

SAFETY ON THE FARM: PROTECTING YOUR EMPLOYEES FROM HEAT ILLNESS

The Occupational Safety and Health (OSH) Act requires employers to provide their employees with **“employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm”**. This is called the *General Duty Clause*. Excessive heat exposure is one of these recognized hazards. Exposure to high temperatures at work may lead to heat-related illness and heat stroke, which can quickly turn fatal. The heat stress caused by exposure to high temperatures also increases the risk of workplace accidents.

This fact sheet explains the actions you can take to protect your employees from heat hazards, and summarizes relevant federal workplace safety requirements, where applicable. **Your state may have additional, stricter rules.** For the most up-to-date requirements, contact your state’s occupational safety agency or your local OSHA office. For your local OSHA office, see: <https://www.osha.gov/contactus/bystate>

Keep in mind: Temperature is not the only factor that puts people at risk of heat-related illness. High humidity, direct sun exposure, lack of wind and the intensity of a person’s workload affect risk. In addition, people may have personal risk factors. A person performing heavy work may suffer from heat illness at temperatures that may appear comfortable to a person at rest. You can find a **recommended work/rest schedule** on pages 7-8.

Employer responsibilities

There are a number of important things you can do as an employer to protect your employees from heat illness. Some of these are required by federal regulations. As mentioned above, states may have additional rules you must follow. Regardless of whether any one of the following protections is required or not, providing these will help you maintain a safe workplace as the General Duty Clause mandates:

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|---------|-------------------------------------|--------------------------------|
| ❖ Water | ❖ Acclimatization | ❖ Monitoring & communication |
| ❖ Shade | ❖ Toilet & handwashing facilities | ❖ Heat illness prevention plan |
| ❖ Rest | ❖ Training in prevention & response | ❖ Emergency response plan |



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Definitions

- ❖ **Acclimatization:** The process by which a person's body adapts to working in the heat, reducing (but not eliminating) their risk of heat illness.
- ❖ **Heat Stress:** A condition in which the body cannot get rid of excess heat and core body temperature rises.
- ❖ **Heat Illness:** Includes conditions such as heat cramps, heat rashes, heat exhaustion, heat syncope and heat stroke, which are caused by heat stress.
- ❖ **Heat stroke.** A medical emergency in which body temperature rises and the body loses its ability to regulate its temperature. A person who is developing or has developed heat stroke may have vertigo, nausea, headache, confusion or bizarre behavior, very high body temperature and loss of consciousness. Left untreated, heat stroke is fatal.

Workplace protections

The following practices are meant to protect agricultural workers from heat stress. Some states may have stricter requirements that employers must follow. For more information, see *State Standards* on page 5.

• **Water.** The Occupational Safety and Health Administration's (OSHA) Field Sanitation Standard **requires** employers to provide employees water that is:

- ❖ Potable
- ❖ Suitably cool
- ❖ Placed in locations readily accessible to all employees
- ❖ Dispensed in single-use drinking cups or by fountains. Common drinking cups and dippers are prohibited.

For the full list of requirements, see OSHA's Field Sanitation Standard ([CFR 1928.110](#)). In addition, the National Institute for Occupational Safety and Health (NIOSH) recommends that employers provide enough cool water so that every employee can drink at least **4 cups (32 oz.) per hour**. The recommended temperature for drinking water is **less than 59°F**. Sports drinks with balanced electrolytes are also recommended for people who are sweating for several hours, but enough drinking water should still be readily available.

• **Shade.** Establish one or more shaded areas as close as practicable to areas where employees are working. A shaded area is adequate if it is open to the outside air and blocks sunlight so that objects don't cast a shadow. Make sure there aren't obstacles or nuisances that might deter employees from resting in the shade (for example, if the shade were located immediately next to the toilet facilities, across a busy road, or next to a source of heat.) Ensure there is enough shade for all employees who are on rest or breaks at any one time to rest seated fully in the shade, in a normal seating position.

• **Rest.** Rest is important to allow the body to cool down. For rest breaks to be effective, workers need to rest in the shade. Anyone who feels that they need a cool-down rest break or is showing signs of heat stress or heat illness should be allowed to take a break in the shade; preferably for at least 10 minutes. No employee should be made to go back to work until symptoms are resolved. If a person shows more serious symptoms (nausea, vomiting, dizziness, confusion, fainting) they should not work again that day. Workers who wear double-layered, heavy, impermeable or non-breathable clothing, or personal protective equipment (PPE) are at greater risk of heat illness and need more frequent breaks. PPE should be removed during rest breaks.

