

## Chapter 57: [Heat Illness Prevention](#)

# Quick Start Summary

Product ID: [731](#) | Revision ID: 2465 | Date published: 22 June 2021 | Date effective: 22 June 2021

URL: <https://www-group.slac.stanford.edu/esh/eshmanual/references/heatQuickstart.pdf>

## 1 Who needs to know about these requirements

The requirements of Heat Illness Prevention apply to workers, supervisors, field construction and service managers and points of contact, the heat illness prevention program manager, and subcontractors. They cover identifying *high-heat* working conditions and implementing controls to mitigate the hazards of working in those conditions. These requirements must be followed when work activities (outdoor or indoor) could reasonably be expected to expose workers to the risk of *heat illness*, namely, when temperatures exceed 80°F.

## 2 Why

Workers who are exposed to extreme heat or work in hot environments indoors or outdoors, or even those engaged in strenuous physical activities, may be at risk of *heat stress*. Exposure to extreme heat can result in occupational illnesses caused by heat stress, including heat stroke, heat exhaustion, heat syncope (fainting), heat cramps, heat rashes, or even death.

## 3 What do I need to know

Workers, and their supervisors, whose work tasks or assignments should reasonably be anticipated to result in exposure to the risk of heat illness must complete ESH Course 416, Heat Illness Prevention ([ESH Course 416](#)). Workers must drink adequate water, take *preventative cool down breaks*, and notify their supervisor if they suspect their work activity will expose them to excessive heat or they are experiencing any symptoms of heat illness.

Supervisors must ensure access to water and *shade* and that communication, oversight, and emergency response requirements for high heat are met. They must also ensure that any worker exhibiting signs or symptoms of heat illness is monitored, not left alone, or sent home without being offered first aid and/or provided emergency services.

## 4 When

These requirements take effect 22 June 2021.

## 5 Where do I find more information

[SLAC Environment, Safety, and Health Manual](#) (SLAC-I-720-0A29Z-001)

- [Chapter 57, “Heat Illness Prevention”](#)

Or contact the [program manager](#).



## Chapter 57

# Heat Illness Prevention

Product ID: [725](#) | Revision ID: [2297](#) | Date published: 22 June 2021 | Date effective: 22 June 2021

URL: <https://www-group.slac.stanford.edu/esh/eshmanual/pdfs/ESHch57.pdf>

## 1 Purpose

The purpose of this program is to prevent *heat illness*. It covers identifying *high-heat* working conditions and implementing controls to mitigate the hazards of working in those conditions. It applies to workers, supervisors, field construction and service managers and points of contact, the heat illness prevention program manager, and subcontractors.

These requirements must be followed when work activities (outdoor or indoor) could reasonably be expected to expose workers to the risk of heat illness, namely, when *temperatures* exceed 80°F.

## 2 Roles and Responsibilities

Functional roles and general responsibilities for each under this program are listed below. More detailed responsibilities and when they apply are provided in the procedures and requirements.

The roles may be performed by one or more individuals and one individual may play more than one role, depending on the structure of the organizations involved. Responsibilities may be delegated.

### 2.1 Worker

- Completes required training
- Notifies supervisor if they suspect their work activity will expose them to excessive heat conditions
- Follows requirements while working in high-heat conditions, including drinking adequate water and taking *preventative cool down breaks*
- Notifies supervisor and/or seeks medical attention if experiencing symptoms of heat illness

### 2.2 Supervisor

- Completes required training
- Ensures workers have completed required training
- Ensures workers are complying with the requirements of this program
- Ensures access to water and *shade*
- Determines conditions when high-heat requirements must be implemented
- Ensures communication, oversight, and emergency response requirements for high heat are met

- Designates a person to assume work-site responsibilities who will be on-site and available to affected workers
- Ensures that any worker exhibiting signs or symptoms of heat illness is monitored, not left alone, or sent home without being offered first aid and/or provided emergency services

## 2.3 Field Construction Manager / Service Manager / Point of Contact

- Verifies subcontractors and users are complying with these requirements and applicable regulations

