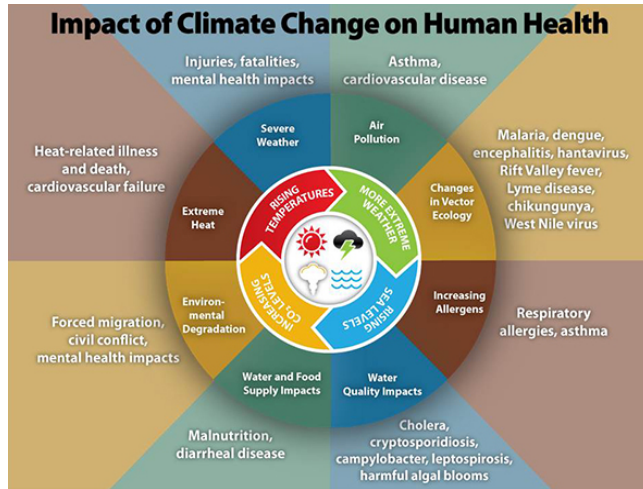


Considerations: Health & Climate Change

July 2015 - Prepared by Allison Rich - Maryland Environmental Health Network www.MdEHN.org



Threat: "Climate change – caused by carbon pollution – is one of the most significant public health threats of our time," EPA Administrator Gina McCarthy, 09/20/2013

Opportunity: Through common-sense measures to cut carbon pollution, we can protect the health of our Nation, while stimulating the economy and helping to prevent the worst impacts of climate change. ⁱ Renewing the Greenhouse Gas Reduction Act is one such common-sense measure.

Vulnerable Populations will suffer the greatest health burdens

Children, the elderly, and people already suffering illness in Maryland

- Climate change will put vulnerable populations at greater risk – including:
 - Children, who breathe more air relative to their size than adults, are at higher risk of worsened asthma and respiratory symptoms from air pollution and severe weather or illness following severe weather
 - Older adults, especially those with pre-existing health conditions, are at a high risk of cardiac and respiratory impacts of air pollution or illness following severe weather
 - People already suffering from allergies, asthma, weak immune systems, and other illnesses are more susceptible to experiencing health impacts related to climate change
 - Communities burdened with higher rates of diabetes, obesity, or asthma may be at greater risk of climate-related health impacts

Air pollution caused by greenhouse gas emissions are hazardous to health

Ground-Level Ozone

- Tropospheric, or ground-level ozone, is formed by chemical reactions between greenhouse gases in the presence of sunlight. (This is not to be confused with stratospheric ozone, which protects us from harmful UV rays from the sun.)
- Exposure to ground-level ozone inhibits lung function and is anticipated to cause:
 - 1,000 to 4,300 additional premature deaths nationally per year by 2050 ⁱⁱ
 - 2.8 million more instances of acute respiratory symptoms such as asthma attacks, shortness of breath, coughing, wheezing, and chest tightness, by 2020
 - 24,000 more seniors and 5,700 more infants hospitalized for respiratory related problems, by 2050 ⁱⁱⁱ

Severe weather will increase the need for and disrupt health care services

Extreme Heat Events

- Extreme heat events are expected to become more frequent and severe due to climate change and will have implications for health care services including:

- Health services utilization, disruption to the healthcare delivery system, and quality of patient care during disastersⁱ
- Increase in hospital visits for cardiovascular, respiratory, cerebrovascular diseases, mental health problems, mortality, injury, and illness
- Extreme heat exposure from climate change can be deadly:
 - During June 30–July 13, 2012, maximum daily temperatures in Maryland, Ohio, Virginia, and West Virginia averaged is 9.5°F warmer than normal. 12 Maryland residents died during this period due to excessive heat exposure^v
 - Severe weather will also include flooding, droughts, storms, and fires that impact healthcare services as well as long term health concerns

Population health status does not return after severe weather events:

- A study of Hurricane Katrina measured health impacts a year after the hurricane and found an increase in disease prevalence, increased health burden directly associated with disruption from Hurricane Katrina, and the adverse effect on morbidity was strongest for nonwhite subjects^{vi}

Sea level rise, heavy rainfall, and storm surges will increase will disrupt communities and increase water borne disease and disrupt communities

- **Sea Level Rise**
 - Rising seas and eroding shorelines displace coastal communities
 - Sea level rise and storm surge threatens drinking water supplies and agricultural fields with salt-water intrusion
 - Potential changes in exposure to diseases

- **Flooding and Heavy Rainfall**

The frequency of heavy precipitation events has already increased for the nation as a whole (75% increase for the Northeast), and is projected to continue increasing. With nearly 3,000 miles in coastline, Maryland is vulnerable to health concerns from flooding including:

- Failure of septic systems - Waterborne diseases contaminating drinking water
- Sewage back-up in plumbing or basements
- Floodwater containing toxins, bacteria, and sewage, can contaminate drinking water, vegetables growing in fields or gardens, and recreational water sources
- Water intrusion in buildings, worsening indoor air quality and/or causing toxic mold to grow in ceilings, walls, or insulation^{vii}
- Between 2007-2013, Baltimore had on average 13.1 nuisance flood days per year, while Annapolis had 39. Annapolis and Baltimore have the highest increase in number of flood days in the nation^{viii}

Allergens related to pollen will increase:

- The length of the ragweed pollen season has increased in parts of the US by 11-27 days because of rising temperatures. As the climate warms more pollen is produced and pollen season lengthens, there will be an increase in health problems related to allergens:
 - Increases in the symptoms of seasonal allergies
 - Pollen triggers asthma attacks, leading to more ER and hospital visits

ⁱ [The Health Impacts of Climate Change on Americans](#) The White House, 6 / 2014

ⁱⁱ "Climate Effects on Health – Air Pollution" Centers for Disease Control, 12/11/2014

ⁱⁱⁱ [Climate Change and Your Health: Rising Temperatures, Worsening Ozone Pollution](#) Union of Concerned Scientists, 2011

^{iv} "Heat-Related Deaths After an Extreme Heat Event – Four States" Centers for Disease Control, 2013

^v [Health of Medicare Advantage Plan Enrollees at 1 Year After Hurricane Katrina](#), Burton, et al., The American Journal of Managed Care Vol. 15 No. 1, 01/ 2009

^{vi} [Climate Change Impacts in the United States](#) U.S. Global Change Research Program, 2014

^{vii} [Sea Level Rise and Nuisance Flood Frequency Changes around the United States](#), National Oceanic and Atmospheric Association, July 2014
