



Protecting Workers from Heat Stress and COVID-19

Recommendations for Employers

Key Recommendations

- Give employees substantial rest breaks in a place where physical distance can be maintained and keep workplace/break rooms clean
- Provide workers with appropriate personal protection equipment (PPE)
- Give workers access to plenty of water or other fluids
- Monitor workers for signs and symptoms of heat stress illness and the coronavirus
- Notify workers of dangerous heat conditions and community spread of COVID-19
- Train workers and supervisors on how to protect against heat stress and COVID-19, such as proper hydration and physical distancing
- Listen to employees! Track heat-related illnesses and injuries and problems with existing safety precautions
- When in doubt, call 911

Heat Stress and COVID-19

Heat stress killed 815 U.S. workers and seriously injured more than 70,000 from 1992 through 2017, [according](#) to the Bureau of Labor Statistics, numbers that are likely far below reality. As summer heats up, heat stress illness becomes more common in the workplace. Excessive heat exposure can cause life-threatening heat stroke. It also exacerbates existing health problems like asthma, kidney and heart disease, and diabetes. Although outdoor workers in agriculture and construction are at highest risk of heat-related injury, the problem affects all workers exposed to heat, including drivers, postal carriers, sanitation workers, healthcare workers covered in full personal protection equipment (PPE), and those working in warehouses, factories, or any other indoor locations without adequate climate control.

This year we have a new health risk to contend with, the novel coronavirus disease of 2019 (COVID-19). Confirmed coronavirus infections have surpassed 3.3 million in the United States, and more than 135,000 people have died.ⁱ As businesses re-open and summer agricultural production goes into high gear, the number of confirmed infections in the U.S. has increased markedly in many regions. Most states are seeing substantial rises in the rate of infections. Indeed, data show that between June 29 and July 12 the number of cases increased by at least 50% in 14 states and by at least 100% in 3 states.ⁱⁱ

While research on the interaction between heat stress and COVID-19 is still limited, we know that the same people

are at highest risk of illness and death from both COVID-19 and heat stress — people over 65 and people with heart disease, kidney disease, diabetes, or obesity. The additional stress to the body from overheating will likely worsen the negative effects of COVID-19, in part because of the dual assault on the body's overall physiology, and in part because heat can act to disrupt the immune response necessary to fend off infection.

The use of personal protection equipment (PPE), while necessary to keep workers safe from COVID-19 and other hazardous working conditions, also increases the chances of overheating. For example, protective clothing may trap heat and perspiration on the body's surface, increasing the core body temperature to dangerous levels. Wearing protective garments over your clothing is like adding an additional [5°F](#) or more to the ambient temperature.

Given the dual challenge of mitigating the risks of heat stress and coronavirus exposure, employers generally, and especially those that employ workers who are regularly exposed to above-average heat, must take measures to protect their workers from heat injuries. These should include heat exposure limits, rest breaks, PPE to reduce heat exposure or prevent coronavirus infection, hydration, monitoring, hazard notification, worker and supervisor education, and record keeping.

Heat Stress Limits

Employers should calculate and implement recommended heat stress limits.

The National Institute of Occupational Safety and Health (NIOSH) has standards for calculating heat stress thresholds. Heat stress is calculated by combining information on local weather (temperature, humidity, and wind), radiant heat sources such as direct sunlight and heavy machinery, and the level of exertion associated with a particular job. For example, someone doing moderate to strenuous work (e.g., a postal carrier or farm worker) for 60 minutes should not be subject to ambient temperatures above 80 degrees (F) without mitigating provisions (e.g., cooling breaks, cooling garments, hydration, fans). It is essential for employers to follow the recommended heat stress limits and initiate robust protective measures at NIOSH's Recommended Exposure Limit (REL) for acclimatized workers and Recommended Alert Limit (RAL) for unacclimatized workers.

Ventilation and air circulation are important tools in avoiding heat stress. However, improper use of fans and air conditioning cause a possible COVID-19 hazard. Proper ventilation helps to dilute the amount of the virus circulating in the air. It is important that no workers be placed downwind from other workers. Fans, air conditioning vents, and work stations should be adjusted accordingly. When it is not possible to avoid being downwind of other workers, outside or inside, the safe physical distance between workers should be greatly increased beyond six feet to allow for the broader dissolution of any viral particles or droplets.



A Note on COVID-19 Protection Gear

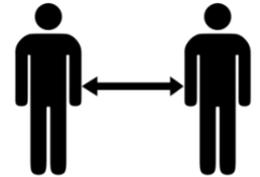
Temperature tolerance levels determined by the heat stress guidelines must be adjusted downward for persons requiring facial gear, respirators, or protective clothing.

Rest Breaks

Employers should provide mandatory rest breaks in recovery areas away from the hot environment.