## 2.4 Subcontractor

- Must have and follow their own heat illness prevention program, in compliance with [8 CCR 3395](#), including providing their own employee training and monitoring adherence to their program, and must provide their written program upon request
- Must comply with any applicable additional SLAC requirements and regulations

## 2.5 Heat Illness Prevention Program Manager

- Assists in the interpretation of standards in support of compliance and safety improvement efforts
- Develops program requirements and develops training.
- Maintains this chapter and associated documents
- Periodically assesses this program
- Ensures that subcontractors have a compliant program

# 3 Procedures, Processes, and Requirements

These documents describe the detailed requirements for this program and how to implement them:

- [Heat Illness Prevention: General Requirements](#) (SLAC-I-730-0A21S-064). Describes requirements for identifying high-heat working conditions and implementing controls to mitigate the hazards of working in those conditions

# 4 Training

## 4.1 Worker

Any personnel whose work tasks or assignments should reasonably be anticipated to result in exposure to the risk of heat illness (typically temperatures above 80°F) in outdoor or indoor environments must complete the following training:

- ESH Course 416, Heat Illness Prevention ([ESH Course 416](#))

## 4.2 Supervisor

Any supervisor of personnel whose work tasks or assignments should reasonably be anticipated to result in exposure to the risk of heat illness (typically temperatures above 80°F) in outdoor or indoor environments must complete the following training:

- ESH Course 416, Heat Illness Prevention ([ESH Course 416](#))

## 5 Definitions

*acclimatization.* Temporary adaptation of the body to work in the heat that occurs gradually when a person is exposed to it. Acclimatization peaks in most people within four to fourteen days of regular work for at least two hours per day in the heat.

*heat illness.* A serious medical condition resulting from the body's inability to cope with a particular heat load; symptoms include heat cramps, heat exhaustion, heat syncope, and heat stroke

*heat stress.* A relationship and difference between external factors and the body's core temperature control mechanisms; the net heat load to which a worker is exposed. Physical exertion, environmental factors, and clothing worn all contribute to heat stress.

*heat wave.* A period when the predicted temperature will be at least 80°F and at least 10°F higher than the average daily high temperature in the preceding five days

*high heat.* Temperature equals or exceeds 95°F

*preventative cool down break.* Not the same as regularly scheduled or other rest break. A break in the shade specifically intended to help the body relieve excess heat

*risk factors for heat illness, environmental.* Working conditions that create the possibility that heat illness could occur, including air temperature, relative humidity, radiant heat from the sun and other sources, conductive heat sources such as the ground, air movement, workload severity and duration, and protective clothing and personal protective equipment worn by employees

*risk factors for heat illness, personal.* Factors such as individual's age, degree of acclimatization, health, water consumption, alcohol consumption, caffeine consumption, and use of prescription medications that affect the body's water retention or other physiological responses to heat

*shade.* Means blockage of direct sunlight. One indicator that blockage is sufficient is when objects do not cast a shadow in the area of blocked sunlight. Shade is not adequate when the heat in the area of the shade defeats the purpose of the shade, which is to allow the body to cool. For example, a car sitting in the sun does not provide acceptable shade to a person inside it, unless the car is running with air conditioning.

*temperature.* The dry bulb temperature in degrees Fahrenheit obtainable by using a thermometer to measure the outdoor temperature in an area where there is no shade. While the temperature measurement must be taken in an area of full sunlight, the bulb or sensor of the thermometer should be shielded while taken the measurement, for example, with the hand or some other object, from direct contact by sunlight.

## 6 References

### 6.1 External Requirements

The following are the external requirements that apply to this program:

- Title 8, *California Code of Regulations*, “Industrial Relations”, Division 1, “Department of Industrial Relations”, Chapter 4, “Division of Industrial Safety”, Subchapter 7, “General Industry Safety Orders”, Group 2, “Safe Practices and Personal Protection”, Article 10, “Personal Safety Devices and Safeguards”, Section 3395, “Heat Illness Prevention in Outdoor Places of Employment” ([8 CCR 3395](#))
- Title 8, *California Code of Regulations*, “Industrial Relations”, Division 1, “Department of Industrial Relations”, Chapter 4, “Division of Industrial Safety”, Subchapter 4, “Construction Safety Orders”, Article 3, “General”, Section 1524, “Water Supply” ([8 CCR 1524](#))

