MASSACHUSETTS EXTREME HEAT Resource Guide

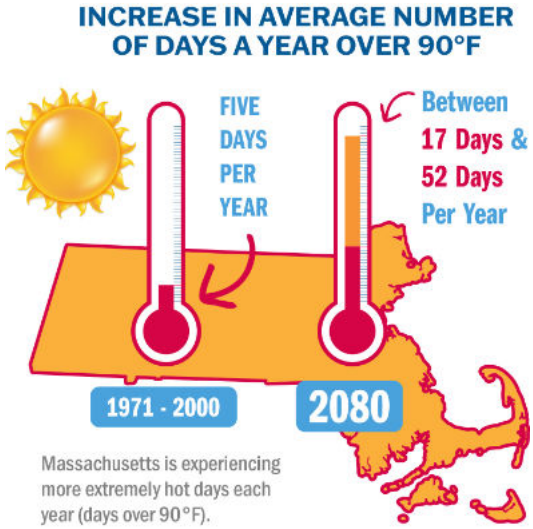
Information to help prepare for extreme heat at the local level.

DEPARTMENT OF PUBLIC HEALTH
Bureau of Climate and Environmental Health

Version 2.0 | Updated April 29, 2025
Visit **Extreme heat | Mass.gov**

Table of Contents/Introduction

As our climate changes, Massachusetts will experience more extremely hot days each year (days over 90°F). An increase in extremely hot weather raises the risk of heat-related illness and can complicate chronic diseases. It also means more multi-day heatwaves that can harm health. Because hot air holds more moisture, our summers are becoming increasingly humid. **Extreme heat**, alone or in combination with poor air quality, can have disproportionate impacts on vulnerable residents, including children, older adults, pregnant people, people living in housing without cooling options or in areas with limited green space, and those with chronic health conditions.



This guide by the Massachusetts Department of Health (DPH) Bureau of Climate and Environmental Health (BCEH) provides resources for health officials on why extreme heat is on the rise and the health effects of extreme heat. It also provides some tools to help local health officials mitigate the health risks and hazards related to extreme heat.

This document includes information from our DPH partners like the Bureau of Community Health and Prevention (BCHAP), state partners like the Department of Labor Standards and the Massachusetts Emergency Management Agency (MEMA), and federal partners like the Centers for Disease Control and Prevention (CDC) and the United States Environmental Protection Agency (EPA). BCEH plans to update this guide regularly to capture new resources as we learn about them and improve upon and expand existing resources.

Key Facts About Climate Change and Extreme Heat

Extreme heat days are substantially hotter than average summer days, with higher temperatures and sometimes high humidity.

Extreme temperature is the leading cause of weather-related mortality in the U.S., having claimed more lives over the past 10 years than any other weather-related event. In Massachusetts, at least 30 heat-related deaths have occurred over the past decade, and the frequency of these deaths is increasing as the climate changes.

People inside buildings that lack cooling systems (e.g., homes, schools, and workplaces), working outdoors, engaging in outdoor recreational activities, or experiencing homelessness can be at risk for excessive heat exposure. Although anyone can suffer from a heat-related illness, some people are at greater risk than others. Those at greater risk include older adults, pregnant individuals, young children, and those with chronic health conditions.

Extreme Heat in Massachusetts

Climate change models predict that Massachusetts will continue to experience an increase in the number of days over 90°F during the summer. Massachusetts is vulnerable to **extreme heat** because of its densely populated urban areas with less tree cover and green space. Rural areas are also likely to experience the effects of heat waves during longer and more frequent heat events because they often have less green infrastructure (like parks or green roofs) to help regulate temperature and provide shade. Public transportation to available cooling spaces may also be limited in rural areas. Excessive heat exposure is projected to contribute to more heat-related illnesses and, in severe cases, deaths.

A heat wave is usually defined as a period of three or more consecutive days of extreme heat.

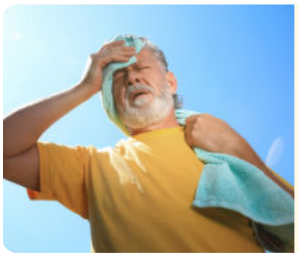
Average temperatures in Massachusetts have risen almost 3.5°F since the beginning of the 20th century.