Heat stress increases the body's core temperature. Workers need rest breaks to allow their core temperatures to return to normal. For indoor work, this should be in an air conditioned or well-ventilated room. For outdoor environments, employers must provide workers with access to sufficient areas of shade. At heat stress thresholds and dependent upon heat and work exertion levels, rest breaks should last 15 to 45 minutes per hour away from the hot environment. Regardless of scheduled breaks, any worker showing signs of heat illness should be given access to shade or a cooled room, immediately.

To protect against the spread of the coronavirus, employers will have to adjust existing cooling spaces. Because physical distancing guidelines must be observed, more or larger break locations should be made available — more shaded cooling stations, more cooled break rooms, larger break rooms, etc. Like workspaces, cooling spaces should provide adequate ventilation and regularly cleaned surfaces to mitigate the spread of the virus. Employee breaks should be staggered when possible while maintaining the option for any worker to take a cool down break when they begin to feel overheated.



Personal Protection Equipment (PPE) and Face Masks

Employers should provide appropriate PPE to protect workers from both heat stress and the coronavirus. Coronavirus supplies should also typically include face masks made of cloth other material which help reduce the spread of SAR-CoV-2 particles from one person to another.

Employers must do a hazard assessment of the workplace, identifying the risks for workplace illness and injury.ⁱⁱⁱ The assessment should identify the heat stress and COVID-19 risks associated with the job functions, the workspace, and the facilities for restroom and work breaks.^{iv} While the employer must assume that the coronavirus presents a danger in the workplace, hazard assessments should incorporate the community COVID-19 infection rates in the calculation of risk. Employees should be provided PPE to address the risks identified in the assessment.

Specialized PPE to cool the body should be available to those who must work at temperatures above NIOSH thresholds for extended periods of time. Such equipment may include water/ice-cooling and heat-reflective [garments](#).



PPE gear to protect against the transmission of the coronavirus should be provided to all workers when appropriate social distancing is not possible. The equipment should match the danger of transmission in the workplace. PPE gear such as respirators, face shields, gloves, and gowns will be essential for some jobs. N95 respirators should be standard issue whenever a worker is in an enclosed or close contact workspace that requires spending more than 15 minutes at a distance of less than six feet from other workers or customers.

When the workplace hazard assessment does not require the use of N95 respirators, workers should be given cloth masks.^v Face masks, typically made of cloth or plastic, are not PPE (unless they are special masks which are carefully fitted). As such, typical face masks are primarily used to protect others, not the person wearing the mask. There is some research indicating that standard masks do provide some protection to the mask wearer,^{vi} but the level of protection does not meet the requirements of the CDC and NIOSH to be considered PPE.^{vii} However, wearing even cloth masks in conjunction with social distancing and frequent hand washing collectively and clearly reduces spread of the virus in the workplace.

All PPE should be properly fitted and workers should be trained on its proper use. PPE for cooling must be made compatible with face masks and PPE necessary to mitigate the spread of the coronavirus in instances where both types of protective gear are necessary.

A Note About Masks

Masks are a new reality for many workers in the age of COVID-19. Employers should keep the following in mind:

- New masks should be given to employees when their masks get soaked with perspiration.
- Workers must have adequate opportunities to remove their masks safely in order to consume liquids.
- Workers must get “mask breaks” — opportunities to remove their masks in an environment safe from potential exposure to the coronavirus. Removing masks allows more cool air to reach the lungs and cool the body down.



Hydration

Employers should provide access to water and electrolytes.



To mitigate the effects of heat stress, workers must be given access, at no cost to themselves, to sufficient quantities of water to maintain adequate levels of hydration. The baseline is one cup of cool water per 15 to 20 minutes. Workers should be provided more water in higher heat and more strenuous work. If workers are sweating for more than two hours, they should also be given electrolytes. To reduce transmission of COVID-19, each worker must have access to their own supply of water or other source of hydration.

Monitoring

Employers should monitor heat exposure and symptoms of illness.

Employers must monitor both environmental heat exposure and employee workloads to ensure that no worker is exposed to heat stress at or above the NIOSH heat stress limits. Additionally, employers must institute a medical monitoring program to protect workers from heat-related illnesses and the novel coronavirus. Monitoring should include a confidential assessment of general health and COVID-19 status on a regular basis with temperature assessments and reliable viral testing as deemed necessary. The regular presence of non-contact thermometers in the workplace as a tool to screen for COVID-19 has the added benefit of allowing for closer monitoring of workers to protect against heat illness or injury.



First Aid and Illness Response

Employers should have staff trained to respond to heat illness and COVID-19 and should have liberal policies for staying home from work when ill.

