

BEATING THE HEAT WITH OSHA'S GUIDANCE



By Chip Darius

Humans are both highly fragile, and highly adaptable. In the wide range of climate found on planet Earth, humans live, work, and survive in areas as diverse as the Arctic circle and deserts in the Middle East. The Guinness world record for highest temperature ever officially recorded on Earth is 134.1°F, in 1913 at Furnace Creek Ranch in Death Valley, California (the hottest place on Earth, averaging 115°F daily).¹

Workers outside of Death Valley are also subject to high heat environments, indoors and outdoors, in both construction and general industry, regardless of season. Keeping workers safe in the heat is a complex topic because people experience heat and recover from heat exposure in different ways based on temperature, humidity, work effort, time spent, proximity, exposure to sun or radiant heat, medical conditions, air movement, confined spaces, PPE that interferes with sweat evaporation, and other social and economic factors. From 1992-2019, Bureau of Labor Statistics reported over 900 heat-related fatalities, and over 70,000 serious heat-related injuries, along with cautions that heat incidents are likely vastly under-reported, especially among social groups most at risk.

EXISTING STANDARDS

Federal OSHA already has multiple standards which relate to heat, covering hazard recognition, response to heat illness emergencies, and recording and reporting heat-related incidents. These performance standards address serious hazards but do not explicitly mention heat, and it's easy to see how they relate to heat if you consider them carefully.

TABLE 1	
OSH Act "General Duty Clause" sec. 5(a)(1&2)	29 CFR 1926.21(b)(2)
29 CFR 1926.28(a)	29 CFR 1926.50
29 CFR 1926.51(a & g)	29 CFR 1926.95(a & c)
29 CFR 1926 subpart AA	29 CFR 1910.94
29 CFR 1910.132	29 CFR 1910.146
29 CFR 1910.151	29 CFR 1904

Under the OSH Act, employers are responsible for providing workplaces free of known safety and health hazards. This includes protecting workers from heat-related hazards².

Presently, California and Washington state OSHA standards address heat, for outdoor workers. Minnesota state OSHA has a heat standard, but only for indoor workers. Military branches and Army Corps of Engineers EM-385-1-1 have their own heat stress standards. This combination of broad Federal standards and other standards can leave employers confused.

PROPOSED RULE

In 2021, OSHA issued advance notice of proposed rulemaking (ANPRM)³ to start the process of creating an OSHA standard for heat illness, which should clarify the minimum employer safety duties related to heat. OSHA requested and has received input from stakeholders on areas of concern for a heat standard, and this author provided comments to OSHA. It was interesting to hear the wide range of concerns raised by others, which ranged across topics such as race, language, culture, equality, lone workers, equity, teen workers, costs of compliance, logistics based on location (e.g., remote farm fields, work at heights on communications towers), reliance on media weather forecasters, use of the OSHA heat stress smart phone app, and concerns about site-specific use of wet-bulb-globe thermometers (WBGT). There are a great many factors for OSHA to consider beyond simply keeping human body temperature within certain parameters.

NATIONAL EMPHASIS PROGRAM

OSHA started annual Heat Illness Prevention awareness campaigns in 2011. Since 2019, OSHA Region 6 (AR, LA, NM, OK, TX) has had a Regional Emphasis Program (REP) for heat illnesses. In 2021, OSHA issued an inspection guidance memo⁴ for heat-related hazards. In April, 2022, OSHA issued CPL 03-03-024, a 41-page National Emphasis Program (NEP) for Outdoor and Indoor Heat-Related Hazards, which incorporated and replaced the memo, announcing OSHA will target high-hazard industries (including construction) during a heat wave for enforcement.

OSHA's NEP relies heavily on the National Weather Service heat index (HI), a "feels like" number commonly referred to in media weather reports based on a combination of outdoor air temperature *in the shade* and humidity. Heat index has four ranges: Caution (80-90 HI), Extreme Caution (91-103 HI), Danger (103-124 HI), and Extreme Danger (126 HI and above).

The heat index in a weather forecast and the free OSHA-NIOSH Heat Safety app for smart phones do not reflect indoor conditions

(e.g., work in an attic), do not take into account wind or direct sun exposure or heat created by exertion, and do not factor in PPE or heavy clothing that can interfere with sweat evaporation. Direct sunlight can increase heat index by up to 15°F.

OSHA's NEP states, "Heat-related illnesses and injuries can happen at almost any ambient temperature, especially in cases where workers perform moderate or higher physical activity, or wear heavy or bulky clothing or equipment, including PPE. Heat-related illnesses and injuries also generally occur when body heat generated by physical work is performed in conditions of high ambient heat, especially when combined with humidity and inadequate cooling." Workers wearing chemical protective garments need very close attention.

