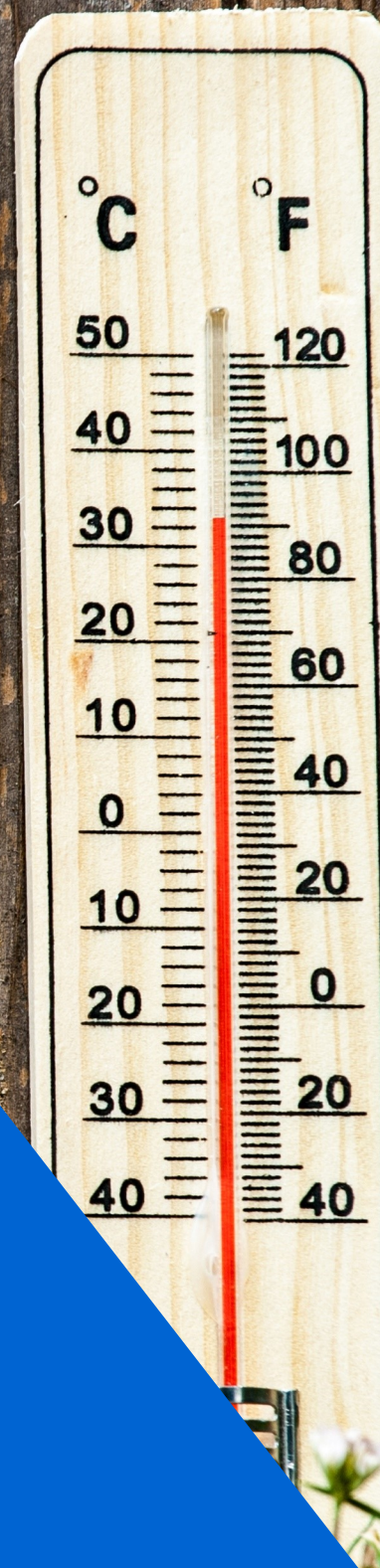


# EXTREME HEAT TOOLKIT

A planning guide for public health and  
emergency response professionals



## WISCONSIN CLIMATE AND HEALTH PROGRAM

Bureau of Environmental and Occupational Health



[dhs.wisconsin.gov/climate](https://dhs.wisconsin.gov/climate) | [dhsclimate@wi.gov](mailto:dhsclimate@wi.gov) | 608-266-1120

Wisconsin Department of Health Services | Division of Public Health | P-00632 (06/2025)



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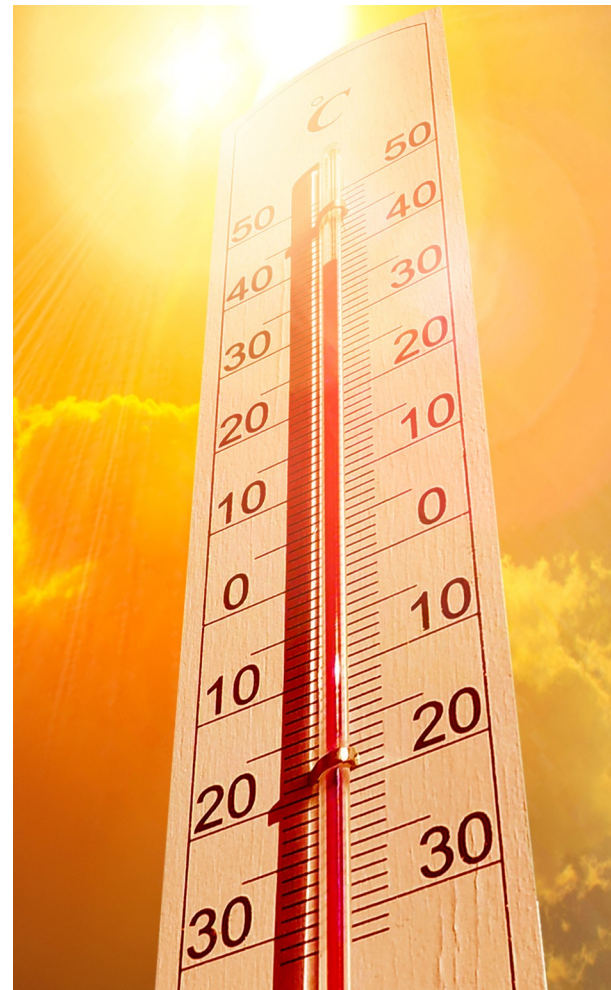
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# ACKNOWLEDGEMENTS

