

Climate Change and Human Health



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ITEP Webinar: Impacts of Climate Change on Tribal Health

US Global Change Research Program (USGCRP)

- **Mission:** To build a knowledge base that informs human responses to climate and global change through coordinated and integrated federal programs of research, education, communication, and decision support



Climate change is a public health issue and is one of the greatest threats to human health.

Lynn Goldman, Testimony to Subcommittee on Energy and Power,
Representing American Public Health Association

Few Americans are aware of the current or projected future health impacts of global warming [for the U.S. or worldwide].

Public Perceptions of the Health Consequences of Global Warming,
Yale Project on Climate Change Communication

For public health, climate change is the defining issue for the 21st century.

Margaret Chan: Director General of
World Health Organization



U.S. Global Change
Research Program

USGCRP Climate and Health Assessment

Motivation

Purpose

Audience



Informing other Federal Climate and Health Initiatives



Climate Data Initiative (climate.data.gov)

- Over 150 Federal climate and health datasets that are freely accessible to researchers and data innovators to produce new tools and applications.

Climate Resilience Toolkit (toolkit.climate.gov)

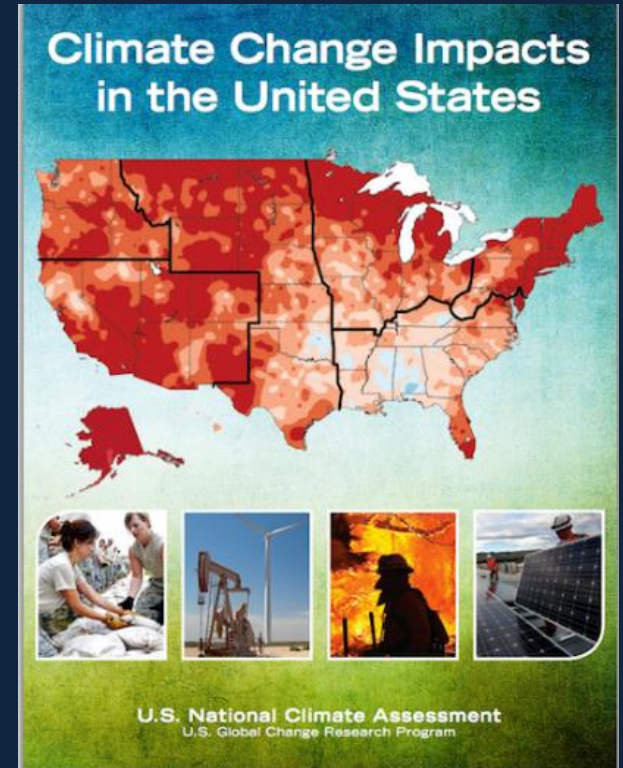
- Provides scientific tools, information, and expertise to help people manage their climate-related risks and improve resiliency to extreme events.

Sustainable Climate Resilience Healthcare Facilities Initiative

- Best Practices Guide and Toolkit to improve healthcare resiliency to extreme events.

Who's involved

- **Product of USGCRP**
- **Part of NCA**
- **Driven by CCHHG**
- **Coordinated by EPA**
- **Written by HHS (NIH, CDC, NIOSH, ASPR, FDA, SAMHSA, USUHS, VA), NOAA, EPA, USDA, NASA, USGS, DOD...**



What's in

1. Climate Change and Human Health (Intro)
2. Temperature-Related Death and Illness
3. Air Quality Impacts
4. Vectorborne Disease
5. Water-Related Illnesses
6. Food Safety, Nutrition, and Distribution
7. Extreme Weather
8. Mental Health and Well-Being
9. Risk Factors and Populations of Concern



What's out

- Mitigation, adaptation, or economic valuation
- Policy recommendations
- Most compounding, secondary, or cumulative climate and health effects
- Assessment of research needs