The number of warm nights in Massachusetts has steadily increased since 1995, with the highest multiyear average (since 1950) occurring during the 2015–2020 period.

Between 1971-2000, Massachusetts experienced 4 days with temperatures over 90°F. By 2050, Massachusetts is expected to experience 10 to 28 such days. About 25 days will be above 90°F for inland areas and about 19 more days will be above 90°F for coastal areas.

Climate Change, Extreme Heat, and Health

Higher heat, increased humidity, and longer and more frequent heat waves can lead to life-threatening conditions if proper precautions are not taken. The body works harder during extreme heat events to maintain a normal temperature. Higher temperatures contribute to poor air quality, increasing the number of days with air quality alerts. Heat events can increase pollen levels and contribute to mold growth, both known to be allergy and asthma triggers. Studies have shown that mortality during heat waves is higher on high air pollution days. Hot weather can lead to more flooding by making the soil drier (reducing its capacity to absorb rainwater) and by holding more moisture in the air. Both conditions increase risks for vector-borne diseases like Eastern Equine Encephalitis (EEE). Warm temperatures also affect food safety by increasing bacteria levels.



The human body responds to heat by increasing sweating and blood circulation close to the skin's surface to maintain an ideal core body temperature.

Extreme heat can overwhelm the body's temperature control mechanisms and cause core body temperature to rise. This results in discomfort, fatigue, heat exhaustion, cramps, edema, heat stroke (hyperthermia), and death.

Extreme temperatures can worsen chronic conditions, including respiratory, cardiovascular, and kidney diseases, and diabetes-related conditions.

Poor air quality during extreme heat events can negatively affect respiratory and cardiovascular systems, which can trigger asthma and heart attacks. Increases in pollen levels can also worsen allergies and other respiratory illnesses.

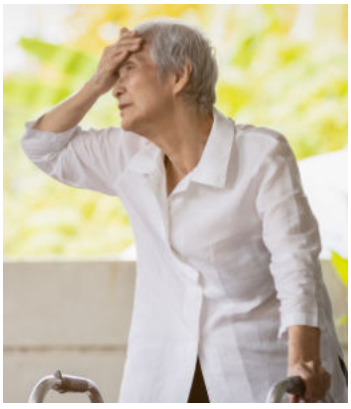
Vulnerable Populations

Demographics

- Infants and young children under 5
- People over 65, especially those who live alone
- Pregnant people
- People of color due to systemic racism
- People with limited English proficiency
- People with low household incomes

Living Experience

- People without adequate shelter or who are unhoused
- People with medical conditions such as heart, lung, or kidney disease
- People with cognitive limitations, mental illness, or dementia
- People who have mobility constraints, are confined to bed, or are housebound
- People with disabilities that impair heat awareness or tolerance



Environment

- People without air conditioning
- People working or exercising outdoors
- People working in hot indoor environments or wearing protective clothing or equipment
- People living or working in "heat islands" - areas where buildings and pavement retain heat

Check this link for more info:

Heat and Medications - Guidance for Clinicians (cdc.gov)

Heat and older adults (cdc.gov)

Understanding Unhealthy Heat

The First is the Worst

In Massachusetts, **extreme heat** is becoming a more serious health concern as summer temperatures rise year after year. Data show that the first heat wave of the season is often the worst for people's health, leading to more heat-related illnesses and hospital visits than later heat waves. This is because our bodies need time to adjust to the heat. That is why it's important to prepare early—before the first hot days arrive.

When it is hot, it is usually humid

In Massachusetts, heat often comes with high humidity, which makes hot weather feel even hotter. This "feels like" temperature is known as the heat index. It usually tracks the actual temperature closely, rising and falling together about 97% of the time. Because temperature data is easier to access and understand, it's a reliable way to track heat risk.

Unhealthy Heat Threshold

When BCEH compared heat waves over several prior summers, our data show that when the temperature rises to 85°F or more for three days in a row, there is a significant increase in emergency room visits and heat-related illnesses. This Unhealthy Heat Threshold (85°F for 3 or more days) predictably identifies significant health impacts.