13 ACTION POINTS

The main action points for employers are clear:

1. Consult with medical professionals, and plan and equip for heat illness prevention, control, and treatment in *all* work where workers *could be* affected by heat illness.
2. Assess heat exposure in the actual work locations, realizing that a general forecast or smartphone app is not specific enough, especially with heavy clothing or PPE.
3. Work in cooler parts of the day, when possible.
4. Provide plenty of cool, clean water, in locations conveniently accessible to workers.
5. Provide air-conditioned cooling stations (or at least shade) in safe areas where workers can open up or remove PPE to rest and cool down.
6. Consider use of cooling clothing, such as evaporative head/neck wraps and cooling vests.
7. Train workers and supervisors, in language and vocabulary they understand, to stay safer in hot work conditions, to recognize heat illness early in themselves or others, and to take action.
8. Encourage workers to notify a supervisor of signs or symptoms of heat illness, in themselves or others, without fear of shame or ridicule.
9. Acclimate new or returning workers to hot conditions by limiting heat exposure and gradually increasing exposure.
10. Use physiological monitoring (temperature and pulse checks), to assess recovery during heat rest cycles.

11. Educate workers to understand how medical conditions, medications, housing, sleep environment, and use of alcohol or drugs affect heat tolerance.
12. Have trained first aiders available, equipped and prepared to immediately provide care for heat cramps, heat exhaustion, dehydration, and life-threatening heat stroke at the job site – even while EMS is on the way.
13. Plan work-rest cycles taking all factors into account.

RESOURCES

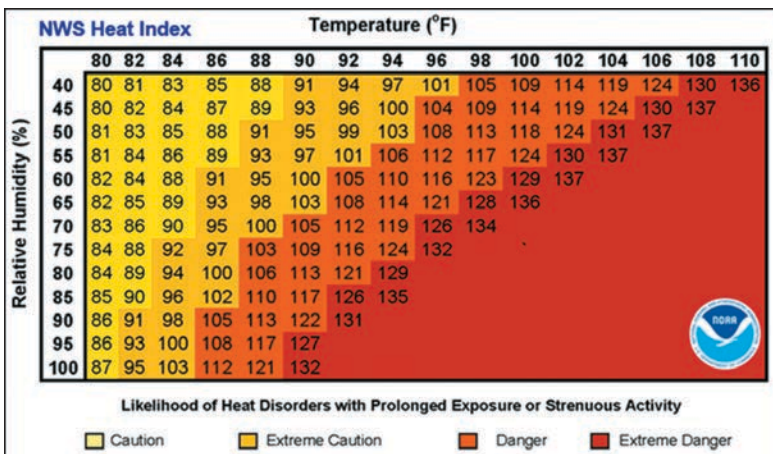
There are great downloadable resources available on the web, including:

- OSHA Heat Illness Prevention topic page: <https://www.osha.gov/heat>
- OSHA Heat Illness Prevention Training Lesson Plan: https://www.osha.gov/sites/default/files/publications/osha_heattraining_guide_0411.pdf
- National Integrated Heat Health Information System (NIHHIS), <https://www.heat.gov>
- CPWR Working in Hot Weather: <https://www.cpwr.com/research/research-to-practice-r2p/r2p-library/other-resources-for-stakeholders/working-in-hot-weather>
- NIOSH Heat Stress page: <https://www.cdc.gov/niosh/topics/heatstress>

SUMMARY

Heat stress management must be included as part of a comprehensive construction health and safety program. Employers need to comply with existing standards and ensure that workers are properly acclimated or re-acclimated to heat, stay adequately hydrated, are trained to self-monitor and monitor others for heat stress, follow appropriate work-rest cycles, have access to clean water and shade or cooling stations, and are supported by trained first aiders. OSHA's rulemaking process can take years, but heat won't give workers a break in the meantime. Eventually there may be separate standards in both 1910 and 1926 (like confined space), or one standard in either 1910 or 1926, with a pointer from the other standard (like 1926.59 pointing to 1910.1200 hazard communication, or 1910.27(a) pointing to 1926 subpart L scaffolds).

Protect your people.



- 1 <https://www.guinnessworldrecords.com/world-records/highest-recorded-temperature>
- 2 See Table 1
- 3 <https://www.osha.gov/heat/employer-responsibility>
- 4 <https://www.osha.gov/laws-regs/federalregister/2021-10-27>
- 5 <https://www.osha.gov/laws-regs/standardinterpretations/2021-09-01>

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