### 6.2 Related Documents

[SLAC Environment, Safety, and Health Manual](#) (SLAC-I-720-0A29Z-001)

- [Chapter 2, “Work Planning and Control”](#)

## Chapter 57: [Heat Illness Prevention](#)

# General Requirements

Product ID: [732](#) | Revision ID: 2466 | Date published: 22 June 2021 | Date effective: 22 June 2021

URL: <https://www-group.slac.stanford.edu/esh/eshmanual/references/heatReqGeneral.pdf>

## 1 Purpose

The purpose of these requirements is to prevent *heat illness*. They cover identifying *high-heat* working conditions and implementing controls to mitigate the hazards of working in those conditions. They apply to workers, supervisors, field construction and service managers and points of contact, the heat illness prevention program manager, and subcontractors. These requirements must be followed when work activities (outdoor or indoor) could reasonably be expected to expose workers to the risk of heat illness, namely, when *temperatures* exceed 80°F.

Workers who are exposed to extreme heat or work in hot environments indoors or outdoors, or even those engaged in strenuous physical activities, may be at risk of *heat stress*. Exposure to extreme heat can result in occupational illnesses caused by heat stress, including heat stroke, heat exhaustion, heat syncope (fainting), heat cramps, heat rashes, or even death.

## 2 Requirements

### 2.1 Provision of Water

Workers must have access to potable drinking water that is fresh, pure, and reasonably cool. The water must be located as close as practicable to the work location. Each worker must have access to a minimum of one quart of water per hour for the duration of the entire shift. Re-usable containers for individual use and drinking cups must not be shared or used in common.

### 2.2 Access to Shade

When the outdoor temperature in the work area exceeds 80°F and workers are present, one or more areas of *shade* must be maintained at all times that are either open to the air or provided with ventilation or cooling. The amount of shade must be at least enough to accommodate the number of workers on recovery or rest periods, and each worker should be able to sit in normal posture without having to come into physical contact with another worker. The shade must be located as close as practicable to the work location. Where it is infeasible or unsafe to provide a shade structure, alternate methods for providing access to shade or other cooling measures are allowed if they provide equivalent protection or are at least as effective as shade in allowing workers to cool.

- Workers must be allowed and encouraged to take *preventative cool down breaks*, distinct from normal rest breaks, as needed to protect themselves from heat illness. Access to shade must be permitted at all times.

- An individual worker who takes a preventative cool down break must
  - Be monitored and asked if he or she is experiencing symptoms of heat illness
  - Be encouraged to remain in the shade
  - Not return to work until signs of heat illness have abated or have rested for a minimum of five minutes
- First aid or emergency response must be provided if a worker exhibits or reports symptoms of heat illness while working or during a preventative cool down break.

## 2.3 High Heat

When the temperature equals or exceeds 95°F, supervisors must

- Maintain effective mean of communication by voice, observation, or electronic means so that workers at the work site can contact a supervisor or designee or emergency medical services when necessary. Electronic devices may be used for this purpose only when reception is reliable.
- Ensure workers are observed for alertness and signs or symptoms of heat illness. Observation/monitoring may be done by implementing one of the following:
  - Supervisor or designee observation of 20 or fewer employees
  - Mandatory buddy system
  - Regular communication with sole worker such as by cell phone or radio
  - Other effective means of communication
- Designate one or more workers on each work site as authorized to call for emergency medical services, and allow other workers to call for emergency services when no designated person is available
- Remind workers throughout the workday to drink plenty of water
- Review high-heat practices in pre-shift meeting before work begins

## 2.4 Emergency Response

The following measures must be implemented to ensure effective emergency response:

- Ensuring effective communication as outlined in Section 2.3
- Responding to signs and symptoms of possible heat illness
  - If a supervisor or designee observes, or another worker reports, any signs or symptoms of heat illness in any worker, the supervisor must take immediate action and respond appropriately, depending on the severity of the illness.
  - If the signs or symptoms are indicators of severe heat illness (examples include decreased level of consciousness, staggering, vomiting, disorientation, irrational behavior, convulsions), emergency response procedures must be implemented. Contact SLAC Site Security (ext. 5555) if not life threatening, otherwise call 911 then contact SLAC Site Security (ext. 5555).
- Monitoring a worker exhibiting signs or symptoms of heat illness and not leaving them alone or sending them home without offering first aid and/or providing with emergency services



