

COMMONWEALTH of VIRGINIA

DEPARTMENT OF LABOR AND INDUSTRY

C. RAY DAVENPORT
COMMISSIONER

MAIN STREET CENTRE
600 EAST MAIN STREET, SUITE 207
RICHMOND, VIRGINIA 23219
PHONE (804) 371-2327
FAX (804) 371-6524
TDD (804) 786-2376

VIRGINIA SAFETY AND HEALTH CODES BOARD

BRIEFING PACKAGE FOR

MARCH 5, 2020

Request to Initiate Notice of Intended Regulatory Action (NOIRA) to Adopt a Regulation on Heat Illness Prevention

I. Action Requested.

The Virginia Occupational Safety and Health (VOSH) Program requests the Safety and Health Codes Board to authorize the Department to initiate the regulatory process to a adopt regulation applicable to Heat Illness Prevention by filing a Notice of Intended Regulatory Action (NOIRA), pursuant to the Virginia Administrative Process Act (§2.2-4007).

II. Background.

At its meeting on September 17, 2019, the Virginia Safety and Health Codes Board directed the Commissioner of Labor and Industry to begin staff work on a proposed NOIRA to begin the regulatory adoption process of a Heat Illness Prevention regulation applicable to all Virginia employers and employees covered by VOSH jurisdiction.

III. Summary of Intended Regulatory Action.

The VOSH Program seeks to adopt regulations applicable to protect Virginia employers and employees from outdoor and indoor heat illness hazards.

NOTE: VOSH jurisdiction over the maritime industry only extends to state and local government employers and employees. Federal OSHA retains jurisdiction over the maritime industry in the private sector in Virginia.

The VOSH Program intends to conduct a review of existing federal and state regulations as well as national consensus standards and guidelines designed to protect employees from heat illness hazards. The proposal would address indoor and outdoor heat illness hazards¹ experienced by similarly situated employees in all industries covered by VOSH jurisdiction.

Issues to be analyzed for inclusion in any proposed regulation include, but are not limited to:

Definitions of appropriate terms

Employer requirement to monitor indoor and outdoor temperatures

Temperature action levels tied to the type of clothing being worn by the employee

Acclimatization procedures

Access to potable drinking water, and electrolytes as needed

Cool down rest periods with access to shade or a climate controlled environment at certain temperature action levels

Prohibiting employees from being ordered back to work until any signs or symptoms of heat illness have abated

Additional communication, observation, monitoring requirements, first aid, and emergency response requirements at certain temperature trigger levels

An exception to the requirements of the regulation for “incidental exposure” which exists when an employee is not required to perform a work activity outdoors for more than 15 minutes in any 60 minute period

Written heat illness prevent plan

Employee and supervisory training on heat illness hazards and preventative measures in a language the employee and supervisor understands

III. Basis, Purpose and Impact of the Proposed Rulemaking.

A. Basis.

The Safety and Health Codes Board is authorized by Title 40.1-22(5) to: “... adopt, alter, amend, or repeal rules and regulations to further, protect and promote the safety and health of employees in places of employment over which it has jurisdiction and to effect compliance with the federal OSH Act of 1970...as may be necessary to carry out its functions established under this title”.

¹ OSHA heat-related case studies involving a roofer, delivery driver, and foundry work demonstrate the variety of occupations that are exposed to heat-related hazards: <https://www.osha.gov/SLTC/heatstress/casestudies.html>

“In making such rules and regulations to protect the occupational safety and health of employees, the Board shall adopt the standard which most adequately assures, to the extent feasible, on the basis of the best available evidence that no employee will suffer material impairment of health or functional capacity”.

“However, such standards shall be at least as stringent as the standards promulgated by the federal OSH Act of 1970 (P.L.91-596). In addition to the attainment of the highest degree of health and safety protection for the employee, other considerations shall be the latest available scientific data in the field, the feasibility of the standards, and experiences gained under this and other health and safety laws.”

Heat-related Illness Factors

Heat-related illness external risk factors generally include, but are not limited to:

- High temperature and humidity
- Direct sun exposure/no shade
- Radiant heat from the sun or other objects
- Limited air movement
- Physical exertion
- Personal Protective Equipment use (e.g., bulky protective clothing, respirators, etc.)