DPH Heat Monitoring Thresholds

Green (Below 78°F)
No significant heat-related health risks

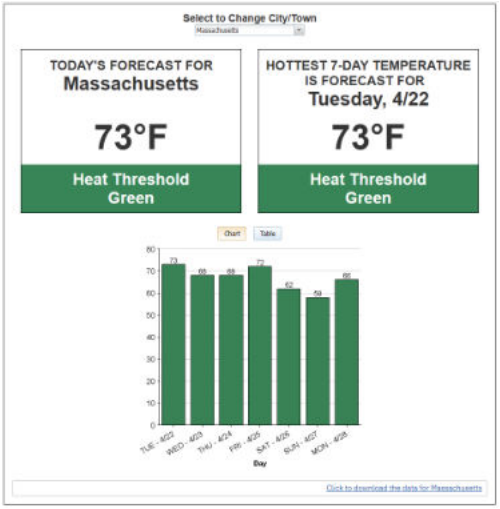
Yellow (78°F - 84°F)
Low threat; heightened awareness encouraged

Orange (85°F or above for 1-2 days)
Medium threat level, urging at-risk individuals and communities to begin implementing heat mitigation measures

Red (85°F or above for 3 or more consecutive days)
High threat, triggering a Community Heat Alert and activation of response efforts. This level of heat is linked to increased emergency department (ED) visits statewide.

Unhealthy Heat Alerts and Forecast Page

Temperatures of 85°F for 3 or more days in a row will trigger unhealthy heat alert notifications for healthcare professionals, local governments, and other community and state organizations so they can plan, prepare, and act. Our Unhealthy Heat Forecast page has a status banner that tracks daily and weekly heat levels in each city and town in the state. The banner turns red when an unhealthy heat alert is active to show when high temperatures may pose a greater risk for vulnerable people like children, pregnant individuals, older adults, and those with chronic medical conditions.

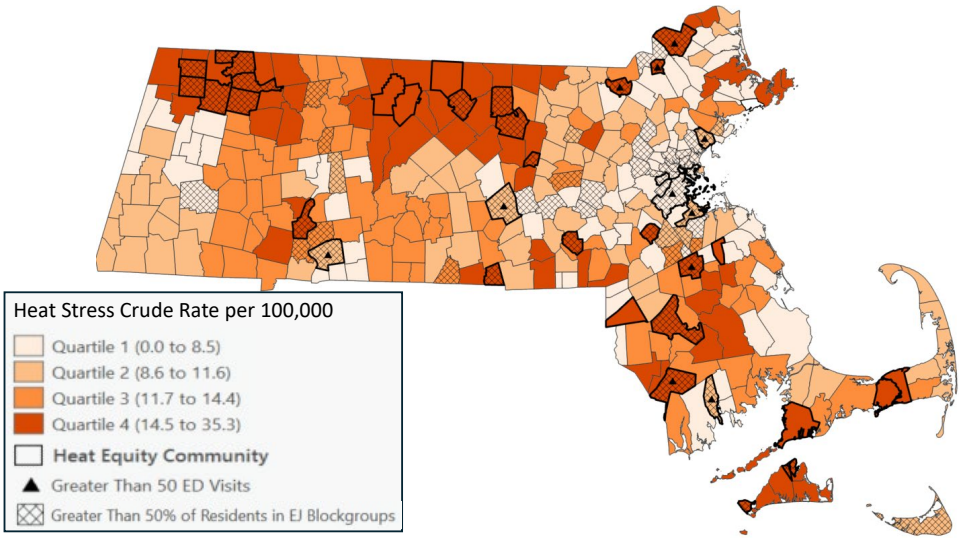


Unhealthy Heat Forecast | Mass.gov

Community Engagement and Heat Equity

To better understand which communities are most affected by heat, BCEH looked at several years of emergency room data related to heat illness. For each city and town, we calculated the number of emergency room visits for heat-related illness. In rural areas with fewer people, we grouped towns together into rural clusters to better study heat impacts.

