

**Heat stress prevention
safety plan**

OAR 437-002-0156

(Insert company name here)

(Date)

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This publication provides practical workplace safety and health information to assist you in making your place of work safer. It is not legal advice. SAIF has made every effort to bring significant Oregon Occupational Safety and Health Administration (OR-OSHA) regulations to your attention. Nonetheless, compliance with OR-OSHA remains your responsibility. You should read and understand all relevant OR-OSHA regulations that apply to your job site(s). You may want to consult with your own attorney regarding aspects of OR-OSHA that may affect you.

**Note:** The information in this publication is time sensitive. Do not rely upon this document if its publication date is more than three years old. Please check the “Safety and health” section of our web site at [**saif.com/safetyandhealth**](http://www.saif.com/safetyandhealth) for a more recent, printable copy. You’ll also find a variety of other valuable safety information designed to help your business prevent injuries and control costs.

# 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 7 – 14 days of regular work for at least 2hrs/day in the heat. This time frame applies to fit individuals with no underlying medical conditions.

**Drinking water** - Potable water that is cool (66° – 77°F) or cold (35° – 65°F).

**Heat illnesses** - Medical conditions resulting from the body's inability to cope with a particular heat load (including heat cramps, heat exhaustion, heat syncope, and heat stroke).

**Shade** - Blockage of direct sunlight. One indicator that the shade is sufficient is when objects do not cast a shadow in blocked sunlight. Shade is not sufficient when the shaded area is still so hot the body is not able 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 working air conditioning. Shade may be provided by any natural or artificial means that does not expose employees to unsafe or unhealthy conditions, and that does not deter or discourage access or use.

**Temperature-controlled environment** – An indoor setting where the temperature is maintained with a mechanical cooling system.

**Contact list**

List key people in your organization who are responsible for elements of this plan
(for example, safety, operations, HR, etc.)

|  |  |  |  |
| --- | --- | --- | --- |
| **NAME** | **TITLE** | **E-MAIL** | **PHONE** |
| SAIF T. PAYES | Safety Program Mgr. | SAIPAY@ABC.com | (555) 555-555 |
|  |  |  |  |
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# **I. Plan overview**

### Purpose and scope

This sample heat illness prevention plan contains procedures to implement requirements outlined in Oregon OSHA’s rule on heat illness prevention (OAR 437-002-0156). The purpose is to help prevent and reduce the risk of heat stress and heat-related illness for our employees. This plan is to be made available to the whole organization and should be reviewed as necessary.

This plan applies to all organization members who are exposed to hot work environments (greater than 80°F) both inside and outside.

**Employer:** (delete all that do not pertain to your workplace)

Operations excluded from this program but found in our workplace include:

* Incidental exposure to heat for less than 15 minutes of any 60-minute period
* Exposures to heat generated from the work process
* Emergency operations directly involved in the protection of life or property or restoration of essential services
* Buildings and structures with mechanical ventilation that keeps the heat index below 80°F

Operations partially excluded from this program include:

* Employees with “rest” or “light” workloads (see OAR 437-002-0156 Table 1.1 of Appendix A) are exempt when the heat index is less than 90°F.
* Wildland fire support operations are exempt from acclimatization protocol
* Organization members who work from home shall meet all training outlined within this program

### Signs, symptoms, and risk factors of heat illness

Heat-related illnesses are preventable. It is important that both management and employees are aware of the signs, symptoms, and risk factors of heat illnesses to recognize and treat those who may be affected.

**Signs and symptoms of heat illnesses:**

**Heat stroke:** Heatstroke is a condition caused by your body overheating. Heatstroke requires emergency treatment. Untreated heatstroke can become a life-threatening condition. Heat stroke signs/symptoms may include:

* High body temperature
(≥ 103°F)
* Rapid pulse
* Seizures
* Nausea
* Hot, red, dry skin
* Slurred speech
* Confusion
* Fainting

**Heat exhaustion:** Heat exhaustion is a condition caused by your body overheating and being unable to cool down. If untreated, heat exhaustion can lead to heat stroke. Heat exhaustion signs/symptoms may include:

* Elevated body temperature
* Heavy sweating
* Thirst
* Nausea
* Headache
* Decreased urination
* Irritability
* Fatigue

