

# Preparing California for Extreme Heat: Guidance and Recommendations

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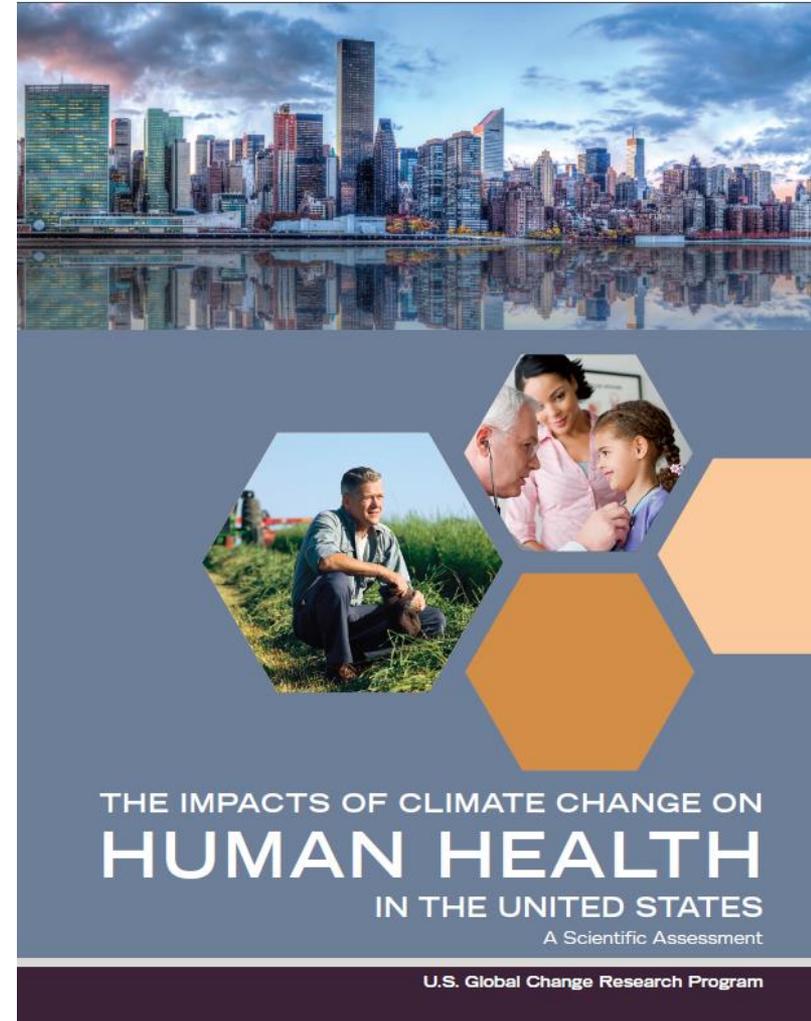
# Climate Change & Extreme Heat

## The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment

<https://health2016.globalchange.gov/>

## Chapter 2: Temperature-Related Death and Illness

<https://health2016.globalchange.gov/temperature-related-death-and-illness>



## 2 TEMPERATURE-RELATED DEATH AND ILLNESS



- 1) Future increases in temperature – related deaths
- 2) Even small differences from seasonal average temperatures result in illness and death
- 3) Changing tolerance to extreme heat
- 4) Some populations at greater risk

# Health Effects from Heat

- Spectrum of heat-related illness
  - Cramps, Heat Exhaustion, Heat Stroke
- Air quality and heat exposure
  - increased respiratory disease burdens
- Air-conditioning dilemma