Our goal was to find and support communities that face the most risk during hot weather. We call these places **Heat Equity Communities**. These are cities and towns where many people have gone to the hospital for heat-related illness and where many residents live in **Environmental Justice (EJ)** neighborhoods or in areas with other health and environmental challenges (AHEM communities).



A city or town is considered a Heat Equity Community if:

- It had a high number or rate of emergency visits for heat illness, and
- At least 50% of its population lives in EJ neighborhoods or it is an AHEM-designated community.

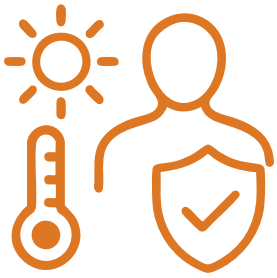
Using this approach, DPH identified 37 Heat Equity Communities across Massachusetts. These communities are in all parts of the state—urban and rural, coastal and inland—and include a wide range of populations and needs.

By identifying these communities, we can focus on equity, make sure resources are going where they're needed most, and better protect people from heat-related illness.

Featured Resources for Unhealthy Heat Preparedness

Personal Safety and Health Actions

Learn how to stay cool, hydrated, and recognize signs of heat-related illness to protect yourself and others during periods of unhealthy heat.



Extreme Heat Events

Learn how increasing summer temperatures in Massachusetts are impacting health and discover practical steps to stay safe during extreme heat events. For more information, download the Extreme Heat Events fact sheet:

Extreme Heat Events (PDF) | **(DOCX)**

What should I do during an extreme heat event?

A factsheet from the U.S. Environmental Protection Agency (EPA) and the Centers for Disease Control and Prevention (CDC) identifies steps that you can take now to prepare for an extreme heat event.

What should I do during an extreme heat event? (PDF) | **(DOCX)**

Prevent and treat heat-related illness

Learn to recognize the signs of heat-related illnesses like heat cramps, exhaustion, and heat stroke. This fact sheet outlines symptoms, recommended actions, and when to seek medical care to help prevent serious health outcomes during hot weather.

Prevent and treat heat-related illness (PDF) | **(DOCX)**

Outdoor Air and Environmental Quality

High temperatures can worsen air pollution and allergens—these resources help you monitor air quality and reduce exposure during heat events.

Poor Outdoor Air Quality

Poor outdoor air quality can cause health problems, especially in people with asthma, lung disease, or heart disease, and can worsen asthma and allergy symptoms. For more information, download the fact sheet:

Poor Outdoor Air Quality | Mass.gov
(available in 15 languages)

Extreme Heat and Poor Air Quality

Climate models predict that climate change will lead to an increase in extreme heat events and associated air pollution episodes in Massachusetts.

Extreme Heat and Poor Air Quality | Mass.gov

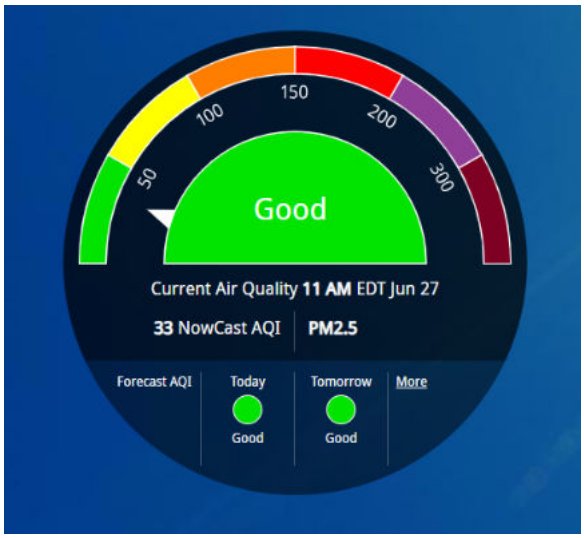
MassDEP's MassAir Online

Find air quality data and learn about long-term trends by accessing MassAir Online, Massachusetts Department of Environmental Protection's (MassDEP) air quality tracking system. It provides daily air quality updates and forecasts from data at more than 20 monitoring stations across the state.

Use the site or call (800) 882-1497 to learn about the air quality in your community.