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# INTRODUCTION



## Purpose

This Extreme Heat Toolkit provides critical information for local governments, health departments, and citizens to prepare for and respond to extreme heat events. It includes background information, practical guidance, strategies, news releases for media, talking points, definitions, and useful reference materials. These resources can be adapted and distributed to inform residents impacted by extreme heat. For additional tools and information, refer to Appendix B: Additional Resources

## Background

Extreme heat is a significant threat to public health. Over the past 15 years, an average of eight Wisconsinites died each year with 134 total deaths, according to data from the Environmental Public Health Tracking Program at the Department of Health Services (DHS). In 2012, there was a high of 26 fatalities during a deadly heat wave. Nationally, an average of 700 people died annually from heat in the past 15 years.

Older adults, young children under five years of age, socially isolated individuals, outdoor workers, people with chronic conditions, pregnant people, and residents with low economic status are most likely to be impacted by extreme heat. These statistics highlight the importance of proactive heat preparedness for all communities.

**From 2009-2024<sup>1</sup>,  
134 Wisconsinites  
died from heat-  
related causes.**

## Climate Trends

Wisconsin's climate is becoming warmer and wetter. Since 1950, the state's climate has warmed 3 degrees Fahrenheit with winters warming the fastest. In addition, Wisconsin logged its hottest year on record in 2024. University of Wisconsin climate scientists created climate projections based on historical trends and scientifically validated models<sup>3</sup>, showing extreme heat events will become more frequent and intense in the future.

## Health Impacts

The increasing prevalence of extreme heat in Wisconsin poses significant public health risks, including:

- Heat illnesses, from heat stress to heat stroke.
- Respiratory diseases, including asthma exacerbations.
- Kidney and cardiovascular failure.
- Mental health impacts.

Emergency planning must consider heat-related needs, such as placement of cooling centers, transportation services, energy demand management, potential power outages, and clear public messages on heat dangers.

## Extreme Heat Response and Recovery Guidance

In Wisconsin, heat preparedness and response fall under the "Home Rule" principle, whereby local or county agencies—emergency management, health, or police and fire first responders—serve as the lead agency during an extreme heat event. The state will also assist and support local response when requested.



# DEFINITIONS

## Extreme Heat Event

A weather event with excessive heat and/or humidity conditions that have the potential to cause heat-related illnesses or fatalities.

An extreme heat event occurs when any of the following takes place:

- The National Weather Service issues an Extreme Heat Warning for at least 25% of Wisconsin's population.
- The Wisconsin State Emergency Operations Center is activated by predicted extreme heat.
- Wisconsin Department of Public Health regional offices or local and Tribal public health agencies request assistance with confirmed or suspected heat-related fatalities during a heat emergency.

## Heat-Related Fatality

A death directly caused by exposure to high temperature or exposure to high temperature is a significant contributing factor.

## Heat-Related Illness

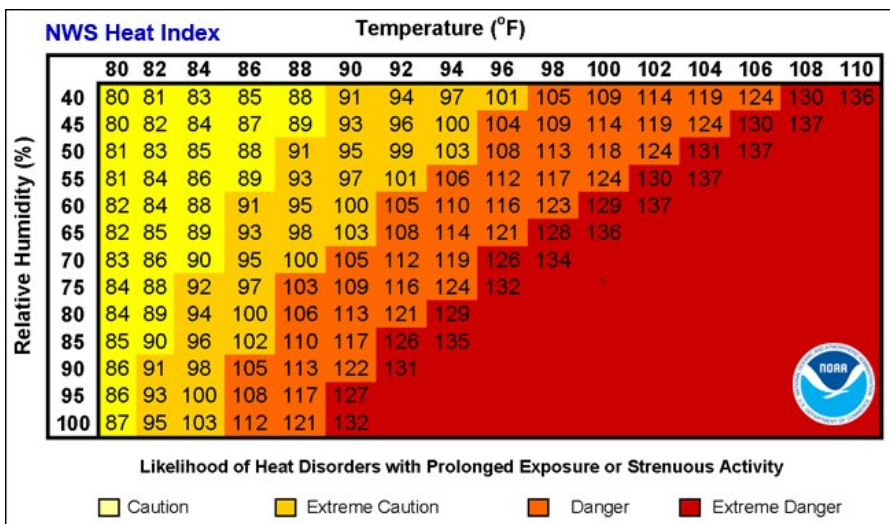
Physical symptoms that occur when the human body can't cope with high temperatures and humidity, making it hard to properly cool down.