Photo: climate.gov



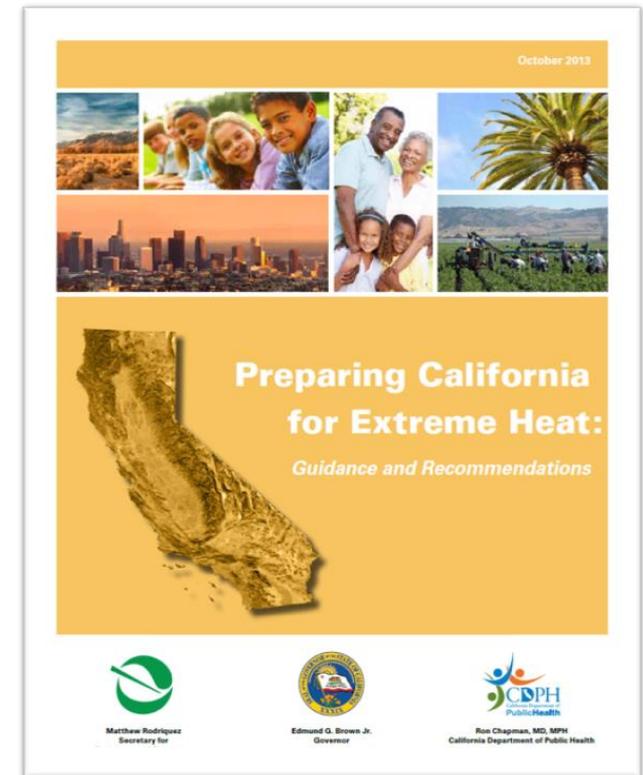
# Populations at Risk

- Elderly, particularly elderly over 65 years of age and elderly living alone
- Children, women, infants, and pregnant women
- People with pre-existing chronic health conditions:
  - (e.g., respiratory disease, cardiovascular disease, diabetes, cerebrovascular diseases, respiratory diseases, and acute allergies)
- People who engage in vigorous physical activity including:
  - agricultural and outdoor workers, indoor workers, athletes (especially young athletes), military personnel, and outdoor recreationists
- People with mental or physical disability
- People in cooler areas less acclimatized to heat, with less awareness of ways to reduce exposure, and with housing not designed for warmer conditions
- Residents of urban areas, of the highest floors of apartment buildings, and without air-conditioning
- Some race/ethnic groups, particularly African American race
- People taking certain medications related to specific heart or mental health conditions
- Populations with low socioeconomic status
- Socially or geographically isolated populations



# Preparing California for Extreme Heat: Contributing agencies and departments

- CDPH and Cal EPA (co-chairs)
- California Air Resources Board (ARB)
- California Department of Forestry and Fire Protection (CAL FIRE)
- California Department of Transportation (Caltrans)
- California Governor's Office of Emergency Services (OES)
- California Energy Commission (CEC)
- California Natural Resources Agency (CNRA)
- Occupational Safety and Health (Cal OSHA)
- Governor's Office of Planning and Research (OPR)
- Office of Environmental Health Hazard Assessment (OEHHA)



• [http://www.climatechange.ca.gov/climate\\_action\\_team/reports/Preparing\\_California\\_for\\_Extreme\\_Heat.pdf](http://www.climatechange.ca.gov/climate_action_team/reports/Preparing_California_for_Extreme_Heat.pdf)

# Climate Change and Extreme Heat Projections for California

- Events become more intense
- Events will occur more frequently
- Events will last longer
- Seasonality of the events will change
- Events will have a larger geographical extent



Photos: CDC.gov

# Health Equity and Heat Islands

- Nationally, African-Americans, Asians and Latinos are more likely than Whites to live in areas where:
  - impervious surfaces cover more than half the ground
  - more than half the population lacks tree canopy.
- These conditions result in greater heat island effect.
- Tend to be the same neighborhoods where residents are:
  - less likely to have air conditioning
  - more likely to have one or more chronic conditions, and
  - less likely to own cars to escape from disasters such as extreme heat



Shonkoff, Morello-Frosch, et al. Climatic Change, 2012

# Preparing California for Extreme Heat: Recommendations

- 1) Build heat resilient and cooler communities
- 2) Improve preparedness and response to extreme heat events
- 3) Promote public health and health sector preparedness and readiness
- 4) Assess measures needed to protect workers at risk for extreme heat
- 5) Research needs



