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**To:** [DIR RS](#)  
**Subject:** Indoor Heat Illness Draft Standard  
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**Attachments:** [Draft-revisions-May-16-2018 CIHC.docx](#)

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Attached please find in BLUE the California Industrial Hygiene Council's comments on the latest draft.

Please let me know if you have any questions.

Thank you,  
Joel

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*Heat Illness Prevention Draft Text - draft revisions 5/16/18 compared to 2/15/18*

§ \_\_\_\_\_. Heat Illness Prevention in Indoor Places of Employment

(a) Scope and Application.

(1) This standard applies to all indoor work areas in the following industries, operations, or locations where the temperature equals or exceeds 80 degrees Fahrenheit when employees are present:

(A) Agriculture;

(B) Commercial and institutional kitchens;

(C) Commercial and institutional laundries;

(D) Construction;

(E) Manufacturing;

(F) Mining;

(G) Oil and gas extraction;

(H) Steam plants, geothermal plants, steam tunnels, and boiler rooms;

(I) Warehousing and storage.

(2) This standard applies to any indoor work, regardless of the industry, operation, or location, where employees wear clothing that restricts heat removal and the temperature equals or exceeds 80 degrees Fahrenheit.

(3) This standard applies to all other indoor work areas, not specifically identified in subsection (a)(1) or (a)(2), where the temperature equals or exceeds 85 degrees Fahrenheit when employees are present. [Since this is non-specific to workplace and work/regimen, we believe that a timetable should exist for (a)(3) to apply, such as for more than 5 working days. For example, as currently drafted, my office setting (apart from the exception below) would be subject to this standard if by chance the HVAC system kicks off for 30 minutes causing the room temp to exceed 80degrees while waiting to be reset!]

(4) This standard applies in any other setting identified in writing by the Division through the issuance of an Order to Take Special Action, in accordance with section 332.3 of these orders.

(1) This standard applies to all indoor work areas where the temperature equals or exceeds 80 degrees Fahrenheit when employees are present. [apart from the temperature, we are not clear why this is not duplicative of (a)(3) above.]

EXCEPTION: This section does not apply to professional and administrative office settings where the employer can demonstrate that the temperature does not equal or exceed 85 degrees Fahrenheit. [unclear how one would “demonstrate” that temperature does not exceed 85]

(5)(2) This standard section applies to the control of risk of occurrence of heat illness. This

is not intended to exclude the application of other sections of Title 8, including, but not necessarily limited to, sections 1512, 1524, 3203, 3363, 3395, 3400, 3439, 3457, 6251, 6512, 6969, 6975, 8420 and 8602(e). This is also not intended to exclude the application

of section 3203 to indoor work areas not covered by this section where one or a combination of environmental risk factors can still cause heat illness in employees.

NOTE NO. 1: The measures required here may be integrated into the employer's written Injury and Illness Program required by section 3203, the employer's written Heat Illness Prevention Program required by section 3395, or maintained in a separate document.

NOTE NO. 2: This standard is enforceable by the Division of Occupational Safety and Health pursuant to Labor Code sections 6308 and 6317 and any other statutes conferring enforcement powers upon the Division. It is a violation of Labor Code sections 6310, 6311, and 6312 to discharge or discriminate in any other manner against employees for exercising their rights under this or any other provision offering occupational safety and health protection to employees.

(b) Definitions.

"Acclimatization" means 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.

"Cool-down area" means an area that is indoor, shielded from high radiant heat sources, open to the air or provided with ventilation or cooling, and provided with a supply of cool drinking water. A cool-down area does not include a location locations where environmental risk factors defeat heat in the area defeats the purpose of providing relief and allowing the body to cool, such as locations where employees are exposed to radiant heat or high humidity. A cool-down area 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. For employees also covered by section 3395 during the work shift, a An area of shade meeting the requirements of section 3395 may be used instead of a cool-down area.

"Environmental risk factors for heat illness" means 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, protective clothing and personal protective equipment worn by employees.

"Clothing that restricts heat removal" means full-body clothing covering the arms, legs, and torso that is any of the following:

(1) Waterproof; or

(2) Designed to protect the wearer from a chemical, biological, radiological, or fire hazard;  
or

(3) Designed to protect the work process from contamination.

