

AUGUST 30, 2021

DRAFT Proposed Heat Illness Prevention Standard

As Adopted by the

Virginia Safety and Health Codes Board

on **To be Determined**



VIRGINIA OCCUPATIONAL SAFETY AND HEALTH (VOSH) PROGRAM

VIRGINIA DEPARTMENT OF LABOR AND INDUSTRY (DOLI)

Effective Date: **To be Determined**

16VAC25-210

Source Document Highlights

Oregon Heat Illness Prevention, 437-002-0155

Washington Outdoor Heat Exposure, WAC 296-62-095

California Heat Illness Prevention in Outdoor Places of Employment, 3395

California Heat Illness Prevention in Indoor Places of Employment, §_____ [DRAFT]

NIOSH language

VOSH language

Chapter 210. Heat Illness Prevention Standard

16VAC25-210-10. Purpose, scope, and applicability.

A. This standard is designed to establish requirements for employers to prevent heat illness among employees, and shall apply to every employer, employee, and place of employment in the Commonwealth of Virginia within the jurisdiction of the VOSH program as described in 16VAC25-60-20 and 16VAC25-60-30.

B. This standard is designed to supplement and enhance existing VOSH laws, rules, regulations, and standards applicable directly or indirectly to heat illness hazards such as, but not limited to, those dealing with personal protective equipment, respiratory protective equipment, sanitation, medical services and first aid, training, subsection A of § 40.1-51.1 A of the Code of Virginia, etc. Should this standard conflict with an existing VOSH rule, regulation, or standard, the more stringent requirement from an occupational safety and health hazard prevention standpoint shall apply.

C. This standard applies whenever an employee performs work activities and the heat index (apparent temperature) equals or exceeds 80 degrees Fahrenheit. This standard does not apply to incidental exposure that exists when an employee is not required to perform covered work activity for more than 15 minutes in any sixty-minute period.

16VAC25-210-20. Effective dates.

A. The requirements for this chapter shall take effect on [DATE] except where otherwise noted.

B. The heat illness prevention plan requirements for 16VAC25-210-90 shall take effect on [insert DATE 30 days after the effective date of this chapter].

C. The training requirements in 16VAC25-210-100 shall take effect on [insert DATE 60 days after the effective date of this chapter].

16VAC25-210-30. Definitions.

The following words and terms when used in this chapter shall have the following meanings unless the context clearly indicates otherwise:

"Acclimatization" means the body's temporary adaptation to work in heat that occurs as a person is exposed to it over time.

"Administrative control" means any procedure that significantly limits daily exposure to heat illness related workplace hazards and job tasks by control or manipulation of the work schedule or manner in which work is performed. Examples of administrative controls that may be effective at minimizing the risk of heat illness in a particular work area include, but are not limited to, acclimatizing employees, 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. The use of personal protective equipment is not considered a means of administrative control.

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

1. Waterproof;
2. Designed to protect the wearer from a chemical, biological, radiological, or fire hazard; or
3. Designed to protect the wearer or the work process from contamination.

"Cool-down area" means an indoor or outdoor area that is blocked from direct sunlight and shielded from other high radiant heat sources and is either open to the air or provided with ventilation or cooling. One indicator that blockage is sufficient is when objects do not cast a shadow in the area of blocked sunlight. A cool-down area does not include a location where:

1. Environmental risk factors defeat the purpose of allowing the body to cool; or
2. Employees are exposed to unsafe or unhealthy conditions; or
3. Employees are deterred or discouraged from accessing or using the cool-down area.

"Double-layer woven clothing" means clothing worn in two layers allowing air to reach the skin (e.g., coveralls worn on top of regular work clothes).

"Drinking water" is potable water that is suitable to drink and suitably cool in temperature. Suitably cool drinking water packaged as a consumer product and electrolyte-replenishing

beverages that do not contain caffeine (for example, sports drinks) are acceptable substitutes; however, electrolyte-replenishing beverages shall not completely replace the required water. Drinking water and electrolyte-replenishing beverages that are cool (66°F - 77°F) or cold (35°F - 65°F) will be considered to be in compliance with this chapter.