Who is at greatest risk of heat illness? Workers who are older, overweight or obese, unacclimatized, pregnant, have health conditions such as diabetes or cardiovascular disease, consume illicit drugs or alcohol, take certain medications, have had heat illness before, or wear types of clothes or PPE that trap heat.

NIOSH has developed a recommended **work/rest schedule** (see pages 7-8).

• **Acclimatization.** Develop a written acclimatization plan. New workers and any workers who have not worked in the heat for a week or more must be allowed time to become gradually accustomed to working in higher temperatures. The acclimatization period should last between 7 and 14 days. NIOSH recommends the following acclimatization schedules for physically fit workers:

- ❖ Workers who have previous experience in the job: **no more** than 50% of the usual duration of work in the heat on day 1, 60% on day 2, 80% on day 3, and 100% on day 4.
- ❖ New workers: **no more** than 20% of the usual duration of work in the heat on day 1, increasing by no more than 20% each day.

Individuals who are not fit may need about **50% more time** to acclimatize. When acclimatizing workers, you must also consider each person's personal risk factors (see *Who is at greatest risk of heat illness*, above), the type of clothing they wear, and changes in weather.

• **Toilet and handwashing facilities.** The Field Sanitation Standard also **requires**:

- ❖ One toilet facility and one handwashing facility **per twenty (20)** employees or fraction thereof.
- ❖ They must be accessibly located; toilets and handwashing facilities must also be in close proximity to each other.
- ❖ They must be located within a one-quarter-mile walk of each hand laborer's place of work in the field.

Besides protecting from the spread of disease, having adequate toilet facilities ensures that employees are able to drink water and hydrate as needed throughout the day. For more details see OSHA's Field Sanitation Standard ([CFR 1928.110](#)).

• **Training in prevention and response.** It is important to train your employees, **including supervisors**, on how to prevent and respond to heat-related illness. Training should be provided before temperatures reach high levels and reminders should be provided on hot days. Training should include a discussion of the causes of heat illness; the importance of water consumption, shade, rest and acclimatization; the added risk caused by certain types of clothing and PPE; how to recognize early signs of heat illness and how to monitor others for symptoms; the importance of reporting symptoms of heat illness to a supervisor; how to respond when they or a coworker show symptoms; how to provide first aid; when and how to call an ambulance; the employer's heat emergency response plan; how to bring unsafe conditions to management's attention; the protections to which workers are entitled in the workplace; and how to make a safety complaint to OSHA. Training should be provided in a language the employees understand.

Train supervisors on how to acclimatize workers, how to ensure workers are receiving sufficient water and rest breaks, what to do when someone shows signs of heat illness; how to respond to an emergency, and how to monitor and respond properly to weather reports and heat advisories. Keep records of both employee and supervisor trainings.

• **Monitoring and communication.** Develop a written plan for monitoring employees for signs of heat illness. This should include both supervisor monitoring and a "buddy system" by which employees are assigned to keep an eye on one or more fellow employees for early symptoms of heat illness, and ensure that such employees are evaluated and, if necessary, promptly provided first aid and medical attention. Ensure that someone in every work area has a means of calling for help if an employee becomes ill (cell phone, radio, etc.) Ensure that no employee is left working alone out of sight. Train all supervisors and employees in monitoring and communication.

• **Heat illness prevention plan.** Develop a written plan for heat illness prevention and designate a properly trained on-site supervisor or other individual with authority to ensure its implementation. This should be a plan for providing at least the protections mentioned above (water, shade, rest, acclimatization, provision of toilet and handwashing facilities, training, monitoring and communication). As stated previously, train all employees and supervisors on the elements of the plan.

• **Emergency response plan.** Develop a written plan on how to respond to an emergency involving heat illness. Train all employees (including supervisors) on how to execute the emergency response plan. The plan should include procedures for:

- ❖ First aid for different types of heat illness
- ❖ Communications in case of a heat emergency
- ❖ Ensuring emergency medical services (EMS) will be called when necessary
- ❖ Ensuring EMS will be provided appropriate directions to locate the site of the emergency
- ❖ Transporting employees to an area where they can be reached by EMS if necessary
- ❖ Maintaining all necessary first aid supplies and communications equipment readily available to employees to ensure a timely response

State standards

The following is a summary of existing state heat standards as of December 2022. For full details and the latest requirements, consult with your state's occupational safety and health agency or [federal OSHA's local office](#).

Please note: States may also have requirements concerning **whether rest breaks must be paid**. Consult with your state's department of labor regarding the rules in effect in your state.

