### **Amendments to Standards**

For the reasons set forth in the preamble, OSHA amends parts 1910, 1915, 1917,

1918, and 1926 of title 29 of the Code of Federal Regulations as follows:

### PART 1910—OCCUPATIONAL SAFETY AND HEALTH STANDARDS

Part 1910 of title 29 of the code of Federal Regulations is hereby amended as

follows:

### Subpart J — General Environmental Controls

### § 1910.148 Heat Injury and Illness Prevention.

(a) Scope and application.

(1) Except as otherwise provided in this paragraph, this standard applies to all

employers.

(2) This standard does not apply to the following:

(i) Work activities for which there is no reasonable expectation of exposure at or above the initial heat trigger;

(ii) Short duration employee exposures at or above the initial heat trigger of 15

minutes or less in any 60-minute period;

(iii) Organizations whose primary function is the performance of firefighting; emergency response activities of workplace emergency response teams, emergency medical services, or technical search and rescue; and any emergency response activities already covered under 29 CFR 1910.120, 29 CFR 1910.146, 29 CFR 1910.156, 29 CFR 1915 Subpart P, 29 CFR 1926.65, and 29 CFR 1926.1211;

(iv) Work activities performed in indoor work areas or vehicles where air-

conditioning consistently keeps the ambient temperature below 80°F;

(v) Telework (i.e., work done from home or another remote location of the

employee's choosing); and

(vi) Sedentary work activities at indoor work areas that only involve some combination of the following: sitting, occasional standing and walking for brief periods of time, and occasional lifting of objects weighing less than 10 pounds.

(3) Employers whose employees all exclusively perform activities described in

(a)(2)(i) through (a)(2)(vi) are exempt from this standard.

(b) *Definitions*. The following definitions apply to this standard:

Acclimatization means the body's adaptation to work in the heat as a person is

exposed to heat gradually over time, which reduces the strain caused by heat stress and enables a person to work with less chance of heat illness or injury.

*Ambient temperature* means the temperature of the air surrounding a body. It is also called "air temperature" or "dry bulb temperature."

*Cooling personal protective equipment (PPE)* means equipment worn to protect the user against heat injury or illness.

*Heat index* means the National Weather Service heat index, which combines ambient temperature and humidity.

*High heat trigger* means a heat index of 90°F or a wet bulb globe temperature equal to the National Institute for Occupational Safety and Health (NIOSH) Recommended Exposure Limit.

*Indoor/indoors* means an area under a ceiling or overhead covering that restricts airflow and has along its entire perimeter walls, doors, windows, dividers, or other physical barriers that restrict airflow, whether open or closed.

Initial heat trigger means a heat index of 80°F or a wet bulb globe temperature

equal to the NIOSH Recommended Alert Limit.

Outdoor/outdoors means an area that is not indoors. For purposes of this standard,

vehicles operated outdoors are considered outdoor work areas unless exempted by

paragraph (a)(2).

Radiant heat means heat transferred by electromagnetic waves between surfaces.

Sources of radiant heat include the sun, hot objects, hot liquids, hot surfaces, and fire.

Recommended Alert Limit (RAL) means the NIOSH-recommended heat stress

alert limits for unacclimatized workers.

*Recommended Exposure Limit (REL)* means the NIOSH-recommended heat stress exposure limits for acclimatized workers.

*Shade* means the blockage of direct sunlight, such that objects do not cast a shadow in the area of blocked sunlight.

Signs and symptoms of a heat emergency means the physiological manifestations of a heat-related illness that requires emergency response and includes loss of consciousness (i.e., fainting, collapse) with excessive body temperature, which may or may not be accompanied by vertigo, nausea, headache, cerebral dysfunction, or bizarre behavior. This could also include staggering, vomiting, acting irrationally or disoriented, having convulsions, and (even after resting) having an elevated heart rate.

*Signs and symptoms of heat-related illness* means the physiological manifestations of a heat-related illness and includes headache, nausea, weakness, dizziness, elevated body temperature, muscle cramps, and muscle pain or spasms.

*Vapor-impermeable clothing* means full-body clothing that significantly inhibits or completely prevents sweat produced by the body from evaporating into the outside air. Examples include encapsulating suits, various forms of chemical resistant suits, and other forms of nonbreathable PPE.

*Vehicle* means a car, truck, van, or other motorized means of transporting people or goods.