**Heat cramps:** Heat cramps are a painful condition consisting of muscle spasms caused by dehydration and electrolyte loss. Heat cramps signs/symptoms may include:

* Muscle spasms and pain typically in the arms, legs, and torso
* Usually affects arms, legs, and torso

**Heat rash:** Heat rash occurs when sweat is trapped under the skin and leads to an uncomfortable itchy rash. Heat rash signs and symptoms may include:

* Red bumps on skin usually around neck, chest, skin folds
* Usually affects neck, chest, skin folds

**Heat syncope:** Heat syncope consists of fainting or dizziness resulting from heat exposure. Heat syncope signs and symptoms may include:

* Dizziness
* Fainting

**Rhabdomyolysis:** Rhabdomyolysis is an urgent medical condition that occurs when there is a breakdown of muscle tissue due to overexertion. The condition can cause serious kidney damage and even death if not promptly treated. Rhabdomyolysis signs and symptoms may include:

* Muscle pain
* Weakness
* Dark urine
* Decreased urination

**Risk factors for heat illnesses:**

**Personal risk factors:** The effects of heat stress on individuals will vary based on various health or medical risk factors. These risk factors can make some individuals more susceptible to heat illness than others. Personal risk factors for heat illness include:

* Obesity
* Medications
* Diabetes
* Alcohol/drug use
* High blood pressure
* Dehydration
* Heart disease
* Lower level of physical fitness

**Environmental risk factors:** The risk of developing heat illness depends on the environmental conditions that individuals are exposed to. Environmental risk factors for heat illness include:

* Air temperature
* Work intensity and duration
* Relative humidity
* Type of PPE or work clothing
* Heat sources
* Air movement

### Determining the heat index

Management will measure or determine the heat index (comprised of temperature and humidity) at least daily when the heat index in the work area is ≥ 80˚ F by:

* Downloading and using the OSHA NIOSH Heat Safety Tool at Heat Safety Tool app for both real-time readings and those forecasted for the shift (<https://www.cdc.gov/niosh/topics/heatstress/heatapp.html>).

For buildings or structures without mechanical ventilation, management will determine the heat index in one of the following ways:

1. By directly measuring the temperature and humidity at the same time and place that employees are working and entering the results into the app. Note that if the indoor humidity is likely higher than that outdoors, the indoor humidity will be used for heat index calculation.
2. By using the NIOSH Heat Safety Tool app to determine the heat index outside the structure and assuming it is the same inside.

The purpose of determining the heat index is to communicate with employees and implement the appropriate heat illness controls. Additionally, employees are encouraged to download the heat index app on their smartphones to monitor changing conditions and to protect their health during non-work hours.

### Responsible individuals

The individual(s), or job role(s) within the organization, listed below, have responsibility for the following aspects of this heat illness prevention plan:

(INSERT NAME(S) OR JOB TITLE(S) HERE) is responsible for training all employees on the required elements of this plan as outlined in Section II, (4).

(INSERT NAME(S) OR JOB TITLE(S) HERE) is responsible for measuring or determining the heat index in employee work areas.

(INSERT NAME(S) OR JOB TITLE(S) HERE) is responsible for ensuring that employees have access to an adequate amount of cool or cold drinking water.

(INSERT NAME(S) OR JOB TITLE(S) HERE) is responsible for implementing communication and/or observation procedures to identify employees who might be experiencing heat illness.

(INSERT NAME(S) OR JOB TITLE(S) HERE) is responsible for ensuring that any heat-specific equipment (e.g., coolers, fans, pop-up shade tents, radios, etc.) is periodically inspected, well-maintained, and replaced or repaired as needed.

(INSERT NAME(S) OR JOB TITLE(S) HERE) is responsible for ensuring that rest break and acclimatization schedules are adhered to as outlined in Sections III, (3) and II, (3) respectively.

(INSERT NAME(S) OR JOB TITLE(S) HERE) is responsible for reviewing this plan on an annual basis and updating it as needed.