## Heat Wave

A period of unusual and uncomfortable heat and humidity lasting more than two days

## Heat Index

A measure of how hot it really feels when relative humidity and actual air temperature factors are combined. The National Weather Service Heat Index chart shows how combined temperature and humidity impact health at different thresholds.







# Definitions of Heat Alerts

## National Weather Service Heat Wave Program in Wisconsin

### Outlooks

Outlooks: The outlooks are issued daily when the potential exists for an excessive heat event in the next three to seven days.

### Heat Wave

A period of unusually hot and humid generally lasting more than two days.

### Heat Advisory – Be aware

Issued when the heat index\* temperature is expected to be 100°F or higher. If the maximum heat index will be between 95-99°F for four days in a row, then an advisory will also be issued.

### Extreme Heat Watch – Be prepared

Heat watches are issued when conditions are favorable for an extreme heat event within the next one to three days.

### Extreme Heat Warning – Take Action

Issued when the maximum heat index temperature is expected to be 105°F or higher and not to go below 75°F for a heat index the morning prior or after. Check in with loved ones and neighbors during heat waves, especially if they last a few days. If the maximum heat index will be between 100-104°F for four days in a row, a warning will be issued.\*\*

\*The Heat Index (HI) or the "Apparent Temperature" is an accurate measure of how hot it really feels when the Relative Humidity (RH) is added to the actual air temperature.

\*\*For additional information about heat awareness, contact your local public health department, county emergency management director, or the National Weather Service.



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# Heat Illness Chart

## Heat Illnesses and Their Symptoms<sup>1,2,3</sup>

Medical Condition	Symptom(s)	Causes	Safety Tips
Heat rash	<ul style="list-style-type: none"><li>• Red cluster of pimples</li><li>• Blisters</li><li>• Itching</li><li>• Red rash on the skin that usually occur on the neck, chest, breast and/or groin</li></ul>	Excessive sweating that blocks sweat ducts	Remove the affected person from heat. Minimize exposure of skin to sun. Keep the affected area dry. Seek medical attention if rash does not improve.
Heat edema (swelling)	<ul style="list-style-type: none"><li>• Swelling in the ankles, feet and hands</li><li>• Body temperature normal or elevated core temperature up to 104° F</li></ul>	<ul style="list-style-type: none"><li>• Occurs in people who are not used to heat</li><li>• Increased blood flow to the skin in limbs</li></ul>	Elevate and apply compressive stockings to the affected limbs.
Heat stress (heat tetany)	<ul style="list-style-type: none"><li>• Respiratory problems, such as breathing difficulty</li><li>• Muscular problems, including spasms or numbness or tingling of muscles</li><li>• Body temperature normal or elevated core temperature up to 104° F</li></ul>	<ul style="list-style-type: none"><li>• Hyperventilation</li><li>• Respiratory alkalosis—the blood becomes too basic (pH is too alkaline)</li></ul>	Remove the affected person from the heat and advise the person to breathe slowly.