“Globe temperature” means the temperature measured by a globe thermometer, which consists of a thermometer sensor in the center of a 6-inch diameter hollow copper sphere painted on the outside with a matte black finish or equivalent. The globe thermometer may not be shielded from direct exposure to radiant heat while the globe temperature is being measured.

“Heat Illness” means a serious medical condition resulting from the body’s inability to cope with a particular heat load, and includes heat cramps, heat exhaustion, heat syncope and heat stroke.

“Heat index” means a measure of heat stress used by the National Weather Service that takes into account the dry bulb temperature and the relative humidity. Radiant heat is not included in the heat index. NOTE: A chart listing National Weather Service heat index values (2018) can be found in A chart to determine the heat index is included as Appendix A. [the chart used in Appendix A is different than the NOAA chart which designates effects of Heat Index in terms of “caution” to “Danger”. Unclear why the color-coded chart is not being used if the intent is to rely on Heat Index and to use this chart.]

“High radiant heat work area” means a work area that has an indoor radiant heat source and is found in one of the following:

- (1) Cement and concrete product manufacturing; chemical manufacturing; clay product and refractory manufacturing; commercial and institutional kitchens; commercial and institutional laundries; food manufacturing; glass and glass product manufacturing; metal manufacturing, fabricated metal part manufacturing and machinery manufacturing; plastics and rubber products manufacturing; steam plants, geothermal plants, steam tunnels, and boiler rooms; transportation equipment manufacturing. Foundries, brick firing and ceramic plants, glass manufacturing, vehicle and vehicle parts manufacturing, rubber manufacturing, steam plants, boiler rooms, industrial scale bakeries and confectioneries, commercial and institutional kitchens, industrial scale laundries, food canneries, chemical plants, mining sites, smelters, and steam tunnels. [Is it necessary to specifically identify specific types of manufacturing operations?]

EXCEPTION: In work areas where the employer demonstrates that the globe temperature is less than 5 degrees Fahrenheit greater than the dry bulb temperature, the work area is not a high radiant heat work area. [why not exempt employers who can demonstrate they are compliant with the ACGIH TLV?]

- (2) Other locations that have been determined in writing by the Chief of the Division of Occupational Safety and Health to include a high radiant heat work area through the issuance of an Order to Take Special Action, in accordance with section 332.3 of these orders.

“Indoor” refers to a space that is under a ceiling or overhead covering and is enclosed along its **entire** perimeter by walls, doors, windows, dividers, or other physical barriers, whether open or closed, except for spaces where (1) openings to the outdoors provide for air

movement and cooling comparable to the cooling that would be provided in an area of shade in that same location meeting the requirements of section 3395, or (2) the employer can demonstrate that openings to the outdoors provide for enough air movement and cooling to maintain the temperature in the space at less than 5 degrees Fahrenheit above the outdoor temperature. A space inside a vehicle or equipment cab located outdoors is an "indoor" space only if the space is enclosed on all sides, regardless of whether the windows are open or closed, and the employee performs his or her primary job duties while in that space. <sup>All</sup> work areas that are not indoor are considered outdoor and covered by section 3395. the following:

- (1) Where employees in the space are already covered by section 3395 during the work shift, there are no work processes in the space that use or generate water, and the space has openings to the outdoors that allow the temperature in the space to be the same as or less than the outdoor temperature throughout the work shift;
- (2) Where employees in the space are already covered by section 3395 during the work shift, there are work processes in the space that use or generate water, and the space has openings to the outdoors that allow the heat index in the space to be the same as or less than the outdoor heat index throughout the work shift;
- (3) Where the space is inside a vehicle or equipment cab and expressly covered by section 3395(a)(2)(E).

All work areas that are not indoor are considered outdoor and covered by section 3395.

"Personal risk factors for heat illness" means factors such as an 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.

"Preventative cool-down rest" means a rest break taken in a cool-down area to prevent overheating.

"Radiant heat" means heat transferred from one body or object to another not in contact with it by electromagnetic waves rather than by conduction or convection. Sources of radiant heat include the sun, hot objects, hot liquids, hot surfaces, and fire.