Heat-related illness internal risk factors generally include, but are not limited to:

- Personal factors of the exposed employee, such as medical conditions, physical fitness, age, sleep, etc.
- Acclimatization
- Medications (prescription and over the counter)
- Level of hydration, including the presence of caffeine and alcohol

Medical conditions that can contribute include, but are not limited to:

- Diabetes
- Heart disease and high blood pressure
- Obesity
- Thyroid disease
- Infections
- Gastro-intestinal disease
- Pregnancy
- Skin problems, including sunburn

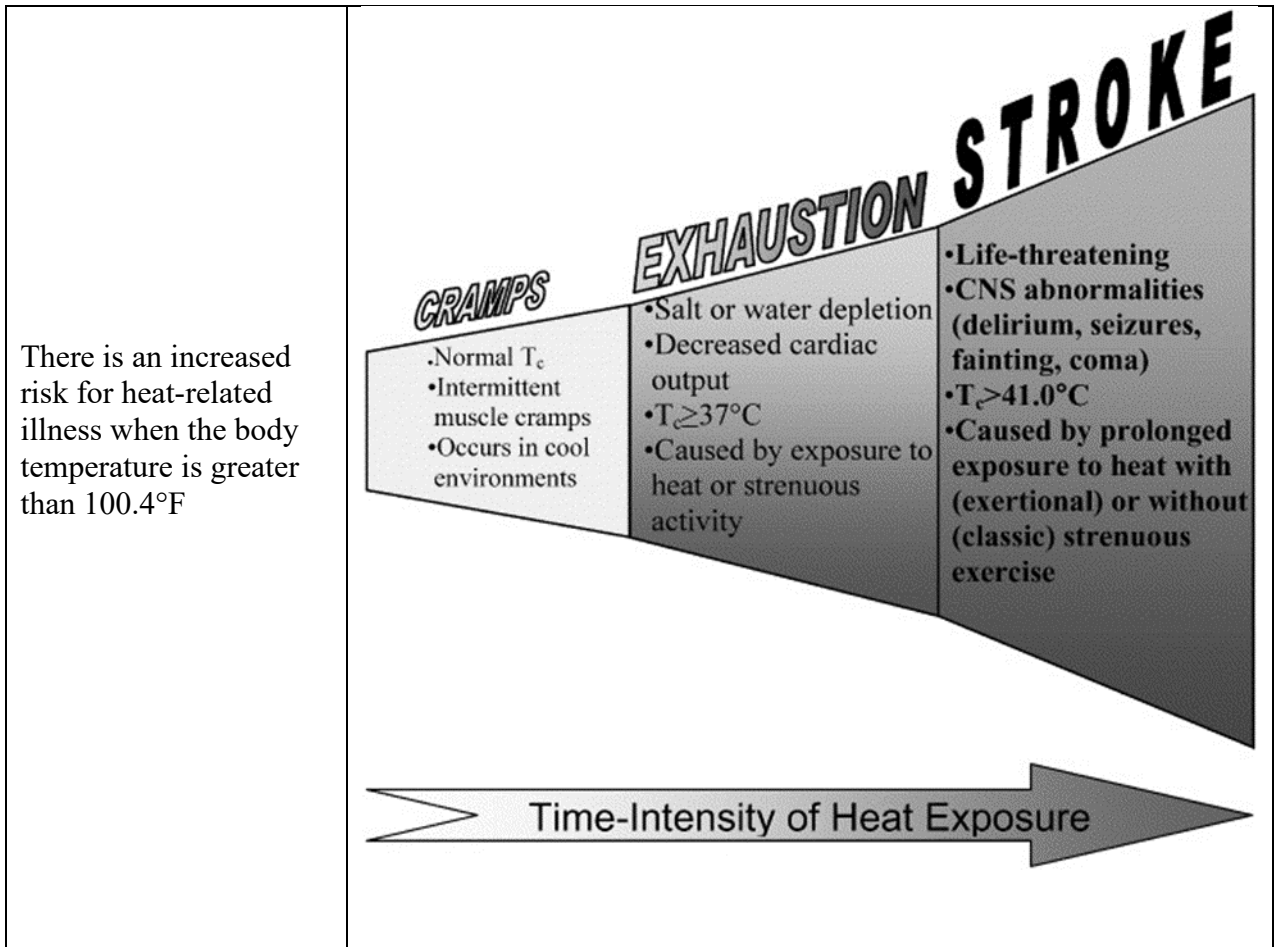
Some of the symptoms of heat-related illnesses are non-specific. This means that when a worker is performing physical labor in a warm environment, any unusual symptom can be a sign of overheating².