Wet bulb globe temperature (WBGT) means a heat metric that takes into account ambient temperature, humidity, radiant heat from sunlight or artificial heat sources, and air movement.

*Work area* means an area where one or more employees are working within a work site.

*Work site* means a physical location (e.g., fixed, mobile) where the employer's work or operations are performed.

(c) Heat Injury and Illness Prevention Plan.

(1) The employer must develop and implement a work site heat injury and illness prevention plan (HIIPP) with site-specific information.

(2) The HIIPP must include:

(i) A comprehensive list of the types of work activities covered by the plan;

(ii) All policies and procedures necessary to comply with the requirements of this standard; and

(iii) An identification of the heat metric (i.e., heat index or wet bulb globe temperature) the employer will monitor to comply with paragraph (d).

(3) If the employer has employees who wear vapor-impermeable clothing, the employer must evaluate heat stress hazards resulting from these clothing and implement policies and procedures based on reputable sources to protect employees while wearing these clothing. The employer must include these policies and procedures and document the evaluation in the HIIPP.

(4) If the employer has more than 10 employees, the HIIPP must be written.

(5) The employer must designate one or more heat safety coordinators to implement and monitor the HIIPP. The identity of the heat safety coordinator(s) must be documented in any written HIIPP. The heat safety coordinator(s) must have the authority to ensure compliance with all aspects of the HIIPP.

(6) The employer must seek the input and involvement of non-managerial employees and their representatives, if any, in the development and implementation of the HIIPP.

(7) The employer must review and evaluate the effectiveness of the HIIPP whenever a heat-related illness or injury occurs that results in death, days away from work, medical treatment beyond first aid, or loss of consciousness, but at least annually. Following each review, the employer must update the HIIPP as necessary. The employer

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must seek input and involvement of non-managerial employees and their representatives,

if any, during any reviews and updates.

(8) The employer must make the HIIPP readily available at the work site to all

employees performing work at the work site.

(9) The HIIPP must be available in a language each employee, supervisor, and

heat safety coordinator understands.

(d) *Identifying heat hazards*.

(1) *Outdoor work*. The employer must monitor heat conditions at outdoor work areas by:

(i) Tracking local heat index forecasts provided by the National Weather Service or other reputable sources; or

(ii) At or as close as possible to the work area(s), measuring the following:

(A) Heat index, or ambient temperature and humidity measured separately to

calculate heat index; or

(B) Wet bulb globe temperature.

(2) Frequency of outdoor monitoring. The employer must monitor with sufficient

frequency to determine with reasonable accuracy employees' exposure to heat.

(3) Indoor work.

(i) At indoor work sites, the employer must identify each work area(s) where there is a reasonable expectation that employees are or may be exposed to heat at or above the initial heat trigger.

(ii) The employer must develop and implement a monitoring plan covering each work area identified in paragraph (d)(3)(i) to determine when employees are exposed to heat at or above the initial and high heat triggers. The employer must include the monitoring plan in the HIIPP and the monitoring plan must include measuring one of the following at or as close as possible to the work area(s) identified in paragraph (d)(3)(i):

(A) Heat index, or ambient temperature and humidity measured separately to

calculate heat index; or

(B) Wet bulb globe temperature.

(iii) Whenever there is a change in production, processes, equipment, controls, or a substantial increase in outdoor temperature which has the potential to increase heat exposure indoors, the employer must evaluate any affected work area(s) to identify where there is reasonable expectation that employees are or may be exposed to heat at or above the initial heat trigger. The employer must update their monitoring plan or develop and implement a monitoring plan, in accordance with paragraph (d)(3)(ii), to account for any increases in heat exposure.

(iv) The employer must seek the input and involvement of non-managerial employees and their representatives, if any, when evaluating the work site to identify work areas with a reasonable expectation of exposures at or above the initial heat trigger and in developing and updating monitoring plans in accordance with paragraphs (d)(3)(i) through (iii).

(4) *Heat metric*. The heat metric the employer chooses to monitor will determine the applicable initial and high heat triggers for purposes of this standard. If the employer

does not identify their choice of heat metric in the HIIPP or monitor as required by this paragraph, the initial and high heat triggers will be the heat index values identified in the definitions.

(5) *Exemption from monitoring*. The employer can assume that the temperature at a work area is at or above both the initial heat and high heat triggers instead of conducting on-site measurements or tracking local forecasts. In such cases, the employer must provide all control measures outlined in paragraphs (e) and (f) of this standard.