"Duration and frequency of employee exposure" means how long ("duration") and how often ("frequency") an employee is potentially exposed to heat illness related hazards or job tasks. Generally, the greater the frequency or length of time of the exposure, the greater the probability is for potential heat illness to occur.

"Economic feasibility" means the employer is financially able to undertake the measures necessary to comply with one or more requirements in this chapter. The cost of corrective measures to be taken will not usually be considered as a factor in determining whether a violation of this chapter has occurred. If an employer's level of compliance lags significantly behind that of its industry, an employer's claim of economic infeasibility will not support a VOSH decision to decline to take enforcement action.

"Elimination" means a method of exposure control that removes the employee completely from exposure to heat illness related workplace hazards and job tasks.

"Employee" means an employee of an employer who is employed in a business of his employer. Reference to the term "employee" in this chapter also includes, but is not limited to, temporary employees and other joint employment relationships, persons in supervisory or management positions with the employer, etc., in accordance with Virginia occupational safety and health laws, standards, regulations, and court rulings.

"Engineering control" means the use of substitution, isolation, ventilation, and equipment modification to reduce exposure to heat illness related workplace hazards and job tasks. Examples of engineering controls that may be effective at minimizing the risk of heat illness in a particular work area include, but are not limited to, isolation of hot processes, isolation of employees from sources of heat, air conditioning, cooling fans, cooling mist fans, evaporative coolers (also called swamp coolers), natural ventilation where the outdoor temperature or heat index is lower than the indoor temperature or heat index, local exhaust ventilation, shielding from a radiant heat source, and insulation of hot surfaces.

“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.

"Feasible" as used in this chapter includes both technical and economic feasibility.

"Heat cramp" means a heat-related illness characterized by spastic contractions of the voluntary muscles (mainly arms, hands, legs, and feet), usually associated with restricted salt intake and profuse sweating without significant body dehydration.¹ Symptoms of heat cramp include muscle cramps, pain, or spasms in the abdomen, arms, or legs.²

"Heat exhaustion" means a heat-related illness characterized by elevation of core body temperature above 38°C (100.4°F) and abnormal performance of one or more organ systems, without injury to the central nervous system. Heat exhaustion may signal impending heat stroke.³ Symptoms of heat exhaustion include headache, nausea, dizziness, weakness, irritability, thirst, heavy sweating, elevated body temperature, decreased urine output.⁴

"Heat illness" means a medical condition resulting from the body's inability to cope with a particular heat load, and includes, but is not limited to, heat cramps, heat rash, heat syncope, rhabdomyolysis, heat exhaustion, and heat stroke.

"Heat index," also known as the apparent temperature, is what the temperature feels like to the human body when relative humidity is combined with the air temperature. The heat index is calculated using equations published by the National Oceanic and Atmospheric Administration's National Weather Service. It can be readily determined using the OSHA-NIOSH Heat Safety Tool App (<https://www.cdc.gov/niosh/topics/heatstress/heatapp.html>) or the online calculator available from the National Weather Service (<https://www.wpc.ncep.noaa.gov/html/heatindex.shtml>). For the purposes of this chapter, the heat index in an indoor space can be calculated by substituting the measured indoor

¹ <https://www.cdc.gov/niosh/docs/2016-106/default.html>

² <https://www.cdc.gov/niosh/topics/heatstress/heatrelillness.html>

³ <https://www.cdc.gov/niosh/docs/2016-106/default.html>

⁴ <https://www.cdc.gov/niosh/topics/heatstress/heatrelillness.html>

temperature in the calculation and leaving the humidity unchanged or by substituting both the measured indoor temperature and the measured indoor humidity.

"Heat rash" looks like a red cluster of pimples or small blisters that usually appear on the neck, upper chest, groin, under the breasts or in elbow creases.⁵

"Heat stroke" means an acute medical emergency caused by exposure to heat from an excessive rise in body temperature [above 41.1°C (106°F)] and failure of the temperature-regulating mechanism. Injury occurs to the central nervous system characterized by a sudden and sustained loss of consciousness preceded by vertigo; nausea; headache; cerebral dysfunction; bizarre behavior; excessive body temperature;⁶ hot, dry skin or profuse sweating.