Chart courtesy of Minnesota Department of Health



Medical Condition	Symptom(s)	Causes	Safety Tips
<b>Heat cramps</b>	<ul style="list-style-type: none"> <li>• Muscle spasms</li> <li>• Abdomen, calf, thighs, and shoulder muscles most common</li> <li>• Body temperature normal or elevated core temperature up to 104° F</li> </ul>	<ul style="list-style-type: none"> <li>• Dehydration</li> <li>• Electrolyte deficiency</li> </ul>	Stop all activities, relocate to a cool location, rest and drink Electrolyte-containing fluids (sports drinks). Seek medical attention if symptoms persist.
<b>Heat exhaustion</b>	<ul style="list-style-type: none"> <li>• Profuse sweating</li> <li>• Weakness</li> <li>• Rapid breathing</li> <li>• Dizziness</li> <li>• Nausea/vomiting</li> <li>• Muscle cramps</li> <li>• Normal reasoning</li> <li>• Body temperature normal or elevated core temperature up to 104° F</li> </ul>	<ul style="list-style-type: none"> <li>• Dehydration</li> <li>• Electrolyte deficiency</li> </ul>	<ul style="list-style-type: none"> <li>• Stop all activities, relocate to a cool location, rest and drink electrolyte containing fluids.</li> <li>• It can be difficult to determine if someone has heat stroke and not exhaustion.</li> <li>• If symptoms do not quickly improve, or unable to oral rehydrate, seek medical attention.</li> </ul>
<b>Heat stroke</b>  <i>This is a life threatening condition due to extreme heat, usually occurring when the body temperature is greater than 104°F.</i>	<ul style="list-style-type: none"> <li>• Oral body temperature of 104°F and above</li> <li>• Often sudden onset of symptoms</li> <li>• Confusion or loss of consciousness</li> <li>• Rapid and strong pulse</li> <li>• Hot, red, dry skin</li> <li>• Headache</li> <li>• Dizziness</li> <li>• Nausea, vomiting</li> </ul>	<ul style="list-style-type: none"> <li>• Profound dehydration</li> <li>• Profound electrolyte deficiency</li> <li>• Body is unable to move heat through layers of skin to cool off.</li> <li>• Normal regulation of body temperature is no longer intact.</li> <li>• Mortality can be as high as 50%.</li> </ul>	<ul style="list-style-type: none"> <li>• Call 911 immediately if you see anyone with these symptoms and has a body temperature of 104° F and above.</li> <li>• While waiting for first responders, take the affected person to a cool shady area.</li> <li>• Immerse the person in cool water, spraying them with cool water while fanning the person vigorously, or placing ice packs on neck, underarm, and groin.</li> <li>• The person is unlikely to be able tolerate oral fluids.</li> </ul>

Chart courtesy of Minnesota Department of Health



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## Extreme Heat Tips

### **Never leave children, disabled people, or pets in a parked car, even briefly.**

On an 80°F day, the temperature inside a car—even with the windows cracked slightly—can reach 100°F in less than 10 minutes!

### **Keep your living space cool or seek shelter in a cool public place.**

If you have an air conditioner, use it! If you don't have an air conditioner and the temperature is above 95°F, using a fan will no longer prevent heat-related illnesses. You should go to a community space with air conditioning, called a cooling center. Call 211 or visit [221wisconsin.org](http://221wisconsin.org) to find a cooling center near you.

### **Slow down and limit physical activity.**

Plan outings or exercise for the early morning or after dark when temperatures are cooler.

### **Drink plenty of water and eat lightly.**

Don't wait for thirst, but instead drink plenty of water throughout the day. Avoid alcohol or caffeine, which can cause dehydration, and stay away from hot, heavy meals.

### **Wear lightweight, loose-fitting, light-colored clothing.**

Add a hat or umbrella to keep your head cool...and don't forget sunscreen!

### **Don't stop taking medication unless your doctor says you should.**

Take extra care to stay cool and ask your doctor or pharmacist for any special heat advice. Some medications can interfere with the body's ability to regulate temperatures and cool off in hot weather.

### **Take a cool shower or bath to cool yourself down.**

A cool shower or bath will actually work faster at reducing your body temperature than an air conditioner. Apply cold, wet rags to your head and neck to quickly cool down.

**For more info visit:** [readywisconsin.wi.gov/heat/](http://readywisconsin.wi.gov/heat/)



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## People at Higher Risk of Heat-Health Impacts

Higher risk groups	Risk Factor <sup>8-16</sup>
Adults over 65	May be less aware and adaptable to extreme heat.
People living alone	May not know who to call or when to call for help .
People with certain disabilities	May not know how to call for help or realize that they are in danger. May not be able to access transportation to get to a cooling center.
Children under 5	Sensitive to effects of extreme heat and must rely on others to keep them cool and hydrated.
People with chronic health conditions	Certain medical conditions can worsen the impacts of extreme heat, including those with cardiovascular or respiratory diseases, and mental illnesses (especially those taking certain psychiatric medications).
People experiencing homelessness	May have limited access to personal cooling protections (e.g., cool shower) and may be less aware of cooling centers.
Pets and service animals	Are dependent on owner for adequate protection from heat.
Outdoor and indoor workers, emergency responders	More likely to become dehydrated and get heat-related illness. May be unable to take breaks or access air conditioning and shade.
Non-English speakers	May not have access to formation about heat advisories, cooling centers, and health risks.
Pregnant people	May have higher core body temperature, increasing risk of heat illnesses that also affect the fetus.
Athletes	May be working hard in the heat and more likely to become dehydrated and get a heat-related illness.
People without air conditioning	May not have finances to use air conditioning or transportation to a cooling center.