"Relative humidity" means the amount of moisture in the air relative to the amount that would be present if the air were saturated.

"Shielding" means a physical barrier between radiant heat sources and employees that reduces the transmission of radiant heat.

“Temperature” means the dry bulb temperature in degrees Fahrenheit obtainable by using a thermometer freely exposed to the air without considering humidity or radiant heat, to measure the temperature in the immediate area where employees are located. While the temperature measurement in high radiant heat work areas must be taken in an area that has full exposure to high radiant heat, the bulb or sensor of the thermometer should be shielded while taking the measurement, e.g., with the hand or some other object, from direct exposure to high radiant heat.

- (c) Provision of water. Employees shall have access to potable drinking water meeting the requirements of Sections 1524, 3363, and 3457, as applicable, including but not limited to the requirements that it be fresh, pure, suitably cool, and provided to employees free of charge. The water shall be located as close as practicable to the areas where employees are working. Where drinking water is not plumbed or otherwise continuously supplied, it shall be provided in sufficient quantity at the beginning of the work shift to provide one quart per employee per hour for drinking for the entire shift. Employers may begin the shift with smaller quantities of water if they have effective procedures for replenishment during the shift as needed to allow employees to drink one quart or more per hour. The frequent drinking of water, as described in subsection (h)(1)(C), shall be encouraged.

- (d) Access to Cool-Down Areas.

(1) A cool down area shall be present when the temperature exceeds 80 degrees Fahrenheit. When the temperature in the work area exceeds 80 degrees Fahrenheit,

tThe employer shall have and maintain one or more cool-down areas at all times. The cool-down area shall be at least large enough to accommodate the number of employees on recovery or rest periods, so that they can sit in a normal posture fully in the cool-down area without having to be in physical contact with each other. The cool-down area shall be located as close as practicable to the areas where employees are working. Subject to the same specifications, the size of the cool-down area during meal periods shall be at least enough to accommodate the number of employees on the meal period who remain onsite.

- (2) Employees shall be allowed and encouraged to take a preventative cool-down rest in a cool-down area when they feel the need to do so to protect themselves from overheating. Such access to cool-down areas shall be permitted at all times. An individual employee who takes a preventative cool-down rest (A) shall be monitored and asked if he or she is experiencing symptoms of heat illness; (B) shall be encouraged to remain in the cool-down area; and (C) shall not be ordered back to work until any signs or symptoms of heat illness have abated, but in no event less than 5 minutes in addition to the time needed to access the cool-down area.
- (3) If an employee exhibits signs or reports symptoms of heat illness while taking a preventative cool-down rest or during a preventative cool-down rest period, the



employer shall provide appropriate first aid or emergency response according to subsection (f) of this section.

(e) Assessment and Control Measures. The employer shall implement control measures as follows:

(1) The employer shall assess the environmental risk factors for heat illness as specified in subsections (e)(1)(A), (B), (C), (D), and (E) in the following situations: where When the temperature equals or exceeds 90 degrees Fahrenheit; or where work processes use or generate water and the heat index equals or exceeds 90 degrees Fahrenheit; where employees wear clothing that restricts heat removal and the temperature equals or exceeds 80 degrees Fahrenheit; or where employees work in high radiant heat work areas and the temperature equals or exceeds 80 degrees Fahrenheit, the employer shall assess the environmental risk factors for heat illness.

(A) The assessments shall be in writing; and shall include temperature or heat index measurements and descriptions of all other environmental risk factors for heat illness, as applicable; and shall include the date, time, and location of all measurements and descriptions. [Why can't the employer use WBGT and TLV criteria/NIOSH REL for evaluating the workplace?]

(B) The assessments shall be representative of employees' environmental risk factors for heat illness and shall include measurements taken in work areas where the temperature or heat index is expected to be the highest. The temperature or heat index measurements shall be taken at times and locations where the temperature or heat index is at or near the annual high, shall be taken as close as practicable to the affected employees, and shall be taken again whenever there is a change in working conditions that may increase temperature or heat index levels. Employers may use representative measurements for multiple work areas that share similar conditions.

(C) Instruments used to measure the temperature or heat index shall be used and maintained according to the manufacturers' recommendations. Instruments used to measure the heat index shall utilize the National Weather Service heat index tables.