# **II. Procedures and requirements when heat index is ≥ 80˚F**

### Access to shade

We will provide and maintain shaded areas that will be:

* Open to the air (at least three open sides) or have mechanical ventilation for cooling
* Located as close as practical to the areas where employees are working
* Able to accommodate all employees on recovery, rest, or meal break periods so that they can sit in a normal posture, fully in the shade. If using trees or other vegetation for shade it must have sufficient shadow to protect employees
* Large enough to accommodate the number of employees who remain on site during meal periods

**\*NOTE\*:** If you can demonstrate that providing access to shade is not safe or interferes with the ability of your employees to complete the necessary work in a particular situation (*e.g.*, high winds, open range land, etc.), **you must implement alternative cooling measures** that provide equivalent protection (*e.g.*, cooling vests, water-dampened clothing, etc.). Please complete Appendix C of this heat illness prevention plan, which outlines details on these alternative cooling measures.

### Drinking water

We will provide drinking water at no cost to employees and ensure:

* Each employee has access to 32 ounces of drinking water per hour (*electrolyte-replenishing beverages are acceptable substitutes, but will not completely replace drinking water*)
* Water is immediately and readily available and all employees can access it
* Water is cool (66° – 77°F) or cold (35° – 65°F)
* Water and/or electrolyte-replenishing beverages contain no caffeine.

Water or electrolyte-replenishing beverages will be [insert how you intend to ensure access to the drinking water].

**\*NOTE\*:** Employers are not required to supply the entire quantity of drinking water needed to be supplied for all employees on a full shift at the beginning of the shift. This section should explain how you will ensure the quantities meet the 32 ounces per hour per employee.

Water will be kept cool or cold by [Insert what equipment or method you will use to ensure water remains at the appropriate temperature].

### Acclimatization procedures

We will implement procedures to acclimatize our employees to high heat conditions to reduce their risk of experiencing a heat-related illness. We will implement acclimatization procedures for:

* new employees with less than seven days of experience with the nature of the work
* current employees who have been away from the job for a period of seven days or more

The following acclimatization procedures have been developed by the National Institute for Occupational Safety & Health (NIOSH) and apply when the heat index is ≥ 80°F. It is understood that there is no one-size-fits-all acclimatization plan and adjustments to these procedures may be required based on worksite specific factors (*e.g.*, working in direct sunlight, work intensity, significant increase in temperature, etc.) and on personal risk factors (*e.g.*, physical fitness, medical history, etc.). As a result, it may take employees up to 14 days of working in the heat to become fully acclimatized.

### Table 1: Acclimatization plan for new employees

(*i.e.*, <7 days of experience with the nature of the work)

|  |  |
| --- | --- |
| **Day of work** | **% of time working in the heat** **(based on 8 hour shift)** |
| 1st | 20\* |
| 2nd | 40\*\* |
| 3rd | 60\*\*\* |
| 4th | 80\*\*\*\* |
| 5th | 100\*\*\*\*\* |

\*On the 1st day of work, employees will work no more than 2 hours in excessive heat. Employees may be allowed to break this into two 1-hour periods.

\*\*On the 2nd day of work, employees will work no more than 3.2 hours in excessive heat.

\*\*\* On the 3rd day of work, employees will work no more than 5 hours in excessive heat.

\*\*\*\* On the 4th day of work, employees will work no more than 6.5 hours in excessive heat.

\*\*\*\*\* On the 5th day of work, employees may work the entire shift in excessive heat.

### Table 2: Acclimatization plan for current employees

(*i.e.*, ≥7 days of experience with the nature of the work)

|  |  |
| --- | --- |
| **Day of work** | **% of time working in the heat** **(based on 8 hour shift)** |
| 1st | 50\* |
| 2nd | 60\*\* |
| 3rd | 80\*\*\* |
| 4th | 100\*\*\*\* |

\*On the 1st day of work, employees will work no more than 4 hours in excessive heat.

\*\*On the 2nd day of work, employees will work no more than 4.8 hours in excessive heat.

\*\*\* On the 3rd day of work, employees will work no more than 6.4 hours in excessive heat.

\*\*\*\* On the 4th day of work, employees may work the entire shift in excessive heat.

**ATTENTION:** Employees can maintain their acclimatization even if they are away from the job for a few days, such as when they go home for the weekend. However, if current employees are absent from work or do not work in excessive heat, for a period of 7 days or longer, they will be required to reacclimate upon returning to work in excessive heat based on the schedule outlined in Table 2.

### Training

All employees who fall within the scope of this program will receive training on the topics listed below, in a language they understand with an opportunity for feedback. Training will be provided annually before teams begin work with potential heat exposure. Training will be documented and will include participant and trainer names, date of training, and training content. Each employee’s most recent training document will be retained.