MassAir (state.ma.us)

EPA AirNow.gov Website



The AirNow website and app highlight air quality in your local area and provide air quality information at state, national, and world views. AirNow's interactive map lets you zoom out to get the big picture or drill down to see data for a single air quality monitor. AirNow's Fire and Smoke map provides detailed, up-to-date information that can be critical to users experiencing smoke events.

AirNow reports air quality using the official U.S. Air Quality Index (AQI), a color-coded index designed to communicate whether air quality is healthy or unhealthy for you.

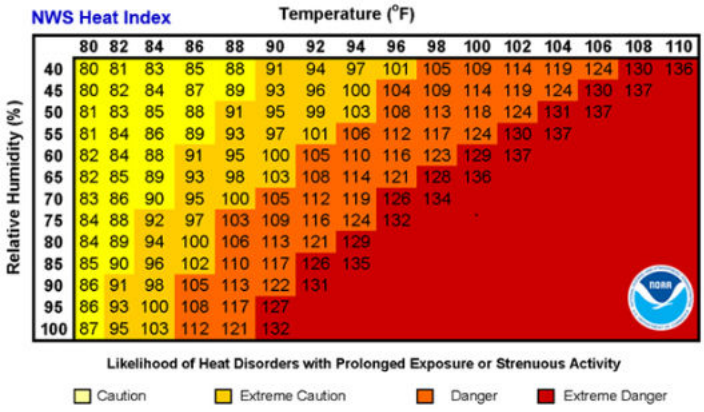
Airnow.gov

National Weather Service (NWS) Heat Index

The National Weather Service (NWS) uses several tools to assess the risk of heat stress, including the Heat Index, which measures how hot it feels by combining air temperature with relative humidity. This index helps inform official heat watches, warnings, and advisories. For example, a temperature of 96°F with 65% humidity results in a heat index of 121°F. Alerts are typically issued when the Heat Index exceeds 105–110°F for two or more days. Direct sun can raise the index by up to 15°F, and hot, dry winds can also increase danger.

Additional **NWS tools and charts** are available to help assess local risk.

Heat Forecast Tools | Weather.gov

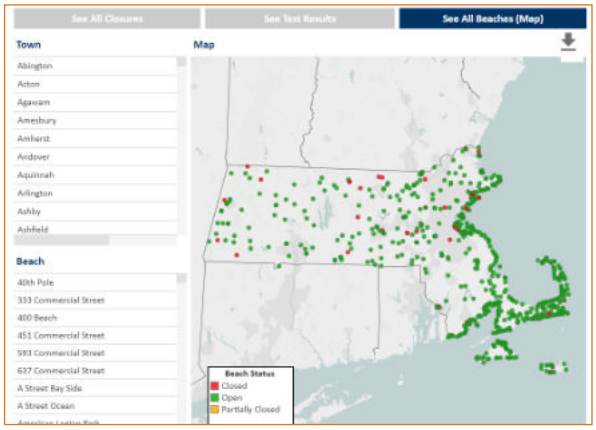


Recreation and swimming safety during hot and humid weather

Stay safe while enjoying outdoor activities and water recreation with resources on heat safety, pool operations, and preventing heat-related illness during play.

Interactive Beach Water Quality Dashboard

DPH's Interactive Beaches Dashboard provides water quality testing results for the current beach season. It will tell you which beaches are open or closed. If a beach is closed, do not swim or enter the water at that location to avoid the risk of illness.



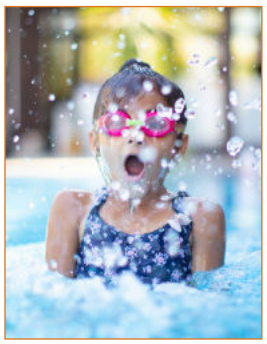
Interactive Beach Water Quality Dashboard | Mass.gov

Contact with Cyanobacteria

Climate change is increasing temperatures and heavy rains, leading to more cyanobacteria in lakes and ponds. Cyanobacteria can make people and animals sick. For more information, download the Cyanobacteria fact sheet below:

Contact with Cyanobacteria | Mass.gov

(available in 15 languages)



Extreme Heat - Best practices for public and semi-public pool operators

Stay safe while swimming—monitor heat risks, provide shade, and maintain water quality during heat waves.