² https://www.osha.gov/SLTC/heatstress/heatrelated_illness_firstaid.html

Heat-Related Illness	Symptoms and Signs
Heat stroke	<ul style="list-style-type: none"> ▪ Confusion ▪ Slurred speech ▪ Unconsciousness ▪ Seizures ▪ Heavy sweating or hot, dry skin ▪ Very high body temperature ▪ Rapid heart rate
Heat exhaustion	<ul style="list-style-type: none"> ▪ Fatigue ▪ Irritability ▪ Thirst ▪ Nausea or vomiting ▪ Dizziness or lightheadedness ▪ Heavy sweating ▪ Elevated body temperature or fast heart rate
Heat cramps	<ul style="list-style-type: none"> ▪ Muscle spasms or pain ▪ Usually in legs, arms, or trunk
Heat syncope	<ul style="list-style-type: none"> ▪ Fainting ▪ Dizziness
Heat rash	<ul style="list-style-type: none"> ▪ Clusters of red bumps on skin ▪ Often appears on neck, upper chest, and skin folds
Rhabdomyolysis (muscle breakdown)	<ul style="list-style-type: none"> ▪ Muscle pain ▪ Dark urine or reduced urine output ▪ Weakness

Heat-related illnesses generally include:

- Heat Stroke
- Heat Exhaustion
- Heat syncope (temporary loss of consciousness) or fainting
- Heat Rash
- Heat Cramps
- Rhabdomyolysis (muscle breakdown)



NOTE: $37^\circ\text{C} = 98.6^\circ\text{F}$ $41^\circ\text{C} = 105.8^\circ\text{F}$

Heat-related Illness Statistics

From 1999-2010, heat illness accounted for 7,415 work and non-work related deaths in the United States, an average of 618 per year.³

Between 1992 and 2016, the Bureau of Labor Statistics (BLS) has reported that 783 U.S. workers died from heat illness and 69,374 were seriously injured.⁴ These numbers are generally understood to be undercounts for a variety of reasons.⁵

³ <https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6136a6.htm>

⁴ Page 5, <https://www.citizen.org/wp-content/uploads/2439.pdf>

⁵ “But the BLS data vastly understate the number of injuries and fatalities for several reasons. Regarding injuries, some of the shortcomings stem from the fact that BLS relies on employer logs. The Occupational Safety and Health (OSH) Act of 1970 requires most employers to record injuries and illnesses sustained by their workers on a form known as the Form 300 Log of Injury (or Form 300 log). But the OSH Act does not apply to federal government agencies, self-employed persons, and household workers. The Act also exempts small farms with fewer than 11 workers, which means that BLS injury data do not capture heat-related events for a significant number of agricultural workers, the sector at highest risk of heat-related illness. Moreover, OSHA does not require that an injury be reported if it does not lead to one or more of the following: death, days away from work, restricted work or transfer to another job, medical treatment beyond first aid, loss of consciousness, or a diagnosis of significant injury by a health care professional.... Two additional factors lead not only to underreporting of heat illness but also to undercounting of heat deaths, which does not rely on employer logs. First, heat stress is not always

According to BLS, in 2015 there were 100 nonfatal occupational injuries and illnesses in Virginia caused by exposure to environmental heat.⁶

From May, 2008 to July, 2014, 106 heat illness related-fatalities were reported in federal OSHA jurisdictions.⁷ Industries and jobs involved in the fatal accidents included:

Asbestos remediation	Landscaping	Drywall finishing
Steel erection	Recycling	Residential construction
Orchards	Electrical	Concrete construction
Trucking/Freight hauling	Oil and gas drilling	Solid Waste collection
Roofing	Exterior painting	Flour milling
Tree trimming	Road paving	Agriculture field labor
Catering	Golf course	Sawmill
Tire repair/replacement	Turkey production	Bricklayer
Forest firefighter	HVAC	Industrial cleaning crew
Archaeological dig	Telecommunications	Water well drilling
Automobile repair	Tent/Pavilion Install ⁸	

Since July, 1999, the VOSH Program has investigated eleven (11) fatal accidents and one (1) non-fatal catastrophic incident (involving the hospitalization of three employees) involving employee heat-related illnesses:

June, 2017	Residential construction site
July, 2016	Agricultural field work
July, 2015	Construction site
July, 2015	Bridge construction site
June, 2010	Roofing construction site
August, 2009	Agricultural field work
August, 2006	Logging site
July, 2006	Manufacturing plant
July, 2005	Non-fatal catastrophe, three employees hospitalized during agricultural field work
August, 2002	Construction site
July, 2002	Agricultural field work
July 1999	Meatpacking plant

recognized as a cause of heat-induced illness or death because many of the symptoms, such as rash, sweating, headache, and fatigue, are nonspecific and overlap with more common diseases....Second, heat stress also diminishes performance and makes other accidents and injuries more likely, giving rise to the possibility that heat stress is a significant factor in an untold number of fatalities or serious injuries that are not recorded as having anything to do with heat.”

