PURDUE EXTENSION

Climate Change and Human Health

Effects on Respiratory Illnesses

Because it causes warmer temperatures earlier in the year, climate change has been shown to increase pollen levels earlier in the spring than in the past. The warmer air increases chances for allergies and concentrations of airborne pollutants. However, it is unclear if the condition or severity of these pollutants has changed. Likewise, increased CO2 levels mean more ragweed, a common allergenic pollen-producing plant. If regional allergenic plants begin to expand beyond their natural habitats, sensitive people not usually affected by ragweed could experience health problems.

Increased mold spore concentrations may become a problem if the change in climate results in periods of increased rainfall. In contrast, climate change could also lead to increased periods of drought, creating dust issues and high levels of particulate matter. Increased ozone levels at the Earth's surface as well as increased levels of particulate matter pollution may cause an increase in coughing, congestion, chest pain, and lung inflammation.

Effects on Water-Borne Illnesses

The relationship between waterborne diseases and climate change is an intricate one. Different types of weather events, such as intense, heavy rainfall, can cause pollution of water sources through combined sewage overflows or excess phosphorous in waterways that lead to changes in bacteria content in water. Figure 1 shows *E. coli* outbreaks relative to daily rainfall.

Drought also can increase concentrations of waterborne pathogens, which can overwhelm water treatment facilities and contaminate surface water.

What can we do?

We can mitigate these issues by reusing and recycling water (after treatment) and by protecting wetlands. We can also increase green space in large cities to decrease the relative amount of impervious surface. This helps reduce runoff and decrease the impact of extreme rainfall events in cities areas by providing areas of vegetation and soil that the rainfall can infiltrate.

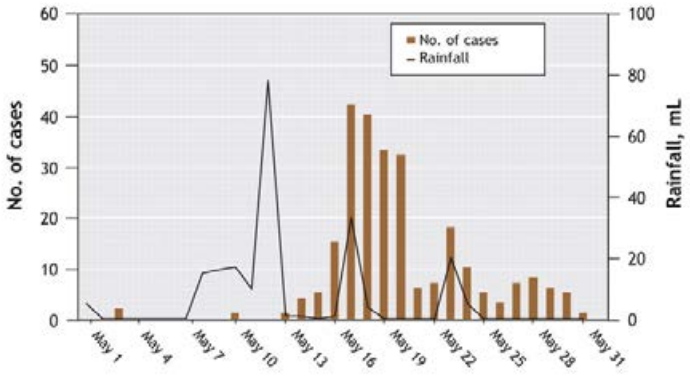
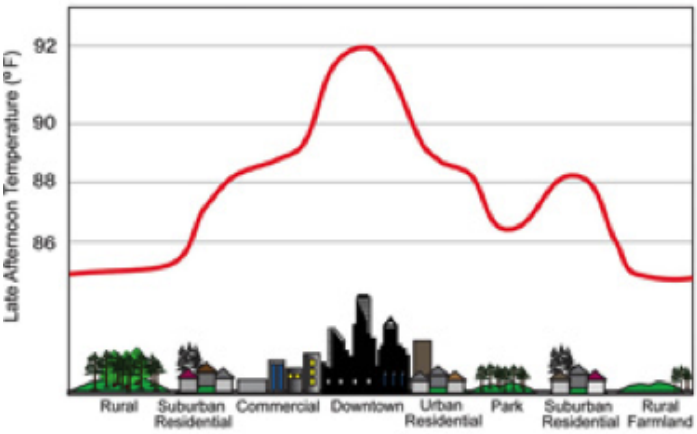


Figure 1. E. coli cases per milliliter of rainfall

Effects of Temperature on the Heart

Individuals whose health is most vulnerable to change climate conditions are the young, elderly, and poor. Heat waves and cold spells can be very dangerous for these groups due to their limited access to resources to cool or heat their homes. The ability of their bodies to maintain a steady temperature during hotter or colder weather is lower than that of a healthy, middle-aged adult. This, coupled with limited access to resources, places their bodies under stress and leads to increased risks for heart attacks or other heat- and cold-related health issues.



Positive Effects

In today's society, climate change is a topic of discussion between parties of believers in anthropogenic climate change and those who do not believe humans affect the climate. The perception, however, is that climate change will only result in negative impacts.

There are some positive benefits.

In cooler regions, climate change will result in a longer growing season, allowing for more food production for the growing global population. In far northern regions covered with ice, melting ice may create new shipping routes. The increased concern surrounding drought conditions have led to a wave of scientific ingenuity resulting in development of crops better able to withstand drought conditions.

Thus, while they will certainly vary by location, some effects of climate change will be positive.

Resources

National Institutes of Health. 2016. *Waterborne Diseases: Health Impacts of Climate Change.* https://www.niehs.nih.gov/research/programs/geh/climatechange/health_impacts/waterborne_diseases/

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