Extreme Heat - Best practices for public and semi-public pool operators (PDF) | (DOCX)

Recreational Water Safety for Everyone

Multilingual safety tips for swimming, pool operation, and summer recreation.

Water safety for everyone | Mass.gov

(available in multiple languages)

Extreme Heat - Best practices for operators of recreational camps for children

Protect campers and staff through hydration, scheduling, shaded areas, and safe swimming guidance.

Extreme Heat - Best practices for operators of recreational camps for children (PDF) | (DOCX)

Short Term Residential Pool Rentals

Health and safety tips for residential pool owners who rent their pool for short-term use or make their pool available as part of a home rental.

Advisory On Short Term Residential Pool Rentals | Mass.gov

Recreational Water Quality

Climate change is changing rainfall and temperature patterns in ways that are increasing pathogens in beach water and occurrences of cyanobacterial harmful algal blooms (CyanoHABs).

Recreational Water Quality | Mass.gov

Car Safety

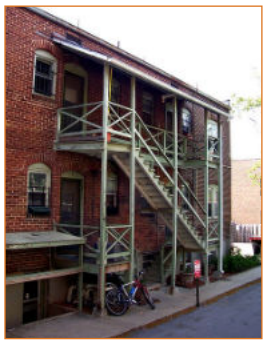
Leaving children and animals inside of a vehicle can be **very dangerous**. In the summer months in New England, the temperature in a closed car can rise quickly, and the vehicle can become a deadly place for a child or animal left in it, even for just a moment. Keep them safe:

- **Never leave children or animals alone in a parked vehicle**, even when they are asleep or restrained, and even if the windows are open.
- Always check inside the vehicle – front and back – before locking the door and walking away.
- If a child is missing, check your vehicle first, including the trunk.
- Do things to remind yourself that a child or animal is in the vehicle, such as placing your purse or briefcase in the back seat so you will check there when you leave the vehicle.
- Always lock your car and keep the keys out of children's reach.
- Ensure adequate supervision when children are playing in areas near parked motor vehicles.

If you see a child or animal alone in a hot vehicle, call the police. If they are in distress due to heat, **get them out as quickly as possible** and call 911 immediately.

Indoor Safety During Hot and Humid Weather

Hot, humid conditions indoors can be hazardous, especially without air conditioning. Find guidance on staying safe and keeping your home cool.



Housing – best practices for multi-unit residential rental properties with limited cooling options

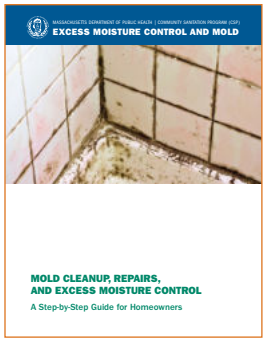
This guide offers strategies for housing operators to protect residents in buildings without central air conditioning. It includes tips on communication, access to cooling, and steps to reduce indoor heat risks during unhealthy heat events.

Housing – best practices for multi-unit residential rental properties with limited cooling options (PDF) | (DOCX)

Mold Growth

Climate change can lead to increased mold growth because of more moisture in our environment from heavy rain, flooding, and hotter, more humid summer weather. For more information, download the Mold Growth fact sheet below:

Mold Growth (PDF) | (DOCX)



Mold Cleanup, Repairs, and Excessive Moisture Control – A Step by Step Guide for Homeowners

Learn how to safely clean up mold, make essential repairs, and control moisture in your home with this easy-to-follow guide.

Mold Cleanup, Repairs, and Excessive Moisture Control – A Step by Step Guide for Homeowners (PDF) | (DOCX)

Workplace safety during hot and humid weather

Protect workers and maintain safe job sites with tips on water intake, breaks, clothing, and spotting heat stress symptoms.

Heat Illness - Tips from Massachusetts Department of Labor

Heat Prevention - Tips for Outdoor Workers | Mass.gov

Heat Illness - Heat Exhaustion Versus Heat Stroke

Heat Exhaustion Versus Heat Stroke | Mass.gov

Heat Illness - Heat Illness Prevention for Employers

Heat Prevention - Tips for Employers on Protecting Outdoor Workers | Mass.gov

Extreme Heat - Best practices for farm labor camp operators

Practical steps to protect farm workers from heat stress and ensure safe living and working conditions.