(e) Requirements at or above the initial heat trigger.

(1) Timing. The employer must implement the controls described in this

paragraph when employees are exposed to heat at or above the initial heat trigger.

(2) *Drinking water*. The employer must provide access to potable water for drinking that is:

(i) Placed in locations readily accessible to the employee;

(ii) Suitably cool; and

(iii) Of sufficient quantity to provide access to 1 quart of drinking water per employee per hour.

Note 1 to paragraph (e)(2). The requirements of paragraph (e)(2) are in addition to the requirements in the sanitation standard applicable to the employer (29 CFR 1910.141, 29 CFR 1915.88, 29 CFR 1917.127, 29 CFR 1918.95, 29 CFR 1926.51, 29 CFR 1928.110) and the temporary labor camps standard (29 CFR 1910.142).

(3) *Break area(s) at outdoor work sites*. The employer must provide one or more area(s) for employees to take breaks that can accommodate the number of employees on break, is readily accessible to the work area(s), and has at least one of the following:

(i) Artificial shade (e.g., tent, pavilion) or natural shade (e.g., trees), but not shade from equipment, that provides blockage of direct sunlight and is open to the outside air; or

(ii) Air-conditioning, if in an enclosed space like a trailer, vehicle, or structure.

(4) *Break area(s) at indoor work sites*. The employer must provide one or more area(s) for employees to take breaks (e.g., break room) that is air-conditioned or has increased air movement and, if appropriate, de-humidification, can accommodate the number of employees on break, and is readily accessible to the work area(s).

(5) *Indoor work area controls*. The employer must provide one of the following at each work area identified in paragraph (d)(3)(i):

(i) Increased air movement, such as fans or comparable natural ventilation, and, if appropriate, de-humidification;

(ii) Air-conditioned work area; or

(iii) In cases of radiant heat sources, other measures that effectively reduce

employee exposure to radiant heat in the work area (e.g., shielding/barriers, isolating heat sources).

(6) *Evaluation of fan use*. At ambient temperatures above  $102^{\circ}$ F, if the employer is providing fans to comply with (e)(4) or (e)(5), the employer must evaluate the

humidity to determine if fan use is harmful, and if the employer determines that it is, the employer must discontinue fan use.

(7) Acclimatization.

(i) New employees. The employer must implement one of the following

acclimatization protocols for each employee during their first week on the job:

(A) A plan that, at minimum, incorporates the measures in paragraph (f) whenever the heat index is at or above the initial heat trigger during the employee's first week of work; or

(B) Gradual acclimatization to heat in which the employee's exposure to heat is restricted to no more than: 20% of a normal work shift exposure duration on the first day of work, 40% on the second day of work, 60% of the third day of work, and 80% on the fourth day of work.

(ii) *Returning employees*. The employer must implement one of the following acclimatization protocols for each employee who has been away (e.g., on vacation or sick leave) for more than 14 days during their first week back on the job:

(A) A plan that, at minimum, incorporates the measures in paragraph (f) whenever the heat index is at or above the initial heat trigger during the employee's first week upon returning to work; or

(B) Gradual acclimatization to heat in which employee exposure to heat is restricted to no more than: 50% of a normal work shift exposure duration on the first day of work, 60% on the second day of work, and 80% of the third day of work.

(iii) *Exception to acclimatization requirements*. The requirements of paragraphs
(e)(7)(i) and (ii) do not apply if the employer can demonstrate the employee consistently worked under the same or similar conditions as the employer's working conditions within the prior 14 days.

(8) *Rest breaks if needed*. The employer must allow and encourage employees to take paid rest breaks in the break area required by paragraph (e)(3) or (e)(4) if needed to prevent overheating.

(9) *Effective communication*. The employer must maintain a means of effective, two-way communication with employees (e.g., by voice or electronic means (such as a handheld transceiver, phone, or radio)) and regularly communicate with employees.

(10) *Personal Protective Equipment (PPE)*. If the employer provides employees with cooling PPE, the employer must ensure the cooling properties of the PPE are maintained at all times during use.

(f) Requirements at or above the high heat trigger.

(1) *Timing*. In addition to the controls required by paragraph (e), the employer must implement the controls described in this paragraph when employees are exposed to heat at or above the high heat trigger.

