



Climate Change, Extreme Precipitation, and Health

The M-LEEaD Center's Community Engagement Core (CEC) increases awareness and understanding of environmental health research.

Stakeholder Advocacy Board members include:

- Community Health and Social Services
- The Detroit Health Department
- Detroit Hispanic Development Corporation
- Detroiters Working for Environmental Justice
- Eastside Community Network
- Ecology Center
- Green Door Initiative
- Henry Ford Health System
- MDHHS
- Michigan Environmental Justice Coalition
- Sierra Club
- We the People of Detroit

Alison Walding
Project Manager
Community Engagement Core
walison@umich.edu

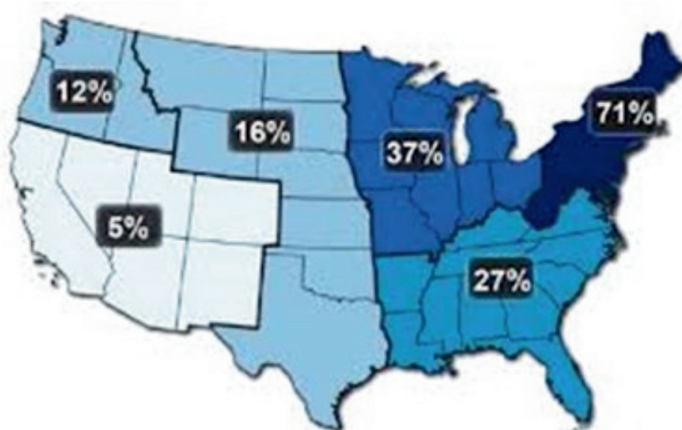
Why is climate change important to public health?

Climate change is altering weather and climate patterns. These changes could affect human health in direct and indirect ways, sometimes severely.^{3 5} Climate change is one of the most serious public health threats facing us today (The American Public Health Association, World Health Organization)^{1 2}. Increases in heavy rainfall events cause stormwater overflows and flooding. Health effects include breathing and digestion problems.

How is climate change & extreme precipitation impacting Michigan?

- Extreme rainfall events are becoming more frequent, especially in winter and spring; however, overall the region will be drier with increasing periods of drought.
- Frequency and intensity of all types of severe storms will likely continue to increase.
- Rising temperatures and more extreme heat events cause increased evaporation. This, in turn, causes more extreme rainfall events.

The Midwest has seen a 31% increase in the heaviest (top 1%) of rainfall events from 1958 to 2007.



Source: Great Lakes Integrated Sciences Assessments (GLISA)



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

Mold:

Mold is likely to grow in houses that have been flooded. Exposure to mold can lead to asthma or cardiovascular diseases.⁴

Asthma:

Household flooding may lead to increased mold. Mold exposure is likely to trigger asthma symptoms and make them worse.

Respiratory Diseases:

Exposure to water-borne illnesses, such as Legionella, may increase.⁴

Toxins from Harmful Algal Blooms (HAB):

Increased extreme rain events cause nutrients to run off into the Detroit River and Lake Erie. These increased nutrients lead to Harmful Algal Blooms (HABs), which can contaminate drinking water supplies. HABs produce toxins, which when ingested can result in sickness, even death.⁴

Diseases from raw sewage:

In extreme rain events, storm water drains can become blocked. This causes an overflow of raw sewage. This can cause people to be exposed to multiple bacteria in the raw sewage.⁶

Example from Midland:

On May 19, 2020, the Edenville and Sanford Dams, which are part of a four-dam system near Midland, failed. The failures forced the evacuation of thousands of residents and created catastrophic flooding and property losses. The two other dams on the same river system, the Smallwood and Secord dams, were damaged. The dams were unable to manage water flows that resulted when storms dropped as much as eight inches of rain over 48 hours in parts of Northeast Michigan. ¹⁶



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What Does this Mean for Me and My Community

Community members and leaders can advocate for many possible solutions in Detroit & nearby ¹²:

- Invest in grey (e.g., pumps, pipes, treatment facilities) and green infrastructure (vegetation, bioretention gardens) and prioritize neighborhoods that have experienced historic disinvestment and flooding
- Improve process for flood-related claims to ensure they are accessible, equitable, and transparent
- Develop grants and technical assistance to support residents in implementing neighborhood or household flood prevention

There are a range of flood prevention strategies for households to consider from relatively affordable to incredibly costly. For renters, some may not be possible without a landlord's support or resources. Some require technical or physical abilities when attempting do-it-yourself approaches.

- Install a flood sensor that can detect excess humidity or moisture in the air (\$10-\$200+)
- Clear clogged lateral sewer pipe (\$150+)
- Repair gutters (\$200+)
- Build a rain garden &/or grade your lawn away from your home (\$200+)
- Repair foundation drainage plumbing (\$700+)
- Seal up foundation cracks & apply coating & sealants (\$600-\$10,000+)
- Install a battery-powered sump pump (\$1,000-\$5,000)



Please see http://mlead.umich.edu/Coec_Fact_Sheets.php for the citations included in this factsheet.

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