

Heat Injuries

June 28, 2024

Engineers for Exploration, UC San Diego

'She nearly made it out': Calif. hiker dies during heat wave

By **Olivia Harden**, Travel Reporter
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FILE: An aerial view of Black Mountain in Carmel Valley, San Diego.
Thomas De Wever/Getty Images

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1. Heat is the #1 weather-related killer in the United States ($\approx 123/\text{yr}$)
2. Greater than hurricanes (≈ 108), floods (≈ 75), and lightning strikes (≈ 33)
3. Even more than tornadoes (≈ 109)

Heat Stress is a Big Deal

- Heat stress happens when your body loses its ability to self-regulate body temperature.
- Heat stress can lead to a range of heat-induced conditions (from least serious to most serious): heat rash, heat cramps, fainting, heat exhaustion, heat stroke.
- For outdoor workers, the sun is the biggest cause of heat stress. They are at a much higher risk of heat stress (for example, agricultural workers in the USA are at 20 times the risk than the national rate)

Serious Outcomes of Heat Stress

- Heat illness caused by heat stress can be a matter of life and death. Workers die from heat stroke every summer and every death is preventable.
- When heat stroke doesn't kill immediately, it can shut down major body organs causing acute heart, liver, kidney and muscle damage, nervous system problems, and blood disorders.

PRIMARY FACTORS CONTRIBUTING TO **HEAT STRESS**



ENVIRONMENT

Air temperature,
humidity, the sun



WORKER

Hydration, clothing,
medical conditions,
acclimatization
(how your body copes with a
hot environment)



WORK

The amount of work done
and how much effort it
takes to complete the work

Reference: WorkSafeBC, Preventing Heat Stress at Work, 2007.

Contributing Factors to Heat Stress

- Previous heat injury
- Alcohol consumption
- Some dietary supplements
- Fatigue
- Skin trauma (sunburn)

An ounce of prevention is worth a pound of cure

- Hydration is key
 - Drink plenty of fluids
 - Avoid caffeine, alcohol, sugary drinks, or very cold drinks
- Access to cooling
 - Passive cooling
 - Shade
 - Reflective clothing
 - Active cooling
 - Ice vests
 - Wetted clothing (low humidity environments)
 - Water cooled garments
 - Circulating air

An ounce of prevention is worth a pound of cure (cont.)

Be aware of conditions