- Transporting an affected worker to a place where they can be reached by emergency responders only if the transport can be done safely without causing additional harm to the worker or other persons involved
- Making sure all workers working in high-heat conditions review and are aware of the location where the work is taking place, and are able to give clear and precise directions to the work location

## 2.5 Acclimatization

All workers must be closely observed during a *heat wave*, defined as a period when the predicted temperature will be at least 80°F and at least 10°F higher than the average daily high temperature in the preceding five days. If a worker has been newly assigned to work in high-heat conditions he or she must be closely observed by their supervisor or designee for their first 14 days of work in such conditions.

## 2.6 Training

Workers, and their supervisors, whose work tasks or assignments should reasonably be anticipated to result in exposure to the risk of heat illness (typically temperatures above 80°F) in outdoor or indoor environments, must complete the following training:

- ESH Course 416, Heat Illness Prevention ([ESH Course 416](#))

## 3 Forms

The following forms and systems are required by these requirements:

- None

## 4 Recordkeeping

The following recordkeeping requirements apply for these requirements:

- None

## 5 References

[SLAC Environment, Safety, and Health Manual](#) (SLAC-I-720-0A29Z-001)

- [Chapter 57, “Heat Illness Prevention”](#)
- [Chapter 37, “Emergency Management”](#)
  - [Emergency Management: Emergency Notification, Response, and Reporting Procedures](#) (SLAC-I-730-0A14C-002)

Other Documents

- Title 8, *California Code of Regulations*, “Industrial Relations”, Division 1, “Department of Industrial Relations”, Chapter 4, “Division of Industrial Safety”, Subchapter 7, “General Industry Safety Orders”,

Group 2, “Safe Practices and Personal Protection”, Article 10, “Personal Safety Devices and Safeguards”, Section 3395, “Heat Illness Prevention in Outdoor Places of Employment” ([8 CCR 3395](#))

- Title 8, *California Code of Regulations*, “Industrial Relations”, Division 1, “Department of Industrial Relations”, Chapter 4, “Division of Industrial Safety”, Subchapter 4, “Construction Safety Orders”, Article 3, “General”, Section 1524, “Water Supply” ([8 CCR 1524](#))

# 851>Cal/OSHA Implementation Plan: Heat Illness Prevention

This form is for documenting changes to a program and the program’s supporting resources (ESH Manual chapter or similar program description, training courses, databases, and so on) resulting from the adoption of the model Revolutionary Working Group (RWG) contract (see below) and the associated DOE variance from 10 CFR 851, “Worker Safety and Health Program”. The purpose is to ensure consistent, concise descriptions of the resulting changes. The form is to be completed by the program manager and sent to the DOE as a cover sheet with the revised documents. The general process is as follows:

1. Program manager completes form
2. Changes to program resources made and reviewed following normal revision processes
3. DOE sent draft form and revisions
4. Changes to program resources published
5. DOE sent final form and revisions

## 1 Introduction

The RWG model contract and 10 CFR 851 variance are intended to simplify and improve the implementation of worker safety and health requirements by tailoring the laws, regulations, and standards that apply while achieving a level of protection equivalent to the requirements of 10 CFR 851. This mostly entails replacing federal Occupational Safety and Health Administration (OSHA) regulations (29 CFR 1910 and 1926) with Cal/OSHA regulations (8 CCR) as external requirements to be complied with but may also involve other laws and regulations and either different versions of industry standards than those cited in 10 CFR 851 or entirely different standards. (One purpose of this form is to capture the specific changes in external requirements for each program.) (For more information on this effort, see the variance application in [851>Cal/OSHA](#) resources.)