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# Talking Points about Extreme Heat

Talking points and message maps for local health professionals

Message mapping is one of the most important risk communication tools that public health agencies can use to convey important information in a concise, easy-to-understand, and credible manner.



CONCISE



CREDIBLE



CLEAR

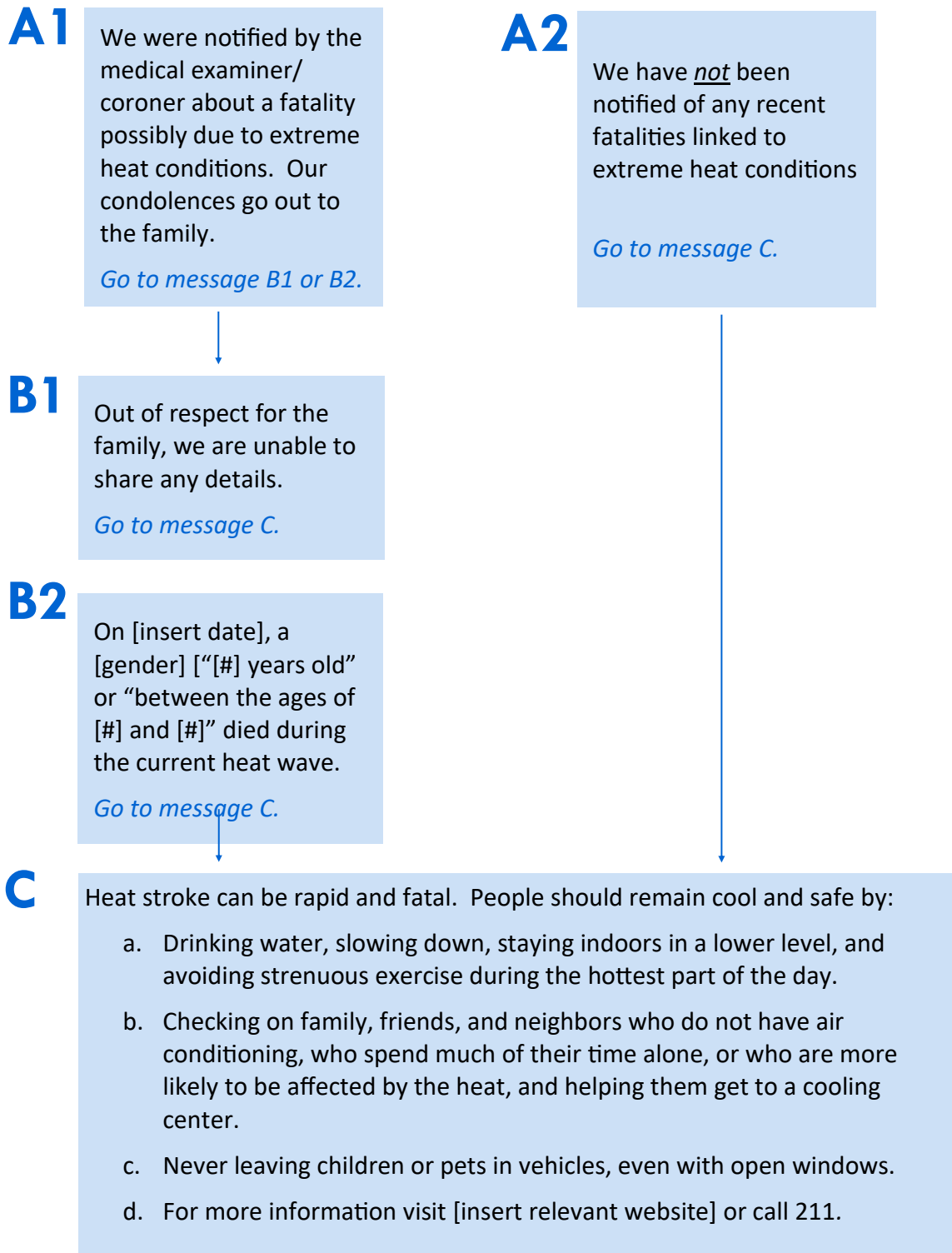
## General Guidelines for Completing a Message Map

- Stick to one to three key messages or one key message with three parts for each underlying concern or specific question.
- Keep key messages brief. The reader should ideally spend less than 10 seconds per line.
- Develop messages that are easily understood by the target audience. (Use a 6th to 8th-grade readability level for communications with the general public.)
- Place messages within a message set. The most important messages should occupy the first and last positions.
- Develop key messages that cite credible third parties.
- Use data sparingly and on only if it has impact.
- Use graphics and other visual aids to enhance key messages.
- Keep a positive tone. Messages should be solution-oriented and constructive. Try to balance negative messages with positive ones.
- Avoid unnecessary uses of the words no, not, never, nothing, none.