(2) *Rest breaks*. The employer must provide employees a minimum 15-minute paid rest break at least every two hours in the break area required by paragraph (e)(3) or (e)(4), subject to the following:

(i) A meal break may count as a rest break, even if it is not otherwise required by law to be paid;

(ii) Periods during which employees are donning and doffing personal protective equipment (e.g., coveralls) must not count towards the total time provided for rest breaks; and

(iii) The time for employees to walk to and from the break area is not included in the time provided for rest breaks.

(3) Observation for signs and symptoms. The employer must implement at least

one of the following methods of observing employees for signs and symptoms of heatrelated illness:

(i) A mandatory buddy system in which co-workers observe each other; or

(ii) Observation by a supervisor or heat safety coordinator, with no more than 20

employees observed per supervisor or heat safety coordinator.

(iii) For employees who are alone at a work site, the employer must maintain a means of effective, two-way communication with those employees (e.g., by electronic means (such as a handheld transceiver, phone, or radio)) and make contact with the employees at least every two hours.

(4) *Hazard Alert*. Prior to the work shift or upon determining the high heat trigger is met or exceeded, the employer must notify employees of the following:

(i) The importance of drinking plenty of water;

(ii) Employees' right to, at employees' election, take rest breaks if needed and the rest breaks required by paragraph (f)(2);

(iii) How to seek help and the procedures to take in a heat emergency; and

(iv) For mobile work sites, the location of break area(s) required by paragraph

(e)(3) or (e)(4) and drinking water required by paragraph (e)(2).

(5) *Excessively high heat areas*. The employer must place warning signs at indoor work areas with ambient temperatures that regularly exceed 120°F. The warning signs must be legible, visible, and understandable to employees entering the work areas.

(g) Heat illness and emergency response and planning.

(1) As part of their HIIPP, the employer must develop and implement a heat

emergency response plan that includes:

(i) A list of emergency phone numbers (e.g., 911, emergency services);

(ii) A description of how employees can contact a supervisor and emergency

medical services;

(iii) Individual(s) designated to ensure that heat emergency procedures are

invoked when appropriate;

(iv) A description of how to transport employees to a place where they can be reached by an emergency medical provider;

(v) Clear and precise directions to the work site, including the address of the work site, which can be provided to emergency dispatchers; and

(vi) Procedures for responding to an employee experiencing signs and symptoms of heat-related illness, including heat emergency procedures for responding to an employee with suspected heat stroke.

(2) If an employee is experiencing signs and symptoms of heat-related illness, the employer must:

(i) Relieve them from duty;

(ii) Monitor them;

(iii) Ensure they are not left alone;

(iv) Offer them on-site first aid or medical services before ending monitoring; and

(v) Provide them with the means to reduce their body temperature.

(3) If an employee is experiencing signs and symptoms of a heat emergency, the

employer must:

(i) Take immediate actions to reduce the employee's body temperature before

emergency medical services arrive;

(ii) Contact emergency medical services immediately; and

(iii) Perform activities described in paragraph (g)(2)(i) through (g)(2)(iv).

(h) Training.

(1) Initial training. Prior to any work at or above the initial heat trigger, the

employer must ensure that each employee receives training on, and understands, the following:

(i) Heat stress hazards;

(ii) Heat-related injuries and illnesses;

(iii) Risk factors for heat-related injury or illness, including the contributions of physical exertion, clothing, personal protective equipment, a lack of acclimatization, and personal risk factors (e.g., age, health, alcohol consumption, and use of certain medications);

(iv) Signs and symptoms of heat-related illness and which ones require immediate emergency action;

(v) The importance of removing personal protective equipment that may impair cooling during rest breaks;

(vi) Importance of taking rest breaks to prevent heat-related illness or injury, and

that rest breaks are paid;

(vii) Importance of drinking water to prevent heat-related illness or injury;

(viii) The location of break areas;

(ix) The location of employer-provided water;

(x) The importance of employees reporting any signs and symptoms of heat-

related illness they may experience, and those they observe in co-workers;

(xi) All policies and procedures that are applicable to the employee's duties, as

indicated in the work site's HIIPP;

(xii) The identity of the heat safety coordinator(s);

(xiii) The requirements of this standard;

(xiv) How the employee can access the work site's HIIPP; and

(xv) Employees have a right to the protections required by this standard (e.g., rest

breaks, water) and employers are prohibited from discharging or in any manner

discriminating against any employee for exercising those rights.

(xvi) If the employer is required by paragraph (f)(5) to place warning signs for excessively high heat areas, they must train employees in the procedures to follow when working in these areas.