(D) The employer shall reassess the environmental risk factors for heat illness when the temperature or heat index, as applicable, increases by 10 degrees Fahrenheit or when a new work process, new procedure, or new task is introduced that could increase the risk of heat illness for employees.

(E) The employer shall have effective procedures to obtain the active involvement of employees and their union representative in designing and conducting the assessments.

NOTE: Under sections 340.1 and 3204, employees or their representatives have the right to observe and obtain the results of employer monitoring of employee exposure to health and safety hazards, including temperature or heat index monitoring.

- (2) The employer shall use control measures as specified in subsections (e)(2)(A), (B), and (C) in the following situations: where When the temperature equals or exceeds 90 degrees Fahrenheit;, or where work processes use or generate water and the heat index equals or exceeds 90 degrees Fahrenheit; where employees wear clothing that restricts heat removal and the temperature equals or exceeds 80 degrees Fahrenheit; or where employees work in high radiant heat work areas and the temperature equals or exceeds 80 degrees Fahrenheit. The selection of control measures shall be, the employer shall implement the following control measures based on the written assessments of environmental risk factors for heat illness required in by subsection (e)(1).:

- (A) Engineering controls. Engineering controls shall be used to reduce the temperature or heat index, as applicable, to below 90 degrees Fahrenheit, or to the lowest temperature or heat index possible, except to the extent that the employer can demonstrate that such controls are not feasible or practicable. Engineering controls include, but are not limited to: isolation of hot processes or work areas, isolation of employees from sources of heat, air conditioning, cooling fans, local exhaust ventilation, shielding reflective shields to block radiant heat, and insulation of hot surfaces.
- (B) Administrative controls. Where engineering controls are not feasible or do not reduce the temperature or heat index, as applicable, to below 90 degrees Fahrenheit or to below 80 degrees Fahrenheit where employees wear clothing that restricts heat removal or work in high radiant heat work areas, administrative controls shall be implemented, except to the extent that the employer can demonstrate that such controls are not practicable. Administrative controls include, but are not limited to: acclimatizing employees workers, rotating employees, scheduling work earlier or later in the day, using work/rest schedules, reducing work intensity or speed, changing required work clothing, and using relief workers.
- (C) Personal heat-protective equipment. Where engineering controls are not feasible or do not reduce the temperature or heat index, as applicable, to below 90 degrees Fahrenheit or to below 80 degrees Fahrenheit where employees wear clothing that restricts heat removal or work in high radiant heat work areas and administrative controls are not practicable, personal heat-protective equipment shall be used provided to employees to reduce the risk of heat illness, except to the extent that the employer can demonstrate that use of such equipment is not feasible to the extent possible. Personal heat-protective equipment that can reduce the risk of heat illness includes, but is not limited to: fire proximity suits, water-cooled garments, air-cooled garments, cooling vests, wetted over-garments, heat-reflective clothing, and supplied-air personal cooling systems.

(3) Regardless of the temperature or heat index, where the work area is a high radiant heat work area, the employer shall use shielding to reduce the risk of heat illness to the extent practicable.

(f) Emergency Response Procedures. The employer shall implement effective emergency response procedures including:

(1) Ensuring that effective communication by voice, observation, or electronic means is maintained so that employees at the work site can contact a supervisor or emergency medical services when necessary. An electronic device, such as a cell phone or text messaging device, may be used for this purpose only if reception in the area is reliable. If an electronic device will not furnish reliable communication in the work area, the employer will ensure a means of summoning emergency medical services.

(2) Responding to signs and symptoms of possible heat illness, including but not limited to first aid measures and how emergency medical services will be provided.

(A) If a supervisor observes, or any employee reports, any signs or symptoms of heat illness in any employee, the supervisor shall take immediate action commensurate with the severity of the illness.

(B) 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), the employer must implement emergency response procedures.

(C) An employee exhibiting signs or symptoms of heat illness shall be monitored and shall not be left alone or sent home without being offered onsite first aid and/or being provided with emergency medical services in accordance with the employer's procedures.

(3) Contacting emergency medical services and, if necessary, transporting employees to a place where they can be reached by an emergency medical provider.