* The environmental and personal risk factors for heat illness, as well as the added burden of heat load on the body caused by exertion, clothing, and personal protective equipment
* Our provisions to cool or cold water or water less than 70˚F, daily heat index information, shade, cool-down rests, how to report symptoms of heat-related illness, access to first aid, and employees' rights without fear of retaliation
* The concept, importance, and our method of acclimatization
* The different types of heat-related illness and common signs and symptoms of heat-related illness
* The importance of employees immediately reporting symptoms or signs of heat illness in themselves or in co-workers
* The effects of nonoccupational factors (medications, alcohol, obesity, etc.) on tolerance to occupational heat stress

# **III. Procedures and requirements when heat index is ≥ 90˚F**

### Enhanced communication

We will communicate so employees can contact a supervisor using one or more of the following:

* Voice
* Observation of employees for alertness and signs and symptoms of heat illness
* Phone or other communication device (cell phone or text messaging device may be used for this purpose only if reception in the area is reliable)

Employees will be observed for alertness and signs of heat illness, as well as monitored to determine whether medical attention is necessary through one or more of the following [pick one or more that you will use]:

* Establishing regular communication via phone, radio, or other means with employees working alone
* Creating a mandatory buddy system between employees who are trained in the signs and symptoms and responses to indications of heat illness
* Establishing an equally effective means of observation or communication

### Emergency response

[Consider adapting [Appendix A](#_Appendix_A_-) on page 12 for your worksite] As part of our emergency medical plan ([Appendix A](#_Appendix_A_-)) we will authorize one or more employees on each worksite to call for emergency medical services to treat any employee suspected of experiencing heat-related illness and will allow other employees to call for emergency services when designated employees are not immediately available. These practices ensure that emergency medical care will be immediately available in response to any employee exhibiting symptoms of heat illness.

### Employee breaks

Oregon OSHA has provided three options for establishing a heat illness prevention rest break schedule. A summary of the heat illness prevention rest break schedule options is found in [Appendix B](#_Appendix_B_-).

We have selected: [pick one that you will use]

**OPTION A - Self designed rest break schedule**

**Heat index of 90°F or greater:** We will require a minimum 10-minute rest break in the shade every two hours.

**Heat index of 100°F or greater:** We will require a minimum 15-minute rest break in the shade every hour.

We will increase the frequency and/or duration of rest breaks from the minimum based on effects of PPE, type of work clothing, relative humidity, indoor or outdoor work, work intensity, and exposure to direct sunlight.

**OPTION B - NIOSH rest break schedule**

We will follow the NIOSH rest break schedule (OAR 437-002-0156, Appendix A, Table 3.1). To follow the NIOSH rest break schedule, we will determine the work intensity (light, moderate, or heavy) and adjust the actual temperature to account for sun exposure (full sun, partly cloudy, or shade) and relative humidity. For example, for moderate work, the rest break duration is 15 minutes in the shade every hour at an adjusted temperature of 100°F. The rest break duration increases as the adjusted temperature increases in accordance with Table 3.1.

**OPTION C- Simplified rest break schedule:**

**Heat index of 90°F or greater:** We will require a minimum 10-minute rest break in the shade every two hours.

**Heat index 95°F or greater:** We will require a minimum 20-minute rest break in the shade every hour.

**Heat index 100°F or greater:** We will require a minimum 30-minute rest break in the shade every hour.

**Heat index 105°F or greater:** We will require a minimum 40-minute rest break in the shade every hour.

# Appendix A - Emergency medical plan

Employers are required to have emergency medical plans that identify and address potential medical situations. Addressing heat exposures to excessive heat index (greater than 80˚F) must be included in the emergency medical plan.

Oregon OSHA emergency medical plans include the following specific requirements:

General industry OAR 437-002-0161(4)

Construction 29 CFR 1926.50

Forestry OAR 437-007-0220.

