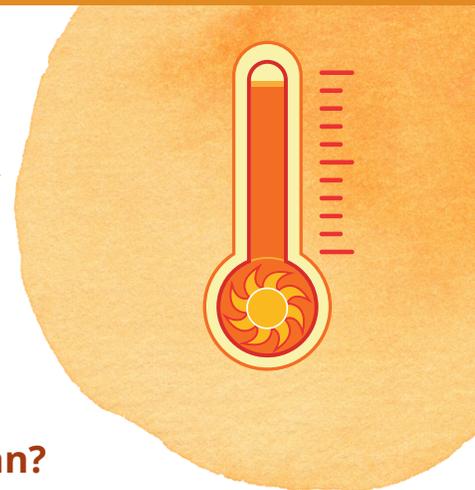


Extreme Heat and Health in Michigan: The Issue and Action Steps for Community Members

Why are environmental shifts important to public health?

Environmental shifts are altering weather patterns which could affect human health in direct and indirect ways, sometimes severely.^{3 5} Environmental shifts are one of the most serious public health threats facing us today according to the American Public Health Association and World Health Organization.^{1 2}

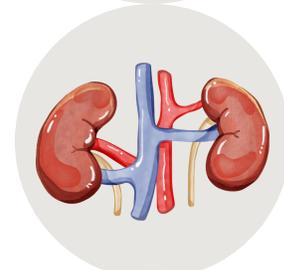
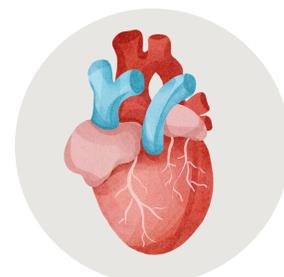


What heat-related health effects can we expect for Michigan?

Extreme heat will lead to increased hospitalizations due to heat exhaustion and heatstroke, wildlife loss from habitat changes, and increased levels of mosquito and tick populations that carry diseases like West Nile Virus and Lyme Disease.¹⁷

Health conditions that increase vulnerability to heat include:

- **Cardiovascular Disease (CVD):** CVD affects the heart and blood vessels. The body regulates temperature by widening and narrowing blood vessels to adjust blood flow. When people have CVD, their bodies may have difficulty responding to extreme heat.¹⁰
- **Kidney Disease:** Kidneys filter blood and control blood pressure, which is necessary for regulating body temperature. As a result, those with kidney disease are more vulnerable to the effects of extreme heat.¹⁰
- **Asthma:** Asthma affects both children and adults, making it difficult to breathe.⁹ Asthma is made worse with increasing temperatures. The Michigan 2012-2014 asthma hospital rate was 12.54 per 10,000 people.⁷