(4) Ensuring that, in the event of an emergency, clear and precise directions to the work site can and will be provided as needed to emergency responders.

(g) Close Observation during Acclimatization.

(1) Where the work area is affected by outdoor temperatures, all employees shall be closely observed by a supervisor or designee during a heat wave. For purposes of this section only, "heat wave" means any day in which the predicted high temperature for

the day will be at least 80 degrees Fahrenheit and at least 10 degrees Fahrenheit higher than the average high daily temperature in the preceding five days.

- (2) An employee who has been newly assigned to any of the following a work area where the temperature or heat index, as applicable, equals or exceeds 90 degrees Fahrenheit or to a high radiant heat work area shall be closely observed by a supervisor or designee for the first 14 days of the employee's employment:.

(A) To a work area where the temperature or heat index, as applicable, equals or exceeds 90 degrees Fahrenheit; or

(B) To work involving the use of clothing that restricts heat removal where the temperature equals or exceeds 80 degrees Fahrenheit; or

(C) To a high radiant heat work area where the temperature equals or exceeds 80 degrees Fahrenheit.

(h) Training.

- (1) Employee training. Effective training in the following topics shall be provided to each supervisory and non-supervisory employee before the employee begins work that should reasonably be anticipated to result in exposure to the risk of heat illness:

(A) 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.

(B) The employer's procedures for complying with the requirements of this standard, including, but not limited to, the employer's responsibility to provide water, cool-down rests, and access to first aid as well as the employees' right to exercise their rights under this standard without retaliation.

(C) The importance of frequent consumption of small quantities of water, up to 4 cups per hour, when the work environment is hot and employees are likely to be sweating more than usual in the performance of their duties.

(D) The concept, importance, and methods of acclimatization and of close observation during acclimatization pursuant to the employer's procedures under subsection (i)(4).

(E) The different types of heat illness, the common signs and symptoms of heat illness, and appropriate first aid and/or emergency responses to the different types of heat

illness, and in addition, that heat illness may progress quickly from mild symptoms and signs to serious and life threatening illness.

- (F) The importance to employees of immediately reporting to the employer, directly or through the employee's supervisor, symptoms or signs of heat illness in themselves, or in co-workers.
  - (G) The employer's procedures for responding to signs or symptoms of possible heat illness, including how emergency medical services will be provided should they become necessary.
  - (H) The employer's procedures for contacting emergency medical services, and if necessary, for transporting employees to a point where they can be reached by an emergency medical service provider.
  - (I) The employer's procedures for ensuring that, in the event of an emergency, clear and precise directions to the work site can and will be provided as needed to emergency responders. These procedures shall include designating a person to be available to ensure that emergency procedures are invoked when appropriate.
- (2) Supervisor training. Prior to supervising employees performing work that should reasonably be anticipated to result in exposure to the risk of heat illness, effective training on the following topics shall be provided to the supervisor:
- (A) The information required to be provided by section (h)(1) above.
  - (B) The procedures the supervisor is to follow to implement the applicable provisions in this section.
  - (C) The procedures the supervisor is to follow when an employee exhibits signs or reports symptoms consistent with possible heat illness, including emergency response procedures.
  - (D) Where the work area is affected by outdoor temperatures, how to monitor weather reports and how to respond to hot weather advisories.
- (i) Heat Illness Prevention Plan. The employer shall establish, implement, and maintain, an effective heat illness prevention plan. The plan shall be in writing in both English and the language understood by the majority of the employees and shall be made available at the worksite to employees and to representatives of the Division upon request. The Heat Illness Prevention Plan may be included as part of the employer's Illness and Injury Prevention Program required by section 3203, and shall, at a minimum, contain:

- (1) Procedures for the provision of water and access to cool-down areas in accordance with subsections (c) and (d).
- (2) The procedures to assess environmental risk factors for heat illness and implement control measures referred to in subsection (e).
- (3) Emergency response procedures in accordance with subsection (f).
- (4) Procedures for close observation during acclimatization in accordance with subsection (g).
- (5) Applicable procedures under section 3203 to identify, evaluate, and correct indoor heat hazards not already addressed in this standard, where one or a combination of environmental risk factors can still cause heat illness in employees.