- **California.** California's heat standard ([T8 CCR 3395](#)) requires employers to provide shade at all times when the temperature is **over 80°F**. At temperatures below 80 °F, employers must provide timely access to shade upon an employee's request if it is not already available. The standard also covers procedures for cool-down breaks, monitoring employees with symptoms of heat illness, acclimatization, worker and supervisor training, and a heat illness response plan. Employers must implement high heat procedures when the temperature **exceeds 95°F**, which triggers additional requirements for rest break schedules, communications, monitoring, and review of high heat procedures during pre-shift meetings, among other provisions. California also has its own [Field Sanitation Standard](#) (T8 CCR 3457).

- **Colorado.** The Colorado heat standard is part of the state's Agricultural Labor Conditions Rules ([7 CCR 1103-15](#)) and takes effect on days when the temperature is or is forecasted to be **80°F or higher**. It has provisions regarding drinking water, shade, and breaks for drinking and restroom use. When the daily high or measured temperature is **at least 95°F**, increased risk procedures are in effect, and employers must give employees a break of at least 10 minutes every two hours and inform them of their rights under the rule. The rule also has provisions for unacclimatized employees, employees wearing PPE, communications, monitoring, emergency response, preventative measures and training.

- **Oregon.** The provisions of Oregon's heat standard ([OAR 437-002-1131](#)) are in effect when the **heat index is 80°F or above**. It has requirements concerning drinking water and other beverages, shade, emergency medical plans, acclimatization plans, heat illness prevention plans, and supervisor & employee training. A **heat index of 90°F or above** triggers a requirement for high-heat practices concerning rest break schedules, communications, monitoring and emergency response. Oregon's Agricultural Labor Housing and Related Facilities standard ([OAR 437-004-1120](#)) also contains requirements concerning heat illness prevention and response.

- **Washington.** The temperature action levels in Washington's heat standard ([WAC 296-307-097](#)) are based on the type of clothing worn by employees (non-breathable: **52°F**; double-layer woven clothes **77°F**; all other clothing **89°F**). It includes requirements concerning drinking water, shade, paid cool-down rest periods, acclimatization, heat illness response, heat exposure safety programs, and supervisor and employee training. Additional requirements concerning rest breaks, communications and employee monitoring come into effect when the temperature is **89°F** or above.

Informational resources

For employees:

- ❖ **Farmworker Justice. *How Can We Protect Ourselves from Heat Stress at Work? Student Handbook.*** <https://www.farmworkerjustice.org/resource/heat-safety-training-toolkit/>
- ❖ **OSHA. *Heat Illness Prevention.*** <https://www.osha.gov/heat/worker-information>

For employers:

- ❖ **NIOSH. *Heat Stress: Work/Rest Schedules.*** <https://www.cdc.gov/niosh/mining/UserFiles/works/pdfs/2017-127.pdf>
- ❖ **NIOSH. *Criteria for a Recommended Standard: Occupational Exposure to Heat and Hot Environments.*** <https://www.cdc.gov/niosh/docs/2016-106/pdfs/2016-106.pdf?id=10.26616/NIOSH PUB2016106>
- ❖ **OSHA. *General Duty Clause.*** <https://www.osha.gov/laws-regs/oshact/section5-duties>
- ❖ **OSHA. *Field Sanitation Standard*** (29 CFR 1928.110). <https://www.osha.gov/laws-regs/regulations/standardnumber/1928/1928.110>
- ❖ **OSHA. *Heat.*** <https://www.osha.gov/heat-exposure>
- ❖ **California**
 - ***Heat Standard*** (T8 CCR 3395). <https://www.dir.ca.gov/title8/3395.html>
 - ***Cal/OSHA. Heat Illness Prevention*** (Resources). <https://www.dir.ca.gov/dosh/heatillnessinfo.html>
- ❖ **Colorado**
 - ***Heat Standard*** (part of Agricultural Labor Conditions Rules; 7 CCR 1103-15). <https://cdle.colorado.gov/sites/cdle/files/7%20CCR%201103-15%20%20Agricultural%20Labor%20Conditions%20Rules.pdf>
- ❖ **Oregon**
 - ***Heat Standard*** (OAR 437-002-1131). <https://secure.sos.state.or.us/oard/view.action?ruleNumber=437-004-1131>
 - ***Agricultural Labor Housing & Related Facilities Standard*** (OAR 437-004-1120). <https://secure.sos.state.or.us/oard/view.action?ruleNumber=437-004-1120>
 - ***Heat Stress.*** (Resources). <https://osha.oregon.gov/pages/topics/heat-stress.aspx>
- ❖ **Washington**
 - ***Heat Standard*** (WAC 296-307-097). https://lni.wa.gov/safety-health/safety-rules/chapter-pdfs/WAC296-307.pdf#WAC_296_307_097
 - ***Be Heat Smart! Your Outdoor Heat Safety Program*** (Resources). <https://lni.wa.gov/safety-health/safety-training-materials/workshops-events/beheatsmart>



Sample Work/Rest Schedule for Workers Wearing Normal Clothing*

The NIOSH work/rest schedule is based on air temperature, with adjustments for direct sunlight and humidity. It may not be applicable to all worksites. Other work/rest schedules are available, some of which are based on Wet Bulb Globe Temperature.