Heat Exhaustion OR Heat stroke

Faint or Dizzy	Throbbing Headache
Excessive Sweating	Heavy Sweating or Red, Hot, Dry Skin
Cool, Pale Clammy Skin	Body Temperature above 103°
Nausea or Vomiting	Nausea or Vomiting
Rapid, Weak Pulse	Rapid, Strong Pulse
Muscle Cramps	Confusion (doesn't know what day it is) Convulsions Loss of Consciousness

CALL 9-1-1
Take immediate action to cool the person until help arrives

- Get to cooler, air conditioned space
- Drink water if fully conscious
- take a cool shower or use cold compresses

Illness caused by heat stress, as well as COVID-19, is serious and can be deadly. Employers must be prepared to respond when a worker shows [symptoms](#) of heat stress on the job including fatigue, dizziness, fainting, racing heart, elevated body temperature, nausea, confusion, and slurred speech. Any workers experiencing symptoms should be immediately moved to a shaded or air-conditioned location and [cooled down](#) using a combination of immersion in an ice bath, wet towels, and fans. Confusion, slurred speech and unconsciousness are signs of heat stroke, and you should immediately call 911.

Many symptoms of COVID-19 are similar to symptoms of other types of flu—fever, chills, cough, fatigue, headache, nausea, and so on. Workers experiencing these symptoms should be isolated from others, given a mask to wear (if for some reason all workers are not already wearing masks), and sent home with

encouragement to get tested for the novel coronavirus. Employers should also be prepared to respond to [urgent symptoms](#) of COVID-19 including shortness of breath, persistent pain or pressure in the chest, confusion, and blueish tint of the lips or face. Workers experiencing any of these symptoms should receive immediate medical attention.

Employers should have clear, flexible leave policies that encourage workers to stay home, without penalty, if they are sick. [Paid sick leave](#) should be available for workers to stay home if they have recently been exposed to someone with COVID-19 or if they have tested positive for the virus, regardless of whether they have any symptoms.



Hazard Notification/Alerts

Employers should post warning signs and develop an alert system to address the immediate dangers of heat stress and COVID-19.

Employers must post prominent signs, in languages their workers understand, in high-heat areas warning of the dangers of heat stress. During the pandemic, signs should address the added risks of heat stress and other illnesses associated with COVID-19. These posted warnings should include reminders about personal strategies such as proper hydration and physical distancing.



Employers must develop a written Heat Alert Program to be implemented whenever the National Weather Service or other authoritative weather service forecasts a heat wave for the coming day or days in order to help improve worker awareness and preparedness. During COVID-19 such periodic warnings should also include updates of local and regional infection trends. Workers should be informed if they have been exposed to the coronavirus while maintaining the confidentiality of the individual who tested positive for COVID-19.

Worker Information and Training

Employers should provide training on the dangers of heat stress.

All workers and supervisors who work in areas where there is a reasonable likelihood of heat illness must be trained on measures to prevent and mitigate that risk. Worker information and training should be in place to ensure that all workers and supervisors understand heat stress and the ways to minimize illness related to it. During COVID-19, the training should explicitly note the simultaneous challenges and strategies related to controlling the dangers of the virus.



Heat-related Surveillance and Record-keeping

Employers should maintain records that detail heat-related incidents, injuries and deaths.

Employers should proactively obtain and analyze data on all heat-related injuries and deaths,^{viii} environmental and physiological measurements related to heat, and other heat-related information. These records will allow employers to make improvements that will guard against heat stress illness and death. As workers are in the best position to observe safety hazards, employees must be allowed to question heat stress and COVID-19 mitigation strategies without fear of reprisals.

Additional information:

[OSHA Overview: Working in Indoor and Outdoor Heat Environments](#)

[OSHA Heat Stress Guide](#)

[NIOSH Criteria for a Recommended Standard: Occupational Exposure to Heat and Hot Environments](#)

[From the Fields to the Factories: Preventing Workplace Injury and Death from Excessive Heat](#)

Stay **Cool**



Stay **Hydrated**



Stay **Informed**



Stay **Healthy**



ⁱ As of July 14, 2020, *Coronavirus in the U.S.: Latest Map and Case Count*, NEW YORK TIMES, <https://nyti.ms/2AVXmr6>.

ⁱⁱ Stephanie Adeline et al., *Tracking the Pandemic: Are Coronavirus Case's Rising or Falling in Your State?*, NPR (July 13, 2020), <https://n.pr/3h7DAJl>.

ⁱⁱⁱ Department of Labor, Occupational Safety and Health Administration, <https://bit.ly/3elHrAl>

^{iv} Centers for Disease Control, <https://bit.ly/3fgOpjk1>.

^v Note that cloth masks may be inappropriate for some jobs where hazardous chemicals in the workplace could soak into the mask.

^{vi} Rick Kushman, *Your Mask Cuts Own Risk by 65%*, UC DAVIS (July 6, 2020), <https://bit.ly/3fdEQtC>.

^{vii} Centers for Disease Control, <https://bit.ly/3fg2cyL>.

^{viii} Note that [29 CFR Part 1904](#) requires that all work-related injuries, illnesses, and deaths be reported to OSHA.