Strengthens and expands our understanding of health impacts

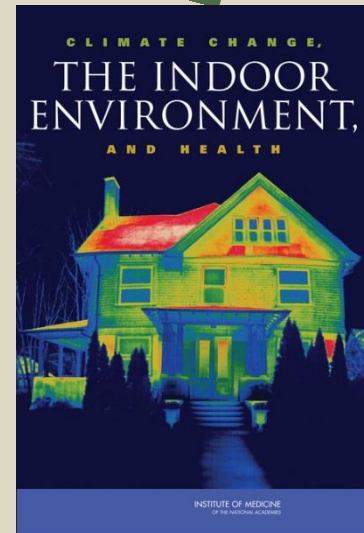
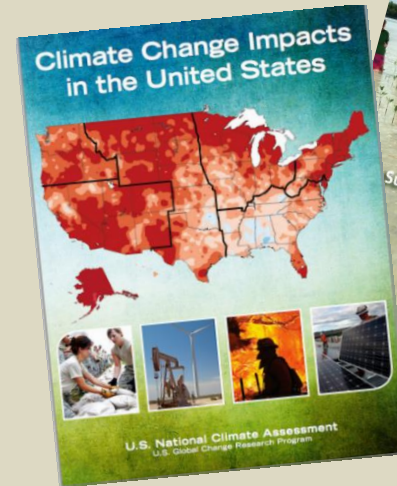
- Updated Findings
- Stronger Evidence
- New analyses
- Broader Scope
- Identifies Risks and Vulnerabilities

An “interim report”

- To be published between the Third and Fourth National Climate Assessments
- Current plan for release is Spring 2016
 - After responding to public comments, National Research Council peer review comments, and interagency review and clearance comments

In the meantime, what do we already know about climate change health impacts?

- USGCRP's Third National Climate Assessment (NCA3)
 - nca2014.globalchange.gov
- IPCC's Fifth Assessment Report
 - www.ipcc.ch/report/ar5/wg2
- National Academy of Sciences
 - <http://www.nap.edu/catalog/13115/climate-change-the-indoor-environment-and-health>
 - <http://www.nap.edu/catalog/12782/advancing-the-science-of-climate-change>



Air Pollution & Allergens



- Changes in the climate affect the air we breathe both indoors and outdoors.
- Climate change is projected to harm human health by increasing ground-level ozone and/or particulate matter air pollution in some locations.
- Increasing CO₂ levels will also promote the growth of plants that release airborne allergens.

Temperature Extremes



- Extreme summer heat is increasing in the United States; projected to become more frequent and intense in the coming decades.
- While deaths and injuries related to extreme cold events are projected to decline due to climate change, these reductions are not expected to compensate for the increase in heat-related deaths.

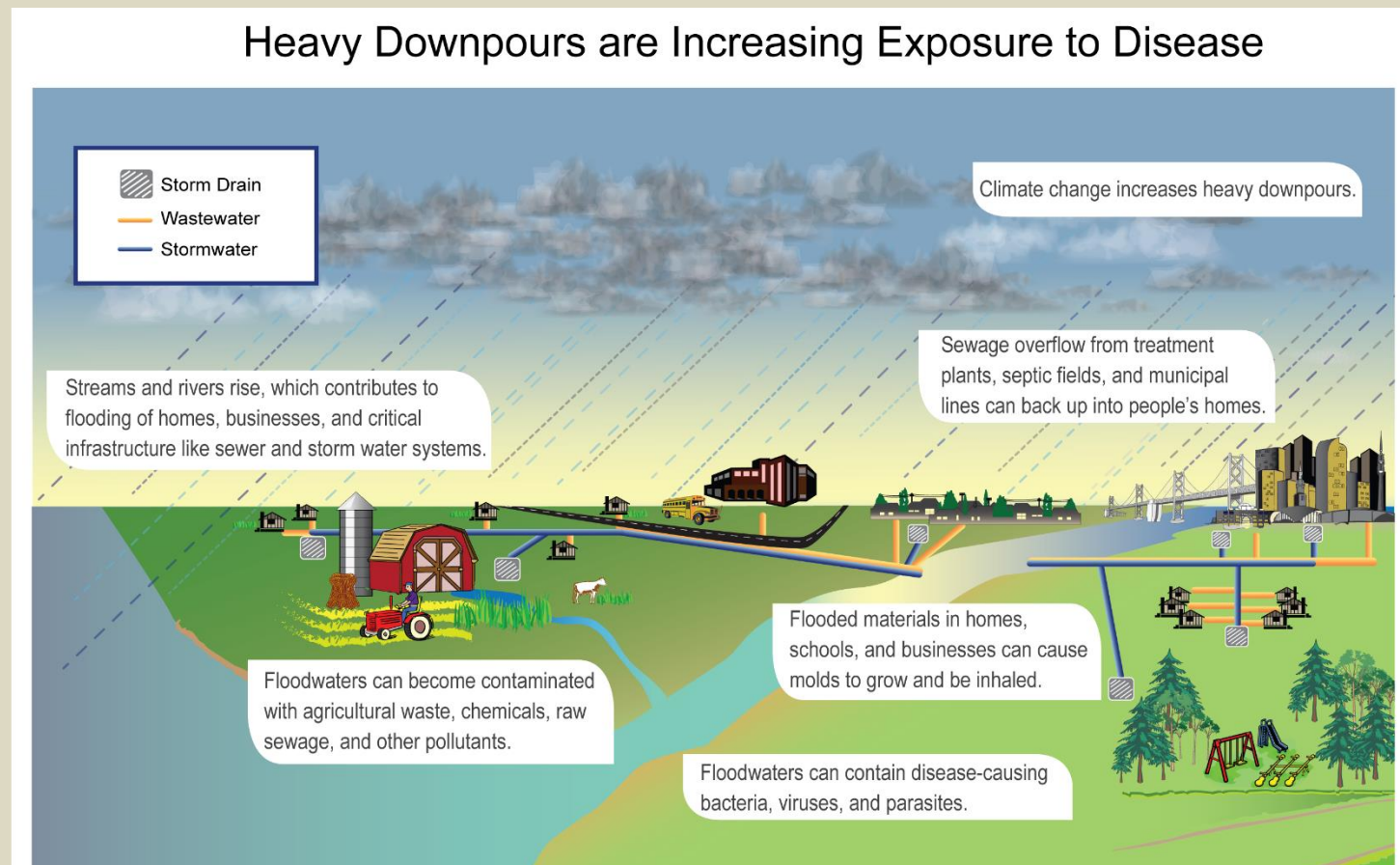
Precipitation Extremes: Heavy Rainfall, Flooding, and Droughts