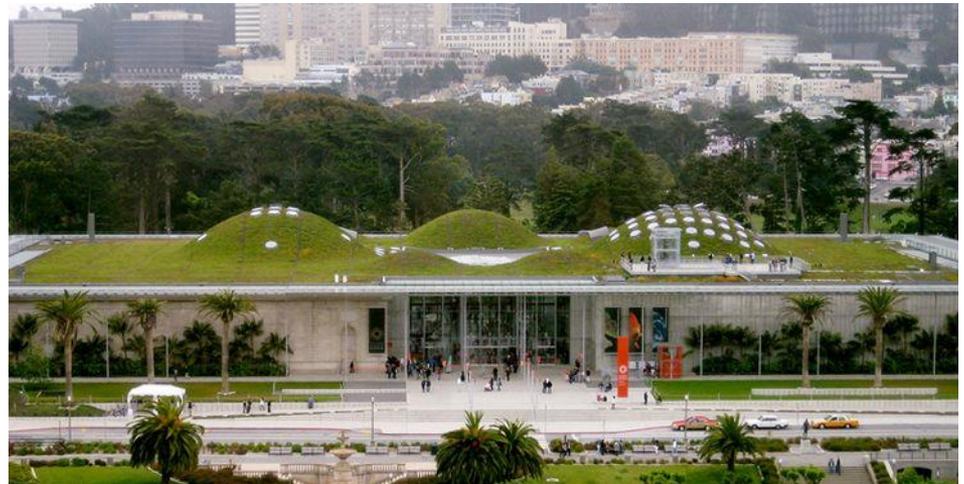
Photo: CDC.gov

# 1) Build heat resilient and cooler communities

- Cool the built environment
- Develop Urban Heat Island Index
- Expand use of cool, porous, or sustainable materials in pavement
- Urban Greening & Green Infrastructure



Photo: Californiareleaf.org



## 2) Improve Preparedness and Response

- Assess existing heat plans
- Improve heat warning systems
- Improve community resilience for vulnerable populations
- Protect vulnerable populations

**CLIMATE CHANGE & EXTREME HEAT**

Extreme heat events, or heat waves, are a leading cause of **EXTREME WEATHER-RELATED DEATHS** in the United States and the number of heat-related deaths is rising!

**WHO'S AT RISK?**

Adults over 65, children under 4, people with existing medical problems such as heart disease, and people without access to air conditioning

**WHAT CAN YOU DO?**

**STAY COOL**

- Find an air-conditioned shelter
- Avoid direct sunlight
- Wear lightweight, light-colored clothing
- Take cool showers or baths
- Do not rely on a fan as your primary cooling device

**STAY HYDRATED**

- Drink more water than usual
- Don't wait until you're thirsty to drink more fluids
- Avoid alcohol or liquids containing high amounts of sugar
- Remind others to drink enough water

**STAY INFORMED**

- Check local news for extreme heat alerts and safety tips
- Learn the symptoms of heat illness

**LEARN MORE!**

Visit CDC's Environmental Public Health Tracking Network to learn more about climate change and extreme heat at [www.cdc.gov/ephtracking](http://www.cdc.gov/ephtracking)

**www.cdc.gov/ephtracking**

### 3) Promote Public Health and Health Sector Preparedness and Resilience

- Increase health sector's extreme heat preparedness and resiliency
- Improve timeliness and completeness of heat illness and death surveillance to understand impact of heat events and guide PH planning and responses.



Photo: CDC.gov

## 4) Protect Workers at Risk for Extreme Heat

- Evaluate Cal/OSHA's current health illness prevention standard
- Promote coordination to protect workers at risk of extreme heat
- Augment training of employers and workers



Photo: dir.ca.gov

## 5) Research Needs

- 1) **ID characteristics of heat vulnerable and resilient populations (CDPH)**
- 2) ID heat adaptation strategies with co-benefits (CDPH)
- 3) Research on population acclimatization (CDPH)
- 4) Evaluate non-air conditioning strategies for vulnerable populations
- 5) Evaluate occupational health risks and strategies to reduce risks
- 6) **Assess UHI potential for cities that can be used to evaluate reduction efforts (Cal EPA)**
- 7) **Conduct research to quantify the costs/benefits of higher albedo pavement (ARB, Caltrans)**
- 8) Evaluate the effectiveness of early warning systems geared towards working populations at high risk
- 9) **Perform high resolution tree canopy analysis of the state's urban areas (CALFIRE)**

# Thank you

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