"Heat syncope" means collapse and/or loss of consciousness during heat exposure without an increase in body temperature or cessation of sweating, similar to vasovagal fainting except that it is heat induced.⁷ Symptoms of heat syncope include fainting (short duration), dizziness, or light-headedness during prolonged standing or suddenly rising from a sitting or lying position.⁸

"High heat" means when the ambient heat index equals or exceeds 90 degrees Fahrenheit.

"Indoor" refers to a space that is under a ceiling or overhead covering that restricts airflow; and is enclosed along its entire perimeter by walls, doors, windows, dividers, or other physical barriers that restrict air flow, whether open or closed. All work areas that are not indoor are considered outdoor.

"Occupational exposure" means the state of being actually or potentially exposed to heat illness related hazards at the work location or while engaged in work activities at another location.

"Outdoor" means not indoor.

"Personal heat-protective equipment" means equipment worn to protect the user against heat illness. Examples of personal heat-protective equipment that may be effective at minimizing the risk of heat illness in a particular work area include, but are not limited to,

⁵ <https://www.cdc.gov/niosh/topics/heatstress/heatrelillness.html>

⁶ <https://www.cdc.gov/niosh/docs/2016-106/default.html>

⁷ <https://www.cdc.gov/niosh/docs/2016-106/default.html>

⁸ <https://www.cdc.gov/niosh/topics/heatstress/heatrelillness.html>

water-cooled garments, air-cooled garments, cooling vests, wetted over-garments, heat reflective clothing, and supplied-air personal cooling systems.

"Personal protective equipment" means equipment worn to minimize exposure to hazards that cause serious workplace injuries and illnesses. These injuries and illnesses may result from contact with chemical, radiological, physical, electrical, mechanical, biological, or other workplace hazards.

"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 taken in a cool-down area to prevent overheating.

"Radiant heat" means heat transmitted by electromagnetic waves and not transmitted by conduction or convection. Sources of radiant heat include the sun, hot objects, hot liquids, hot surfaces, and fire.

"Rhabdomyolysis" means a medical condition associated with heat stress and prolonged physical exertion, resulting in the rapid breakdown of muscle and the rupture and necrosis of the affected muscles.⁹ Symptoms of rhabdomyolysis include muscle cramps/pain, abnormally dark (tea or cola colored) urine, weakness, exercise intolerance, asymptomatic.¹⁰

"Relative humidity" means the amount of water vapor present in air expressed as a percentage of the amount needed for saturation at the same temperature.

"Respirator user" means an employee who in the scope of their current job may be assigned to tasks that may require the use of a respirator in accordance with this chapter or required by other provisions in the VOSH and OSHA standards.

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

⁹ <https://www.cdc.gov/niosh/docs/2016-106/default.html>

¹⁰ <https://www.cdc.gov/niosh/topics/heatstress/heatrelillness.html>

"Technical feasibility" means the existence of technical know-how as to materials and methods available or adaptable to specific circumstances that can be applied to one or more requirements in this chapter with a reasonable possibility that employee exposure to the SARS-CoV-2 virus and COVID-19 disease hazards will be reduced. If an employer's level of compliance lags significantly behind that of the employer's industry, allegations of technical infeasibility will not be accepted.

"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. When employees are working outside, the temperature measurement must be taken in an area with full sunlight. 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 contact by sunlight.

"Vapor barrier clothing" means clothing that significantly inhibits or completely prevents sweat produced by the body from evaporating into the outside air. Such clothing includes encapsulating suits, various forms of chemical resistant suits used for PPE, and other forms of nonbreathing clothing.

"VOSH" means Virginia Occupational Safety and Health.

"Work area" means a site (including outdoor and indoor areas, a structure, or a group of structures) or an area within a site where work or any work-related activity (e.g., taking breaks, going to the restroom, eating, entering, or exiting work) occurs. A work area includes the entirety of any space associated with the site (e.g., workstations, hallways, stairwells, breakrooms, bathrooms, elevators) and any other space that an employee might occupy in arriving, working, or leaving.¹¹

"Work practice control" means a type of administrative control by which the employer modifies the manner in which the employee performs assigned work. Such modification may result in a reduction of exposure to SARS-CoV-2 virus and COVID-19 disease related workplace

¹¹ Definition of "work area" derived from OSHA definition of "physical location" in OSHA COVID-19 ETS, 1910.502. <https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.502>

hazards and job tasks through such methods as changing work habits, improving sanitation and hygiene practices, or making other changes in the way the employee performs the job.

16VAC25-210-40. Drinking water.

A. Employers whose work activities are covered by this chapter shall ensure that an adequate supply of additional drinking water to that already required by VOSH laws, standards and regulations is readily accessible to employees at all times and at no cost when the heat index in the work area equals or exceeds 80 degrees Fahrenheit.

B. Where drinking water is not plumbed or otherwise continuously supplied, employers shall supply each employee enough water to enable them to consume 32 ounces per hour. 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. Employers may begin the shift with smaller quantities of drinking water if effective procedures are established to replenish the water consumed during the shift.

C. The drinking water shall be located as close as feasible to the areas where employees are working and in a manner and location that ensures it remain suitably cool. Drinking water shall not be located in close proximity to toxic or hazardous substances or materials.

D. Employers shall encourage employees to frequently consume drinking water to ensure hydration.

E. Employers shall ensure that all employees have the opportunity to drink at least one quart of drinking water per hour.

F. Employees are responsible for monitoring their own personal risk factors for heat illness, including consumption of sufficient quantities of drinking water.

16VAC25-210-50. Employee access to cool down areas.

A. Employers whose work activities are covered by this chapter shall establish and maintain one or more cool down areas when the heat index temperature in the work area equals or exceeds 80 degrees Fahrenheit. Cool down areas 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.

B. A cool down area must meet the following requirements:

1. The cool down area must either be open to the air or provide mechanical ventilation for cooling.
2. The amount of cool down area present must be at least 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.
3. The cool down area must be located as close as feasible to the areas where employees are working.

C. The available space of the cool down area present during meal periods must be large enough to accommodate the number of employees on the meal period that remain onsite.

D. Employees shall be allowed and encouraged to take a preventative cool-down rest in the cool down area when they feel the need to do so to protect themselves from overheating.

1. Such access to a cool down area shall be permitted at all times.
2. 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 16VAC25-210-70.

E. In outdoor work areas when the heat index temperature does not exceed 80 degrees Fahrenheit, employers shall either provide a cool down area as per subsection B. or provide timely access to a cool down area upon an employee's request.

F. When the employer can demonstrate that providing access to a cool down area is not safe or feasible in a particular situation (for example, during high winds or when an employee is walking through range land), employers shall identify and implement alternative cooling measures that provide equivalent protection.

16VAC25-210-60. Acclimatization.

An employee who has been newly assigned or has returned to work after an absence of seven calendar days¹² to any of the following 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 ambient heat index equals or exceeds 80 degrees Fahrenheit; or
- B. To work involving the use of clothing that restricts heat removal (e.g., double-layer woven clothing, vapor barrier clothing, etc.) where the ambient heat index equals or exceeds 80 degrees Fahrenheit; or
- C. To a high radiant heat work area where the ambient heat index equals or exceeds 80 degrees Fahrenheit.

¹² <https://www.osha.gov/heat-exposure/protecting-new-workers>

16VAC25-210-70. High heat procedures.

A. In addition to complying with the other provisions of this chapter, employers shall develop and implement high heat procedures when the ambient heat index equals or exceeds 90 degrees Fahrenheit.

B. The high heat procedures shall include:

1. Employers shall ensure that effective communication by voice, observation, or electronic means is maintained so that employees at the work site can contact a supervisor 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.