Best practices for farm labor camp operators (PDF) | (DOCX)

Extreme Heat - Best practices for correctional facilities

Guidance for protecting staff and incarcerated individuals from heat-related illness in correctional settings.

Best practices for Correctional Facilities (PDF) | (DOCX)

Extreme weather, drought, flooding, and other environmental hazards

Extreme heat can worsen drought and water quality issues, while sudden storms can lead to flooding, mold, and contamination—these resources help you understand and manage related health risks.

Extreme Weather

Climate change can make extreme weather events worse and more frequent, causing injury, illness, and property damage.

Extreme Weather | Mass.gov *(available in 15 languages)*

Extreme Weather Events

Extreme weather events are rare in Massachusetts but have become more frequent in recent years. Climate models predict continued increases in the intensity and frequency of extreme weather.

Extreme Weather Events | Mass.gov

Heat and Drought

Climate change can lead to rising temperatures and drought that can affect water quality and public health.

Heat and Drought | Mass.gov *(available in 15 languages)*

Contaminated Water and Related Hazards

Flooding of septic systems, sewage treatment plants, farms, homes, and businesses can lead to flood water contaminated by chemicals and other dangerous pollutants. Download the informative fact sheet at:

Contaminated Water and Related Hazards | Mass.gov

(available in 15 languages)

Water Contaminated with Fecal Bacteria

Learn about the dangers of water contamination from heavy rains and flooding, and find out how to protect your drinking water.

Water Contaminated with Fecal Bacteria | Mass.gov

(available in 15 languages)

Inland and Tidal Flooding

Climate change is increasing the risk of flooding in Massachusetts – especially in tidal or low-lying areas.

Inland and Tidal Flooding | Mass.gov *(available in 15 languages)*

Wildfire Smoke Events

Smoke from wildfires, even hundreds and thousands of miles away, may cause poor air quality in Massachusetts.

Wildfire Smoke Events | Mass.gov

Storm Fact Sheet

Get the facts about storms from the Bureau of Climate and Environmental Health.

Storm Fact Sheet | Mass.gov

Foodborne Illness

High temperatures increase the risk of foodborne illness—these resources offer guidance on safe food handling during heat.

Water and Shellfish Contaminated with Vibrio Bacteria

Climate change increases flooding risks, and higher ocean water temperatures can increase the amount of vibrio bacteria in coastal waters and cause illness.

Water and Shellfish Contaminated with Vibrio Bacteria | Mass.gov

(available in 15 languages)

Food-borne Illness

Learn how increasing summer temperatures in Massachusetts can affect food safety and impact health. Discover practical steps to stay safe during extreme heat events.

Food-borne Illness | Mass.gov

Ticks, mosquitoes, and vector-borne diseases

Warmer temperatures and longer summers increase tick and mosquito activity—learn how to reduce exposure and prevent disease during heat season.

Mosquitoes and Ticks

Learn what Massachusetts is doing to keep you safe – and ways you can protect yourself and your family – from mosquito and tick bites and the illnesses they can cause.

Mosquitoes and Ticks | Mass.gov

Massachusetts arbovirus update

Find local risk levels for Eastern Equine Encephalitis (EEE) and West Nile Virus (WNV) based on seasonal testing.

Mass. arbovirus update | Mass.gov

Ticks and Mosquitoes

Climate change is extending and intensifying warm seasons, increasing hot summer days and heavy rains, which in turn raises the risk of tick-borne diseases and mosquito activity.