- Projected increases in heavy rainfall, flooding, & drought in certain U.S. regions may increase people's exposure to a broad set of health hazards:
 - Flood hazards include drowning, injury, waterborne disease risk, indoor air quality problems from water intrusion into buildings
 - Drought-related hazards include wildfires, dust storms, extreme heat events, flash flooding, degraded water quality, and reduced water quantity.

Food- and Water-borne Diarrheal Disease

- Air and water temperatures, precipitation patterns, extreme rainfall events, and seasonal variations are all known to affect disease transmission.



Diseases Carried by Vectors



- Climate is one of the factors that influence the distribution of diseases borne by vectors (such as fleas, ticks, and mosquitoes, which spread pathogens that cause illness).
 - Numerous vectorborne diseases are currently found in North America, including Lyme, dengue fever, West Nile virus, Rocky Mountain spotted fever, plague, and tularemia.
- Possible shifts or expansions in the geographic ranges of vectors can affect incidence of disease.



Food Security



- While the U.S. will be less affected than some other countries, climate change impacts to our agriculture and food system can affect health in four main ways:
 - Americans with particular dietary patterns, such as Alaska Natives, will face shortages of key foods
 - Food insecurity increases with rising food prices
 - The nutritional value of some food crops is projected to decline
 - Farmers are expected to need to use more herbicides and pesticides, thus increasing the chemical exposure risk for farmers, farmworkers, and consumers

Mental Health and Stress-related Disorders



- Extreme weather events can affect mental health in several ways.
- High levels of anxiety and post-traumatic stress disorder among people affected by Hurricane Katrina; some similar observations following floods, heat waves, and wildfire.
- Children, primarily because of physiological and developmental factors, are especially vulnerable to trauma resulting from extreme weather events.
- Some patients with mental illness are especially susceptible to heat.

Most Vulnerable at Most Risk



- Climate change adds to some of the existing health threats the nation now faces. Certain people and communities are especially vulnerable, including children, the elderly, the sick, the poor, and some communities of color.
- Increasing number of Americans who are obese and have diabetes, heart disease, or asthma, which makes them more vulnerable to a range of climate-related health impacts.
- The poor are less able to afford the kinds of measures that can protect them from and treat them for various health impacts.

Climate Change & Indigenous Health

- Food Safety and Security
 - Traditional food/medicinal plant cultivation or harvesting
 - Hunting and fishing;
 - Changing travel conditions for Alaska Natives
 - Thawing ice cellars/houses threatens safe food storage
- Water quantity
 - Too much or too little



Climate Change & Indigenous Health

- Water quality and degraded infrastructure
 - Damaged or overwhelmed water/sewer systems
 - Threats to drinking water supplies and public sanitation
- Loss of Cultural Identity
 - Impacts to land base, structures, natural resources that are tied to cultural traditions
- Relocation and Displacement
 - A threat for some; a reality for others



Thank You

Contact me at: jantarasami.lesley@epa.gov

For more information about the forthcoming
USGCRP Climate and Health Assessment:

www.globalchange.gov/health-assessment