## TALKING POINTS FOR HEAT-RELATED FATALITY

If the media approaches you regarding a reported heat-related fatality in your jurisdiction, the following talking points may be useful. Start with message A1 or A2, and follow the instructions within that box.



The following is a message map that could be used when addressing the general public regarding heat-related safety.

**Main Message:**  
“Since [June/July/August #], there [has/have been #] heat-related fatalities in Wisconsin. To help you and your loved ones stay safe during this heat wave...”

<b>Key Messages</b> <i>Three key messages</i>	<b>Supporting Information</b> <i>Three pieces of supporting information for each one</i>
<b>Message 1</b>  Check on your neighbors to make sure they are okay, especially older adults and those living alone.	<b>Supporting Info 1</b> Older adults are less likely to sense and respond to high temperatures.  <b>Supporting Info 2</b> Those living alone can be isolated and unaware of the dangers posed by extreme heat.  <b>Supporting Info 3</b> When regularly checking on your neighbors or loved ones, look for signs of heat-related illness.
<b>Message 2</b>  If you must be out during the hottest time of the day, be alert for signs of heat illness.	<b>Supporting Info 1</b> Symptoms include feeling hot, weak, dizzy or faint, cramping/muscle spasms, nausea, or rapid pulse.  <b>Supporting Info 2</b> Protect yourself by limiting physical activities, drinking plenty of water, and wearing light loose-fitting clothing.  <b>Supporting Info 3</b> Call 911 or seek medical attention if you or someone you know develops heat illness.
<b>Message 3</b>  Hundreds of cooling centers are available to the public across Wisconsin.	<b>Supporting Info 1</b> Cooling centers are designated buildings with air conditioning where people can seek relief from the heat.  <b>Supporting Info 2</b> Call 211 to find the cooling center closest to you.  <b>Supporting Info 3</b> Ask 211 whether transportation is also available.







# Checklists for Extreme Heat

Long-term, short term, and response to extreme heat events

## LONG-TERM HEAT PREPAREDNESS CHECKLIST

- ☐ Identify extreme heat event partners and define their roles and responsibilities.
- ☐ Involve community organizations and other stakeholders in the response planning process (include medical examiner/coroner in this process).
- ☐ Develop a response plan, including but not limited to the following:
  - Cooling center plan that identifies and maps air conditioned locations. Ensure that cooling centers are evenly distributed throughout jurisdiction.
  - Transportation options to cooling centers (e.g., free buses). Consider the accessibility of cooling centers (e.g., for walkers and wheel chairs, and proximity to areas with higher risk people).
  - Contingency plans and strategies for power outages.
  - Local and state roles in the reporting process for heat-related fatalities.
- ☐ Monitor weather reports for summer months.
- ☐ Develop maps of priority populations, if feasible or use the Climate and Health Program's Heat Vulnerability Indices.
- ☐ Ensure that heat fact sheets are updated.
- ☐ Develop a database/list of facilities and organizations that serve populations that are more susceptible to extreme heat (e.g., social service agencies, senior living centers, daycare centers, schools, long-term care facilities, organized sports, construction companies, etc.) so that they can be immediately contacted of an impending extreme heat event.

# IMPENDING HEAT EVENT PREPAREDNESS CHECKLIST

- ☐ Notify local extreme heat partners.
- ☐ Alert contacts in database/list of facilities and organizations that serve priority populations.
- ☐ Update message map.
- ☐ Work with news media to alert public of the extreme heat event, health risks, and tips on recognizing symptoms and preventing heat-related illnesses.
- ☐ Activate transportation assistance program.
- ☐ Provide maps of cooling center locations and other cool places. (Get permission from owners first.)
- ☐ Consider extending hours at public pools and air-conditioned places.
- ☐ Consider suspending outdoor public events.
- ☐ Coordinate with service organizations to provide water to people experiencing homelessness and transportation to cooling centers or shelters.

