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# Climate Change and Health: Insect-borne Disease

Climate change is acknowledged by scientists around the world to be a reality and to be caused primarily by human activity, especially the burning of fossil fuels. As the earth warms, the delicate balance of climate, weather events, and life is disrupted. Consequences emerge that threaten human health and, ultimately, survival. What is truly needed for health is restoration of a cool and stable climate.

## Climate Change Increases the Threat of Disease from Insects

Insects can carry and transmit numerous diseases to humans. One concern about climate change is that it increases the spread of these insects and the diseases they carry.

- Changing temperature and precipitation shifts the geographic range in which insects live, resulting in expansion pole-ward and into higher elevations.
- Individual diseases that are sensitive to heat and precipitation will have a larger range and longer lifespan. The insects that carry them may experience an increase in their reproduction rate.



## Climate Change Aids Mosquitoes

As the climate changes, new temperature and rain patterns will affect where mosquitoes live as well as their breeding and feeding patterns.

Higher temperatures:

- Expand the range of mosquitoes pole-ward and to higher elevations, putting previously unexposed populations at risk.
- Boost reproduction rate, lengthen breeding season, make mosquitoes bite more, and speed the development of the disease-causing agents they carry (bacteria, viruses, etc.) to an infectious state.

Rainfall:

- Standing water left by more intense and frequent rainfall, storms and hurricanes in many regions creates sites for mosquitoes to breed.

## Mosquitoes and Their Threat to Health

Mosquitoes are transmitters of several viruses that can cause severe illness or death in humans, including West Nile Virus, dengue fever, encephalitis, and malaria.

### West Nile Virus

- Between 1999 and 2012, about 37,000 cases of West Nile Virus were reported in the U.S., causing approximately 1,500 deaths annually.
- There are no medications to treat or vaccines to prevent WNV infections
- Approximately 80% of people who contract West Nile Virus do not show any symptoms.

## Mosquito-borne Diseases, continued...

### Dengue Fever

- Dengue fever can be transmitted by the Asian tiger mosquito, which is found in 36 countries.
- The disease is now established in many countries of the Americas, including popular tourist areas. Cases have been found in Florida.
- The most serious form of dengue, known as dengue hemorrhagic fever (DHF), can be fatal. It kills about 5% of its victims, mostly children and young adults.

### Malaria

- In 2012 there were 207 million cases of malaria worldwide, causing some 627,000 deaths, mainly in sub-Saharan Africa.
- Each year in the U.S. there is an average of 1,500 reported cases of malaria, usually brought in by people who contracted the disease in a foreign country.

## Climate Change and Ticks

Ticks serve as “bridges,” carrying diseases between affected animals and humans.

### Lyme Disease

- Typical symptoms of this tick-borne disease include fever, headache, fatigue, and a characteristic skin rash. If left untreated, infection can spread to joints, the heart, and the nervous system.
- Modeling indicates the tick that carries Lyme disease will reach north into Canada, affecting previously unexposed populations.

### Rocky Mountain Spotted Fever

- Rocky Mountain Spotted Fever (RMSF) is a tick-borne disease that is potentially fatal. Typical symptoms include fever, headache, abdominal pain, vomiting, and muscle pain.
- Untreated, RMSF can cause serious damage to internal organs, particularly the kidneys.
- Despite its name, over half of U.S. cases occur in the South Atlantic states (Delaware through Florida).
- Research suggests that, with warming trends, incidence of RMSF will increase in northern latitudes.



Signs like the one above can alert you to tick-prone areas and caution you about the diseases they can carry.

### How to Protect Yourself

- Wear protective clothing and insect repellent to prevent insect bites.
- Check yourself and pets for ticks after being in wooded or grassy areas
- Take extra precautions from dusk to dawn, when mosquitoes are most likely to bite.
- Capture and remove or store water runoff that provides a breeding ground for mosquitoes.
- Repair damaged screens to prevent insects from coming inside your home.
- Listen to warning systems and signs to be aware of hazardous areas and outbreaks.

### Take action to reduce climate change!

To protect our world from the health effects of climate change, we must take steps that restore the climate. This includes switching from fossil fuels to safe clean renewable energy sources like sun, water and wind. Planting trees and protecting forests. Planning growth to assure efficient, convenient mass transit. Where conditions permit, walking and bicycling more. We'll all live better on a cool, green, healthy planet!

To learn more about what you can do, visit PSR's website:

[www.psr.org/environment-and-health/climate-change/](http://www.psr.org/environment-and-health/climate-change/)

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