Asthma

How does climate change impact asthma?

Climate change is creating warmer temperatures and more frequent heat waves, which, in turn, lead to increases in heat stress, respiratory illnesses, and heat-related deaths. Individuals with asthma are at risk of worsened symptoms and asthma attacks.[1]

Climate Change Increases Air Pollution

Rising temperatures increase the concentration of ground-level ozone, which pollutes the air. When ozone remains in the upper atmosphere (the stratosphere), it shields us from ultraviolet radiation. However, at ground level, ozone creates smog, which can cause breathing problems by damaging lung tissue, reducing lung function, and inflaming airways.[1]

Climate Change Increases Allergens in Air

Climate change increases the concentration of airborne allergens, as rising temperatures increase pollen levels. In addition, flowering starts earlier, resulting in a longer ragweed pollen season, and more time for exposure to airborne allergens.[2]

What can you do to stay healthy?

Monitor the Air Quality Index Daily to Keep Healthy

The U.S. Environmental Protection Agency's (EPA) Air Quality Index (AQI) measures the level of pollution. The purpose of the AQI is to let you know when the air quality may be hazardous to your health. When the AQI is in the unhealthy range, stay indoors in air-conditioning as much as possible; when you go outside, avoid exertion and heavily trafficked roadways and consider wearing a mask. Check local AQI daily at https://www.airnow.gov/.

Monitor the Heat Index (HI) Daily to Keep Healthy

The National Weather Service's Heat Index (HI) measures the "real feel" temperature, which combines heat and humidity. Young children, pregnant women, people who work outdoors, and older adults are vulnerable to heat exhaustion and heat stroke and should stay indoors in air-conditioning when HI rises above 91. Drink plenty of water and stay in the shade if you do go outside. Check the HI daily at http://www.nws.noaa.gov/om/heat/index.shtml or Google Air Now AQI.

[1] Carter, LM, et al. (2014). *Ch. 17: Southeast and the Caribbean. Climate Change Impacts in the United States: The Third National Climate Assessment.* Melillo, J.M., Richmond, T., & Yohe, G.W. Eds., U.S. Global Change Research Program: Washington, D.C., 396-417.
[2] USGCRP (2016). *Impacts of Climate Change on Human Health in the United States: A Scientific Assessment.* Crimmins, Al.,et al., Eds. U.S. Global Change Research Program: Washington, DC.
[3] Luber, G, et al. (2014). *Chapter 9: Human Health Climate Change Impacts in the United States: The Third National Climate Assessment. In* Melillo et al. Eds. U.S. Global Climate Change Research Program, 228-229. http://nca2014.globalchange.gov/report/sectors/human-health
[4] American Academy of Pediatrics. (2007/2012). Global Climate Change and Children's Health. *Pediatrics* 120: 1149. http://dx.doi.org/10.1542/peds.2007-2645
[5] Gamble, JL, et al. 2013. Climate Change and Older Americans: State of the Science. *Environmental Health Perspectives.* 121:15–22; http://dx.doi.org/10.1289/ehp.1205223

Air Quality Index (AQI) and Your Health

AQI Values	Levels of Health Concern	Colors and Meaning
0 to 50	Good	Green: Satisfactory air quality; air pollution poses little or no risk
51 to 100	Moderate	Yellow: Acceptable air quality; moderate health concern for a few people who are unusually sensitive to air pollution
101 to 150	Unhealthy for Sensitive Groups	Orange: Health effects for members of sensitive groups
151 to 200	Unhealthy	Red: Health effects for all; more serious health effects for members of sensitive groups.
201 to 300	Very Unhealthy	Purple: Health alert! More serious health effects for all.
301 to 500	Hazardous	Maroon: Health alert! Serious health effects for all.

Source: US Environmental Protection Agency. (2016). Air Quality Index: Air Now. Available at: https://airnow.gov/index.cfm?action=aqibasics.aqi.

Health Impacts

Breathing problems
Reduced lung function
Inflamed airways
Damaged lung tissue

Who is most vulnerable?

The American Lung Association (ALA) notes that *all* those with asthma and other lung diseases are particularly at risk from exposure to heat, air pollution, airborne allergens, and extreme weather events. In addition, the following populations are especially vulnerable to public health threats from climate change:

Low-income households and some communities of color, due to exposure to higher levels of pollution in their neighborhood, and inadequate access to medical care;[3]

Children, due to their immature lungs and immune system and their increased exposure to pollution due to breathing more air per pound than adults and spending more time outdoors;[4]

Older adults, due to medical conditions and depressed immune functioning associated with aging.[5]

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