2. Employers shall ensure that employees are observed for alertness, signs and symptoms of heat illness and monitored to determine whether medical attention is necessary by implementing one or more of the following:

- a. Regular communication with employees working alone, such as by radio, cellular phone, or other alternative means, or**
- b. Create a mandatory buddy system, or**
- c. Implement other equally effective means of observation or communication.**

3. Employers shall designate and equip one or more employees on each worksite as authorized to call for emergency medical services, and must allow other employees to call for emergency services when designated employees are not immediately available (such a practice supplements existing requirements to ensure that emergency medical care is immediately available in all workplaces).

4. Employers shall ensure that each employee takes a minimum ten-minute preventative cool-down rest period in the shade at least every two hours, regardless of the overall length of the shift. The preventative cool-down rest period required by this section may be provided concurrently with any other meal or rest period required by policy, rule or law if the timing of the preventative cool-down rest period coincides with the otherwise

required meal or rest period. Except when such a rest period coincides with the existing unpaid meal break, the preventative cool-down rest period is a work assignment and must be compensated accordingly.

16VAC25-210-80. Emergency response procedures.

A. Employers covered by this chapter shall develop and implement effective emergency response procedures.

B. The emergency response procedures shall include and address the following:

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. The employer shall designate a person to be available to ensure that emergency procedures are invoked when appropriate.

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 if a supervisor observes, or any employee reports, any signs or symptoms of heat illness in any employee.

The supervisor must take immediate action appropriate to the severity of the illness:

a. If a supervisor 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.

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), immediately implement the emergency response procedures.

c. 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 the employer's procedures.

3. Contacting emergency medical services and, if necessary and instructed to do so by the medical professionals, 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 are provided for first responders to quickly navigate to the location of the affected worker.

16VAC25-210-90. Heat illness prevention plan.

A. Employers covered by this chapter shall establish, implement, and maintain, an effective heat illness prevention plan.

B. For employers with eleven or more employees, 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 VOSH upon request; and shall, at a minimum, contain:

1. Procedures for the provision of water and access to cool down areas.
2. Acclimatization methods and procedures referred to in 16VAC25-210-60.
3. High heat procedures referred to in 16VAC25-210-70.
4. Emergency response procedures referred to in 16VAC25-210-80.

16VAC25-210-100. Training.

A. Employee training.

1. Employers covered by this chapter shall provide effective training in the following topics to each supervisory and non-supervisory employee before the employee begins work that should reasonably be anticipated to expose employees to a heat index equal to or in excess of 80 degrees Fahrenheit:

- 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 drinking water, cool-down areas, access to first aid, and the employees' right to exercise their rights under this chapter 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 pursuant to the employer's procedures under subsection 16VAC25-210-60.A.
- e. The different types of heat illness, the common signs and symptoms of heat illness, and appropriate first aid and emergency responses to the different types of heat illness.
- f. That heat illness may progress quickly from mild symptoms and signs to serious and life threatening illness.
- g. 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.
- h. 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.

i. 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.

j. 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.

B. Employers covered by this chapter shall provide **effective training** to supervisors **on the following topics**:

1. The information required to be provided by **subsection A. above**.
2. The procedures the supervisor is to follow to implement the applicable provisions in this section.
3. The procedures the supervisor is to follow when an employee exhibits signs or reports symptoms consistent with possible heat illness, including emergency response procedures.
4. **How to determine or measure the heat index (apparent temperature), monitor weather reports and respond to hot weather advisories.**

16VAC25-210-110. Discrimination against an employee for exercising rights under this chapter is prohibited.

A. No person shall discharge or in any way discriminate against an employee because the employee has exercised rights under the safety and health provisions of this chapter, Title 40.1 of the Code of Virginia, and implementing regulations under 16VAC25-60-110 for themselves or others.

B. No person shall discharge or in any way discriminate against an employee who raises a reasonable concern about heat illness hazards to the employer, the employer's agent, other employees, a government agency, or to the public such as through print, online, social, or any other media.

C. Nothing in this chapter shall limit an employee from refusing to do work or enter a location because of a reasonable fear of illness or death. The requirements of 16VAC25-60-110 contain the applicable requirements concerning discharge or discipline of an employee who has refused to complete an assigned task because of a reasonable fear of illness or death.