

FOSSIL FUELS AND HEALTH: INFECTIOUS DISEASE



Driven by the burning of fossil fuels like coal and oil, our world is getting warmer and warmer – and real people’s lives are in danger. But not just from the searing heat, violent storms, and rising seas most think of first when the conversation turns to our changing climate.

The climate crisis is also making us sick – and it’s only just getting started.

Infectious diseases are becoming more prolific in our warming world. And the insidious spread of some illnesses and the uptick in dangerous diagnoses has much to do with climate change.

“Humans have known that climatic conditions affect epidemic diseases from long before the role of infectious agents was [even] discovered,” [the World Health Organization \(WHO\) writes](#). “Vectors, pathogens, and hosts each survive and reproduce within a range of optimal climatic conditions: temperature and precipitation are the most important, while sea level elevation, wind, and daylight duration are also important.”

But those conditions are changing, introducing new illness to places they never previously existed and creating the conditions for harmful pathogens to flourish.

CLIMATE CHANGE-DRIVEN INFECTIOUS DISEASE

Broadly, there are two major groups into which climate change-related infectious diseases can be categorized: **vector-borne** and **water-related**.

WATER-RELATED ILLNESSES are caused by waterborne pathogens like bacteria, viruses, and protozoa; toxins produced by certain harmful algae; and chemicals introduced into the environment by humans (think agricultural runoff). We are exposed to them by ingesting or other direct contact with contaminated water, or by eating affected fish and shellfish.

They include: Cholera, typhoid fever, dysentery, and hepatitis A, as well as health problems related to exposure to toxin-producing algae.

MALARIA, a canary in the climate coal mine...

“Malaria modelling shows that small temperature increases can greatly affect transmission potential,” [according to the WHO](#). “Globally, temperature increases of 2-3 degrees Celsius would increase the number of people who, in climatic terms, are at risk of malaria by around 3-5 percent, i.e. **several hundred million.**”

VECTOR-BORNE DISEASES are transmitted by “vectors,” typically a biting insect like a mosquito, flea, or parasitic arachnid like a tick. Vectors carry infective pathogens like viruses and bacteria, and transmit diseases or parasites from one animal to another.

They include: Lyme disease, malaria, West Nile virus, dengue fever, Zika virus, plague, Rocky Mountain spotted fever, and more.

In our warming world, both types of infectious disease may become more widespread. Why?

EXPANDING VECTOR RANGES

- Excessive rainfall and high humidity thanks to climate change enhance mosquito breeding and survival.
- Rising temperatures open the door to regions once less hospitable to warm-weather insects.
- Longer-lasting warm weather and milder winters extend the life and breeding cycles of ticks, and allow them to move ever-poleward with increasing average temperatures.

CREATING CONDITIONS FOR VECTORS AND PATHOGENS TO THRIVE:

- Increasing water temperatures expand the seasonal growth windows and suitable habitats for harmful freshwater toxin-producing algae, many bacteria, and some vectors.
- Extreme weather events can leave the standing water mosquitos need to reproduce, as well as debris, where rats and the fleas and ticks they carry flourish.
- Rising temperatures can cause some vector populations to increase and allow them to survive for longer periods.

FUTURE CONCERNS*

1. As vectors expand their ranges to areas not previously familiar with the diseases they transmit, there is a greater risk of missed diagnoses.
2. Some vector-borne pathogens once thought dormant may reemerge as climate factors interact with other changes, like altered land-use patterns.
3. Pathogens like bacteria and viruses can change (mutate), and often do so to adapt to new environments, hosts, and climate

*[*If we don't take action to stop the crisis.](#)*

TAKING ADVANTAGE OF DISASTER:

- More frequent and intense precipitation can lead to more runoff and introduce numerous pollutants into drinking and recreational waters.
- Extreme weather events and storm surge can damage infrastructure for drinking, waste, and storm water, elevating risk of exposure to water-related pathogens, chemicals, and algal toxins.

It's clear: We must transition away from dangerous, dirty fossil fuels and invest in clean, reliable energy. Renewable energy is good for our climate, our economies, and, very importantly, our health.