See reverse for temperature adjustments for the NIOSH work/rest schedule and examples of light, moderate, and heavy work.

Things you need to know:

- Continuous work in the heat is not advisable—you must take rest breaks periodically to allow your body to cool down.
- A variety of work/rest schedules are available that can be adapted to your worksite. Relying on self-pacing alone may not be sufficient.

Temperature (°F)	Light Work Minutes Work/Rest	Moderate Work Minutes Work/Rest	Heavy Work Minutes Work/Rest
90	Normal	Normal	Normal
91	Normal	Normal	Normal
92	Normal	Normal	Normal
93	Normal	Normal	Normal
94	Normal	Normal	Normal
95	Normal	Normal	45/15
96	Normal	Normal	45/15
97	Normal	Normal	40/20
98	Normal	Normal	35/25
99	Normal	Normal	35/25
100	Normal	45/15	30/30
101	Normal	40/20	30/30
102	Normal	35/25	25/35
103	Normal	30/30	20/40
104	Normal	30/30	20/40
105	Normal	25/35	15/45
106	45/15	20/40	Caution
107	40/20	15/45	Caution
108	35/25	Caution	Caution
109	30/30	Caution	Caution
110	15/45	Caution	Caution
111	Caution	Caution	Caution
112	Caution	Caution	Caution

Example
A worker performing heavy work in 104 °F temperatures should work for 20 minutes and rest for 40 minutes.

Example
A worker performing moderate work at 108 °F should use extreme caution! The risk for heat injury is high in this situation.

* From NIOSH Criteria for a Recommended Standard, Occupational Exposure to Heat and Hot Environments, <https://www.cdc.gov/niosh/docs/2016-106/pdfs/2016-106.pdf>. Assumptions: workers are physically fit, well-rested, fully hydrated, under age 40, and environment has 30% humidity and perceptible air movement.

HEAT STRESS Work/Rest Schedules

Temperature Adjustments for this Work/Rest Schedule

Adjust the temperature in the table based on:

Environmental conditions	AND	Humidity
<ul style="list-style-type: none"> • Full sun (no clouds): Add 13 °F • Partly cloudy/overcast: Add 7 °F • No shadows visible, in the shade, or at night: No adjustment 		<ul style="list-style-type: none"> • 40% humidity: Add 3 °F • 50% humidity: Add 6 °F • 60% humidity or more: Add 9 °F
<p>Example Adjustment Conditions at a mine are 90 °F, with partly cloudy skies and 50% humidity. Adjust the table as follows: Add 7 °F for partly cloudy skies and 6 °F for 50% humidity, to arrive at 103 °F.</p>		



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Examples of Work at Different Intensity Levels

Light work

- Operating equipment
- Inspection work
- Walking on flat, level ground
- Using light hand tools (wrench, pliers, etc.). However, this may be moderate work depending on the task
- Travel by conveyance

Moderate work

- Jack-leg drilling
- Installing ground support
- Loading explosives
- Carrying equipment/supplies weighing 20–40 pounds
- Using hand tools (shovel, fin-hoe, scaling bar) for short periods

Heavy work

- Climbing
- Carrying equipment/supplies weighing 40 pounds or more
- Installing utilities
- Using hand tools (shovel, fin-hoe, scaling bar) for extended periods

Case Study: Use of Work/Rest Schedule

A crew was shoveling ore out from under the primary conveyor at a surface mine in Arizona in August. The high temperature that day was 113 °F. The crew was rotating in 10-minute shifts and hydrating between shifts. Coworkers noticed signs of heat illness in two employees, and they were transferred to the medical station for evaluation. From there they were sent to the hospital, where they were given IV saline and released home. Both employees recovered after rehydration at the hospital.

Lessons Learned

In extreme heat, even a work/rest schedule may not eliminate the risk of heat illness. In this case, use of work/rest schedules, frequent hydration, and team monitoring helped keep this situation from becoming even more serious. Without those safety precautions the workers could have potentially suffered more severe heat illness, possibly including heat stroke, which is life threatening.