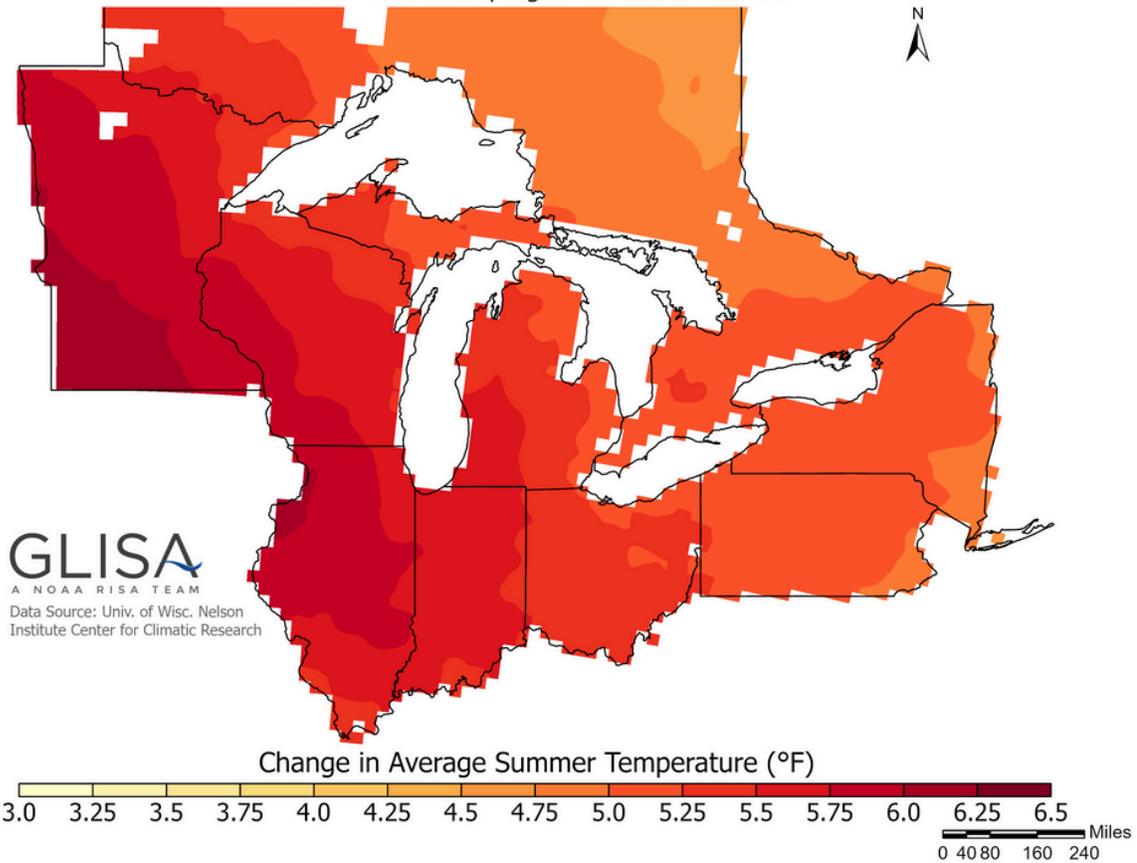




How are global weather shifts & extreme heat impacting Michigan?

Temperatures are rising and heat waves are becoming more frequent. As the map below shows, the change in average summer temperature across the Great Lakes area could increase by 3-6 degrees Fahrenheit.²

Projected Change in Average Summer Temperature by Mid-Century
 Period: 2040-2059 | Higher Emissions: RCP 8.5



In southeast Michigan there are many ‘urban heat islands’ – areas with significantly warmer temperatures due to buildings and hard surfaces. Green infrastructure can help address this challenge, along with greenhouse gas emissions and stormwater management, through redevelopment of vacant land.⁵



A recent study found that a combined heatwave and major power blackout could result in more than 1,400 deaths in Detroit. Environmental shifts are increasing the risk for more frequent and prolonged heatwaves, which put more strain on an already aging electrical grid. Leaving Detroit residents without power for days during a heatwave could expose thousands to an increased risk of heat exhaustion and heat stroke. ⁴

In this graphic you can see how a power blackout could lead to increased health risks during a heat wave. The houses in blue and yellow, classified as "no risk" or "caution" when the power is on, can change to "caution" or "extreme caution" when the power is off.

HEAT INDEX CLASS	EXPOSURE RISK
 NO RISK (< 27°C)	NONE
 CAUTION (27 - 32°C)	FATIGUE
 EXTREME CAUTION (32 - 41°C)	HEAT EXHAUSTION POSSIBLE, HEAT STROKE POSSIBLE
 DANGER (41 - 54°C)	HEAT EXHAUSTION LIKELY, HEAT STROKE POSSIBLE
 EXTREME DANGER (> 54°C)	HEAT STROKE LIKELY

Stone et al. (2021). Compound Climate and Infrastructure Events: How Electrical Grid Failure Alters Heat Wave Risk. *Environmental Science & Technology* 2021 55 (10), 6957-6964



Power off: health risks due to heat exposure increase

Power on: health risks due to heat exposure decrease

DETROIT



What Does this Mean for Me?

Here are some steps you can take when the weather gets hot to protect your health:

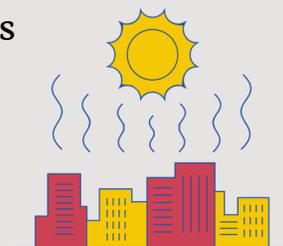
- Stay hydrated. Drink water. Avoid sugary & alcoholic beverages.
- Stay indoors and in an air-conditioned place. If your home does not have air conditioning, go to a community center, public library, or local cooling center.
- Limit your outdoor activity to morning and evening hours, if possible
- Watch the local news to find out where there are cooling centers in your area.
- Wear lightweight, light-colored, loose-fitting clothing.
- Check on senior or disabled neighbors, especially those who live alone.



How can I support my community?

Here are some steps you can take to protect your community:

- Be aware of local extreme weather warnings and share information about cooling centers.
- Learn about environmental shifts and support local efforts such as Eastside Community Network's environmental health promotion efforts, the Detroit City Council Green Task Force, and the City of Detroit Sustainability Action Agenda recommendations.
- Work with local, state and federal decision makers to reduce environmental impact.
- Work with local and state decision makers to reduce “heat islands”.
- Identify local programs and resources for improving the energy efficiency of your home to reduce energy usage and keep your home cooler in the summer.



Please see http://mleead.umich.edu/Coec_Fact_Sheets.php for the citations included in this factsheet. This research was supported by the National Institute of Environmental Health Sciences (NIEHS) (#R01ES022616, #R01ES032389) and the Fred A. and Barbara M. Erb Family Foundation, with additional support provided by the Michigan Center on Lifestage Environmental Exposures and Disease (M-LEEaD) (NIEHS #P30ES017885).