Agriculture OAR 437-004-1305

Post the emergency medical plan where employees gather or are most likely to read it. Train all employees about the medical plan and their responsibilities during an emergency.

|  |
| --- |
| Basic information |
| Your name:  |  | Date:  |
| Location:  |  |
| Emergency contact information  | Local EMS emergency number, manager cell phone, etc.  |

|  |
| --- |
| Responding to signs of heat illness |
| Observed or reported signs of heat illness | If a supervisor (or fellow co-worker) observes signs or an employee reports symptoms of heat illness, the employee must be relieved from duty and provided with a sufficient means to reduce body temperature. Examples include, but are not limited to cooling blankets, cooling vests, and fans. |
| Observed or reported symptoms of severe heat illness  | If the signs or symptoms are indicators of severe heat illness (such as, but not limited to decreased level of consciousness, staggering, vomiting, disorientation, irrational behavior, or convulsions), immediately implement the emergency response procedures. |
| An employee exhibiting signs or symptoms of heat illness must be monitored and must not be left alone or sent home without being offered onsite first aid and/or being provided with emergency medical services in accordance with [add company name here] emergency medical plan (next section). |

# Appendix B - Rest break schedule options

### Option A - Self designed rest break schedule

|  |  |  |
| --- | --- | --- |
| **Heat index** | **Minimum rest break duration** | **Rest break interval** |
| 90˚F or greater | 10 minutes | Every two hours |
| 100˚F or greater | 15 minutes | Every hour |

Employers should increase the duration and/or frequency of breaks beyond the minimum requirements based on:

* Effect of PPE on bodily heat retention
* Type of work clothing
* Relative humidity
* Whether work activities are indoors or outdoors
* Intensity of work
* Exposure to direct sunlight

### Option B - NIOSH rest break schedule for workers wearing normal clothing

|  |  |  |  |
| --- | --- | --- | --- |
| **Adjusted Temperature\*** | **Light work** | **Moderate work** | **Heavy work** |
| **Rest break duration (every hour)** | **Rest break duration (every hour)** | **Rest break duration (every hour)** |
| 90˚F |  |  |  |
| 91˚F |  |  |  |
| 92˚F |  |  |  |
| 93˚F |  |  |  |
| 94˚F |  |  |  |
| 95˚F |  |  | 15 minutes |
| 96˚F |  |  | 15 minutes |
| 97˚F |  |  | 20 minutes |
| 98˚F |  |  | 25 minutes |
| 99˚F |  |  | 25 minutes |
| 100˚F |  | 15 minutes | 30 minutes |
| 101˚F |  | 20 minutes | 30 minutes |
| 102˚F |  | 25 minutes | 35 minutes |
| 103˚F |  | 30 minutes | 40 minutes |
| 104˚F |  | 30 minutes | 40 minutes |
| 105˚F |  | 35 minutes | 45 minutes |
| 106˚F | 15 minutes | 40 minutes | **CAUTION** |
| 107˚F | 20 minutes | 45 minutes | **CAUTION** |
| 108˚F | 25 minutes | **CAUTION** | **CAUTION** |
| 109˚F | 30 minutes | **CAUTION** | **CAUTION** |
| 110˚F | 45 minutes | **CAUTION** | **CAUTION** |
| 111˚F | **CAUTION** | **CAUTION** | **CAUTION** |
| 112˚F | **CAUTION** | **CAUTION** | **CAUTION** |

\*Base temperature to be adjusted for sun exposure and relative humidity. Not heat index.

* Follow normal break schedule

### Option C - Simplified rest break schedule

|  |  |  |
| --- | --- | --- |
| **Heat index** | **Rest break duration** | **Rest break interval** |
| 90˚F or greater | 10 minutes | Every two hours |
| 95˚F or greater | 20 minutes | Every hour |
| 100˚F or greater | 30 minutes | Every hour |
| 105˚F or greater | 40 minutes | Every hour |

# Appendix C - Alternative cooling methods

(Mandatory when shade is unavailable and optional when adequate shade is available)

**\*NOTE\*:** This section is only required if you opt to provide alternative cooling methods (for example: cooling vests, water-soaked towels or clothing, etc.) for your employees, or if you are unable to safely or feasibly provide adequate shade for your employees. If you do not provide alternative cooling measures, you may delete this Appendix.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Alternative cooling method (list)** | **When and where will it be used?** | **How will it be used?** | **Who will use it?** | **How will it be maintained and cared for?** |
| Example - evaporative cooling vest | When heat index is > 90oF | Soaked 1-2 min in cold water prior to donning | All employees | In accordance with manufacturer’s listed instructions |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |