Stroke and Heat Exhaustion</a></li> <li>• <a href="#">How Climate Change Affects Your Health – Rising Temperatures</a></li> </ul>

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