(2) *Supervisor training*. The employer must ensure that each supervisor responsible for supervising employees performing any work at or above the initial heat trigger and each heat safety coordinator receives training on, and understands, both the topics outlined in paragraph (h)(1) and the following:

(i) The policies and procedures developed to comply with the applicable requirements of this standard, including the policies and procedures for monitoring heat conditions developed to comply with paragraphs (d)(1) and (d)(3)(ii); and

(ii) The procedures the supervisor or heat safety coordinator must follow if an employee exhibits signs and symptoms of heat-related illness.

(3) Annual refresher training. The employer must ensure that each employee receives annual training on, and understands, the subjects addressed in paragraph (h)(1) of this standard. The employer must also ensure that each supervisor and heat safety coordinator additionally receives annual training on, and understands, the topics addressed in paragraph (h)(2). For employees who perform work outdoors, the employer must conduct the annual refresher training before or at the start of heat season.

(4) *Supplemental training*. The employer must ensure that each employee promptly receives, and understands, additional training whenever:

(i) Changes occur that affect the employee's exposure to heat at work (e.g., new job tasks);

(ii) The employer changes the policies or procedures addressed in paragraph(h)(1)(xi) of this standard;

(iii) There is an indication that the employee has not retained the necessary understanding; or

(iv) A heat-related injury or illness occurs at the work site that results in death, days away from work, medical treatment beyond first aid, or loss of consciousness.

(5) *Presentation*. Training must be provided in a language and at a literacy level each employee, supervisor, and heat safety coordinator understands. The employer must provide employees with an opportunity for questions and answers about the training materials.

(i) *Recordkeeping*. If the employer conducts on-site measurements at indoor work areas pursuant to paragraph (d)(3)(ii), they must have written or electronic records of those indoor work area measurements and retain those records for 6 months.

(j) *Requirements implemented at no cost to employees*. The implementation of all requirements of this standard must be at no cost to employees, including paying employees their normal rate of pay when compliance requires employee time.

(k) Dates.

(1) *Effective date*. This standard is effective [60 days after date of publication of the final rule in the *Federal Register*].

(2) *Compliance date*. Employers must comply with all requirements of this standard by [150 days after date of publication of the final rule in the *Federal Register*].

(1) *Severability*. Each provision within this standard is separate and severable from the other provisions. If any provision of this standard is held to be invalid or unenforceable on its face, or as applied to any person, entity, or circumstance, or is stayed

or enjoined, that provision shall be construed so as to continue to give the maximum

effect to the provision permitted by law, unless such holding shall be one of utter

invalidity or unenforceability, in which event the provision shall be severable from this

standard and shall not affect the remainder of the standard.

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## PART 1915—OCCUPATIONAL SAFETY AND HEALTH STANDARDS

### Subpart F - [Amended]

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### § 1915.95 Heat Injury and Illness Prevention.

The requirements applicable to shipyard employment under this section are

identical to the requirements set forth at 29 CFR 1910.148 of this chapter.

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### PART 1917—OCCUPATIONAL SAFETY AND HEALTH STANDARDS

### Subpart B - [Amended]

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### § 1917.32 Heat Injury and Illness Prevention.

The requirements applicable to marine terminals under this section are identical to the requirements set forth at 29 CFR 1910.148 of this chapter.

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### PART 1918—OCCUPATIONAL SAFETY AND HEALTH STANDARDS

### Subpart L - Heat Injury and Illness Prevention [Amended]

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## Subpart L - Heat Injury and Illness Prevention.

The requirements applicable to Longshoring under this section are identical to the

requirements set forth at 29 CFR 1910.148 of this chapter.

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# PART 1926—OCCUPATIONAL SAFETY AND HEALTH STANDARDS

## Subpart D - [Amended]

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## § 1926.67 Heat Injury and Illness Prevention.

The requirements applicable to construction under this section are identical to the

requirements set forth at 29 CFR 1910.148 of this chapter.

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### PART 1928—OCCUPATIONAL SAFETY AND HEALTH STANDARDS

### Subpart B - [Amended]

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# § 1928.21 Applicable Standards in 29 CFR Part 1910.

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(1) - (8) \* \* \*

# (9) Heat Injury and Illness Prevention.

The requirements applicable to construction under this section are identical to the requirements set forth at 29 CFR 1910.148 of this chapter.

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