## 2 Plan

Field Number	Field Name	Field
1.	Program name	Heat Illness Prevention
2.	Program manager	<a href="#">Flores, Abel J.</a>
3.	LBNL counterpart	Name? ( <a href="#">SME list</a> ) ( <a href="#">LBNL Phonebook</a> )
4.	Program documents	List: ESH Manual chapter and exhibits (Publishing to populate, PM to confirm; listing here to make sure PM checks them) <i>The following is a list of existing program documents, to be reviewed by the program manager to determine which will need to be revised to reflect 851&gt;Cal/OSHA changes.</i> <ul style="list-style-type: none"><li>▪ None, new chapter</li></ul>
5.	Training courses	List: training courses (Publishing to populate, PM to confirm; listing here to make sure PM checks them) <i>The following is a list of existing training courses, to be reviewed by the program manager to determine which will need to be revised to reflect 851&gt;Cal/OSHA changes.</i>

Field Number	Field Name	Field
		<p>Course materials are available for review.</p> <ul style="list-style-type: none"> <li>ESH Course 416, Heat Illness Prevention (<a href="#">ESH Course 416</a>)</li> </ul>
6.	Other program resources	<p>List: other resources (DBs, SP sites, etc) (Publishing to populate, PM to confirm; listing here to make sure PM checks them)</p> <p><i>The following is a list of existing program resources, to be reviewed by the program manager to determine which will need to be revised to reflect 851&gt;Cal/OSHA changes.</i></p> <ul style="list-style-type: none"> <li>None, new chapter</li> </ul>
7.	Current external requirements	<p>List: laws, regulations, DOE directives, standards (Publishing to populate)</p> <p><i>The following is a list of current external requirements for this program, as identified in the program documents above.</i></p> <ul style="list-style-type: none"> <li>None</li> </ul> <p><i>The following is a list of current external reference/guidance documents.</i></p> <ul style="list-style-type: none"> <li>None</li> </ul>
8.	Proposed external requirements	<p>List: laws, regulations, DOE directives, standards (PM to populate based on gap analysis, any other 851&gt;Cal/OSHA work, and own research)</p> <p><i>List all the external requirements that will apply to this program. To determine, start by looking up existing external requirements in <a href="#">851&gt;Cal/OSHA</a> resources (variance, gap analysis, and contract) and finding replacements (for example a specific section in 29 CFR 1910 to a specific section in 8 CCR or a current version of an industry standard). Where Cal/OSHA requirements are less stringent than those of 10 CFR 851, check with Jeremy Sawyer on which to use. <b>Enter “no changes” if none.</b></i></p> <ul style="list-style-type: none"> <li>Title 8, <i>California Code of Regulations</i>, “Industrial Relations”, Division 1, “Department of Industrial Relations”, Chapter 4, “Division of Industrial Safety”, Subchapter 7, “General Industry Safety Orders”, Group 2, “Safe Practices and Personal Protection”, Article 10, “Personal Safety Devices and Safeguards”, Section 3395, “Heat Illness Prevention in Outdoor Places of Employment” (<a href="#">8 CCR 3395</a>)</li> <li>Title 8, <i>California Code of Regulations</i>, “Industrial Relations”, Division 1, “Department of Industrial Relations”, Chapter 4, “Division of Industrial Safety”, Subchapter 4, “Construction Safety Orders”, Article 3, “General”, Section 1524, “Water Supply” (<a href="#">8 CCR 1524</a>)</li> </ul>
9.	Proposed substantive changes	<p>List or narrative text</p> <p>Summary only. Examples: changes action thresholds; required personnel (competent and qualified persons); required training; required permits, inspections, recordkeeping.</p> <p><i>Describe (list) the substantive changes to be made in the program, based on the new external requirements. <b>Enter “no changes” if none.</b></i></p> <p>Adding program with requirements for providing water and shade, cool down breaks, and additional oversight and communication requirements for working in heat, both indoors and out</p>
10.	Additional proposed substantive changes	<p>List or narrative text</p> <p>Summary only. Description of changes in addition to those made for 851&gt;Cal/OSHA</p> <p><i>Describe (list) the substantive changes to be made in the program, in addition to those based on the new external requirements. For example, those due to stakeholder input, other reviews and audits, operating experience. <b>Enter “no changes” if none.</b></i></p> <ul style="list-style-type: none"> <li>None</li> </ul>