# EXTREME HEAT EVENT RESPONSE CHECKLIST

- ☐ Notify local extreme heat event partners.
- ☐ Coordinate with medical examiner/coroner if heat fatality occurs.
- ☐ Continue to monitor weather and create a news release for media with safety tips and other relevant information.
- ☐ Activate cooling center plans.
- ☐ Continue promoting cooling center location, hours, and transportation options.
- ☐ Coordinate outreach to priority populations (e.g., e-mail to contacts in facilities database).
- ☐ Consider canceling, rescheduling, or implementing mitigation protections for outdoor public events.



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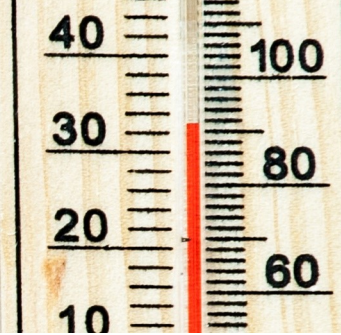
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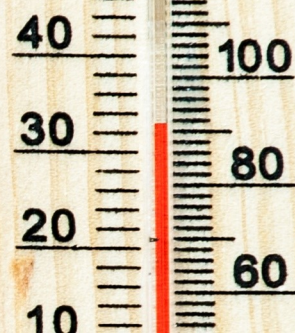


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# RESOURCES



**Wisconsin Department of Health Services (DHS)** – [www.dhs.wisconsin.gov/climate/weather/heat.htm](http://www.dhs.wisconsin.gov/climate/weather/heat.htm)  
**Summer Health Hazard Dashboard** – <https://www.dhs.wisconsin.gov/climate/summer-hazards.htm>  
**Heat Vulnerability Index** – <https://www.dhs.wisconsin.gov/climate/wihvi.htm>  
**Wisconsin Emergency Management (WEM)** – [www.readywisconsin.wi.gov](http://www.readywisconsin.wi.gov)  
**American Red Cross** – [www.redcross.org/prepare/disaster/heat-wave](http://www.redcross.org/prepare/disaster/heat-wave)  
**Heat Information Translated** – [www.redcross.org/prepare/disaster-safety-library](http://www.redcross.org/prepare/disaster-safety-library)  
**Heat Wave Safety Checklist** – [www.redcross.org/heatwavechecklist](http://www.redcross.org/heatwavechecklist)  
**Federal Emergency Management Agency (FEMA)** – [www.fema.gov](http://www.fema.gov) and [www.fema.gov/es/](http://www.fema.gov/es/) (Spanish)  
**Federal Centers for Disease Control and Prevention (CDC)** – <https://www.cdc.gov/climate-health/php/resources/protect-yourself-from-the-dangers-of-extreme-heat.html>  
**CDC HeatRisk Dashboard** – <https://ephtracking.cdc.gov/Applications/HeatRisk/>  
**National Integrated Heat Health Information System (NIHHIS)** – <https://www.heat.gov/>  
**National Weather Service Heat** –  
**Federal Environmental Protection Agency (EPA)** – <https://www.epa.gov/natural-disasters/extreme-heat>  
**Occupational Safety and Health Administration** – <https://www.osha.gov/heat>  
**List of Wisconsin Local Public Health Departments** – [www.dhs.wisconsin.gov/lh-depts/counties.htm](http://www.dhs.wisconsin.gov/lh-depts/counties.htm)  
**List of Wisconsin Tribal Health Directors** – [www.dhs.wisconsin.gov/lh-depts/contacts/tribal-health-directors.pdf](http://www.dhs.wisconsin.gov/lh-depts/contacts/tribal-health-directors.pdf)  
**List of County Building, Code, and Zoning Officials** – [www.wccadm.com/](http://www.wccadm.com/)  
**Refugee Health Information Network (RHIN)** – <http://rhin.org/default.aspx>

## SAMPLE HEAT RESPONSE PLAN

Lincoln County Health Department has generously shared their extreme heat communications and response plan for other health departments to use as a sample. Download the zip file of the plan components by visiting <https://drive.google.com/drive/u/1/folders/1iK6cyRQXf-HYG2u55k2rvTCh9Qz1ZidE> (Google Drive) and clicking the arrow at the top right of your screen to download.

If you can't access Google Drive from your agency or have any trouble downloading the files, please email [dhsclimate@wi.gov](mailto:dhsclimate@wi.gov) for assistance.