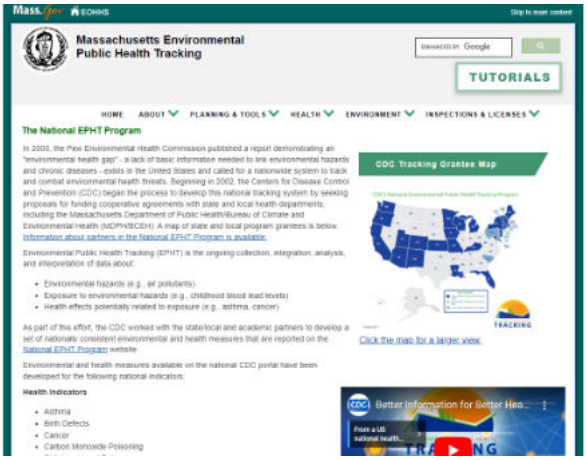
Ticks and Mosquitoes | Mass.gov

Community data tools

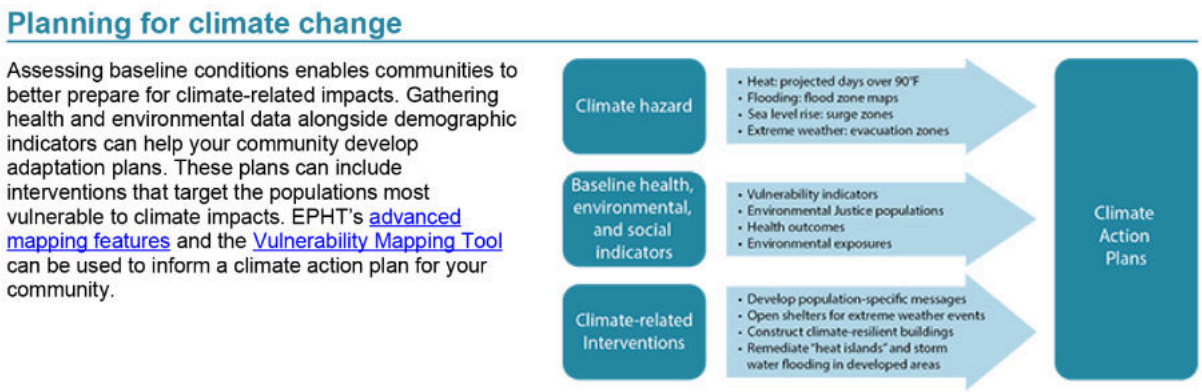
How to use the Massachusetts Environmental Public Health Tracking

Environmental Public Health Tracking (EPHT) is the ongoing collection, integration, analysis, and interpretation of data about:

- Community profiles with climate and heat stress hospitalization data
- Environmental hazards (e.g., air pollutants)
- Exposure to environmental hazards (e.g., childhood blood lead levels)
- Health effects potentially related to exposure (e.g., asthma, cancer)



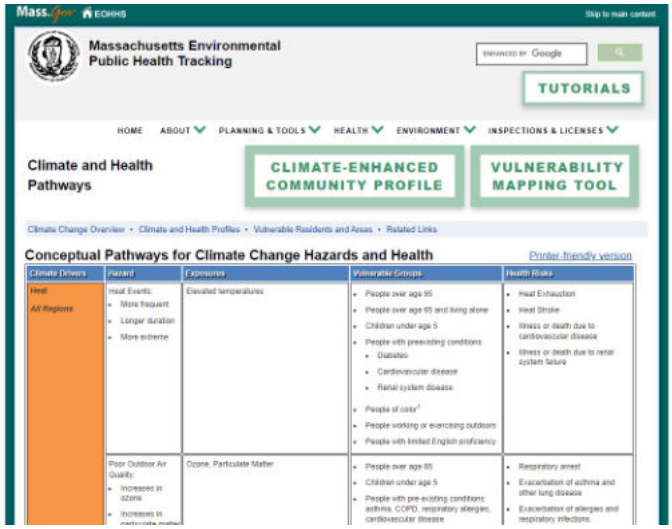
The EPHT website has tutorials on using the tools to get the most out of the data and information.



MEPHT | Massachusetts Environmental Public Health Tracking

Climate Change Hazards and Health

The EPHT website, which includes a vulnerability mapping tool, highlights how climate drivers and hazards (such as extreme heat and frequent rainfall) impact vulnerable populations and increase their risk from exposure to such climate events.



MEPHT | Climate and Health Pathways

Climate Enhanced Community Profiles

Public health data and climate projections, planning resources, anticipated health impacts from climate change, and considerations for reducing health disparities can be found for any community selected.

Community-Profile Report | Mass.gov