National Institute of Environmental Health Sciences
*Your Environment. Your Health.*

# Climate Change and Human Health

Climate change is the result of the buildup of greenhouse gases in the atmosphere, primarily from the burning of fossil fuels for energy and other human activities. These gases, such as carbon dioxide and methane, warm and alter the global climate, which causes environmental changes to occur that can harm people's health and well-being. The NIEHS Climate Change and Human Health Program leads and coordinates the Institute's efforts to better understand climate change, in order to protect people's health.

## How does climate change affect human health?

While climate change is a global process, it has very local impacts that can profoundly affect communities. It can affect people's health and well-being in many ways, some of which are already occurring, by:

- Increasing the frequency and severity of heat waves, leading to more **heat-related illnesses and deaths**.[1]
- Changing the range of disease-carrying insects, such as mosquitoes, ticks, and fleas that transmit **West Nile Virus, dengue fever, Lyme disease, and malaria** to humans.[1,2]
- Increasing exposure to pollen, due to increased plant growing seasons; molds, due to severe storms; and air pollution, due to increased temperature and humidity, all of which can worsen **allergies and other lung diseases, such as asthma**.[3]
- Increasing temperatures and causing poor air quality that can affect the heart and worsen **cardiovascular disease**.[1]
- Increasing flooding events and sea level rise that can contaminate water with harmful bacteria, viruses, and chemicals, causing **foodborne and waterborne illnesses**.[1]
- Increasing the frequency and severity of extreme weather events, in addition to causing **injuries, deaths, illnesses, and effects on mental health** from damage to property, loss of loved ones, displacement, and chronic stress.[1]
- Placing added stress on hospital and public health systems, and limiting people's ability to obtain adequate health care during extreme climate events.

## Who is most at risk from climate change?

Although the United States has a well-developed public health and medical system, climate change will affect many, if not most, Americans. Children, pregnant women, the elderly, the poor, and those with underlying health conditions, like heart disease, asthma, and mental illness, are most vulnerable to the health effects from climate change. Globally, the effects of climate change will have even more severe consequences for human health.

## Where can I get more information about NIEHS' work in climate change?

- NIEHS Climate Change and Human Health Program
  http://www.niehs.nih.gov/about/od/programs/climatechange/index.cfm
- U.S. Global Change Research Program Interagency Crosscutting Group on Climate Change and Human Health
  http://www.globalchange.gov/what-we-do/climate-change-health

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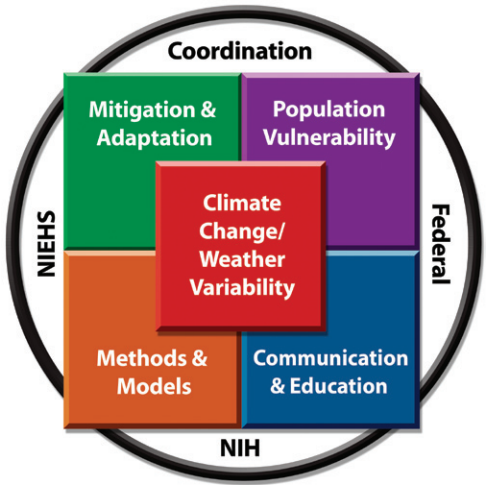
## What is NIEHS doing to help people prepare for and adapt to climate change?

NIEHS research is helping make people and communities more resilient to climate change impacts, while also protecting health and the environment for future generations. NIEHS-supported scientists are studying the best ways to identify those who are most vulnerable, understand climate-related health risks, and communicate the health risks of climate change. Examples include:

- Developing models to define and predict high-risk days, to determine when those with heart disease are most vulnerable.
- Investigating the impact of climate change on the spread of disease in food and water.
- Determining the impact of extreme weather events on pregnant women and fetuses.
- Analyzing the association between air pollution and childhood asthma.
- Examining the differences between urban and rural communities in vulnerability to heat-related illnesses and death.
- Assessing the impacts of climate change on coastal ecosystems.
- Supporting training and capacity building, in developing countries, on climate change and human health.
- Partnering with other federal agencies, through the U.S. Global Change Research Program, and internationally with the Intergovernmental Panel on Climate Change, and the World Health Organization, to identify research gaps and develop tools for decision-making.

## Where can I find more information on climate and weather-related health risks?

- **Climate and Health Program Prevention and Preparedness**
  http://www.cdc.gov/climateandhealth/prevention.htm
- **Climate Change: What You Can Do**
  http://www.epa.gov/climatechange/wycd/index.html
- **Ready Program**
  http://www.ready.gov




*NIEHS is addressing the health risks of climate change through an integrated program of research, research translation, communication, and education.*

For more information on the National Institute of Environmental Health Sciences, please go to our website at: **http://www.niehs.nih.gov/.**


[1] USGCRP (United States Global Change Research Program). 2009. Global Climate Change Impacts in the United States. Karl TR, Melillo JM, Peterson TC, eds. New York:Cambridge University Press.

[2] Confalonieri U, Menne B, Aktar R, Ebi KL, Hauengue M, Kovats RS, Revich B, Woodward A. 2007. Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Parry ML, Canziani, OF, Palutikof JP, van der Linden PJ, Hanson, CE, eds. UK:Cambridge University Press.

[3] NRC (National Research Council). 2010. Adapting to the Impacts of Climate Change. Washington, DC:The National Academies Press.