Pages 10-12, <https://www.citizen.org/wp-content/uploads/2439.pdf>

⁶ <https://www.bls.gov/opub/ted/2017/work-injuries-in-the-heat-in-2015.htm>

⁷ <http://www.osha.gov/SLTC/heatillness/map.html>

⁸ Id.

Laws and Regulations

Neither OSHA nor VOSH has a comprehensive heat illness regulation.

OSHA has been petitioned twice in recent years to adopt either an emergency temporary standard and/or a permanent heat illness standard by the consumer and health advocacy group, Public Citizen, on September 1, 2011⁹ and July 17, 2018¹⁰. OSHA officially responded to the 2011 petition and denied the organization's request by letter dated June 7, 2012¹¹. It does not appear that OSHA has responded to the 2018 petition.

There are several federal OSHA laws and regulations adopted by the VOSH program and two Virginia unique regulations that indirectly address certain heat illness issues:

Requirements to provide potable drinking water to employees are contained in 1910.141¹² (for general industry); 16VAC25-160-10¹³ (Virginia unique regulation that is the functional equivalent of 1926.51 for Construction); 16VAC25-180¹⁴ (Virginia unique regulation that is the functional equivalent of 1928.110); 1915.88¹⁵; 1917.127¹⁶; 1918.95¹⁷

Va. Code §40.1-51(a), otherwise known as the “general duty clause” (the Virginia equivalent to §5(a)(1)¹⁸ of the OSH Act of 1970), provides that:

“It shall be the duty of every employer to furnish to each of his employees safe employment and a place of employment which is free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees....”

While Congress intended that the primary method of compliance and enforcement under the OSH Act of 1970 would be through the adoption of occupational safety and health standards¹⁹, it also provided the general duty clause as an enforcement tool that could be used in the absence of an OSHA (or VOSH) regulation.

Federal case law has established that the general duty clause can be used to address “serious” recognized hazards to which employees are exposed through reference to such things as national consensus standards, manufacturer's requirements, or an employer's safety and health rules.

However, there are limitations to use of the general duty clause that make it problematic

⁹ <https://www.citizen.org/wp-content/uploads/petition-for-a-heat-standard-090111.pdf>

¹⁰ https://citizenvox.org/wp-content/uploads/2018/07/180717_Petition-to-OSHA-on-Heat-Stress-Signed_FINAL.pdf

¹¹ <https://www.citizen.org/wp-content/uploads/migration/denial-of-heat-stress-petition.pdf>

¹² <https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.141>

¹³ <http://leg1.state.va.us/cgi-bin/legp504.exe?000+reg+16VAC25-160-10>

¹⁴ <http://leg1.state.va.us/cgi-bin/legp504.exe?000+reg+16VAC25-180-10>

¹⁵ <https://www.osha.gov/laws-regs/regulations/standardnumber/1915/1915.88>

¹⁶ <https://www.osha.gov/laws-regs/regulations/standardnumber/1917/1917.127>

¹⁷ <https://www.osha.gov/laws-regs/regulations/standardnumber/1918/1918.95>

¹⁸ https://www.osha.gov/laws-regs/oshact/section_5

¹⁹ *The Law of Occupational Safety and Health*, Nothstein, 1981, page 259.

to enforce and result in its infrequent use. The recent 2019 decision of the Occupational Safety and Health Review Commission's (OSHRC) in *Secretary of Labor v. A. H. Struggill Roofing, Inc.*,²⁰ demonstrates the complexities and difficulties of establishing a heat illness general duty "recognized hazard" and accompanying violation in a case where an employee of a roofing contractor collapsed and later died with a diagnosis of heat stroke where the employee's core body temperature was determined to be 105.4°F.²¹

As is evident from the wording of the general duty statute, it does not directly address the issue of heat illness hazards. While preferable to no enforcement tool at all, the general duty clause does not provide either the regulated community, employees, or the VOSH Program with substantive and consistent requirements on how to reduce or eliminate heat illness hazards.

Other problems with the use of the general duty clause include the inability to use it to enforce any national consensus standard, manufacturer's requirements or employer safety and health rules which use "should" or "may" language; and the inability to cite other-than-serious general duty violations because the statutory language specifies that the hazard be one that is "causing or likely to cause death or serious physical harm".²²

General requirements to train construction employees "in the recognition and avoidance of unsafe conditions" are contained in 1926.21²³ (no requirements in general industry, agriculture, or maritime).

General requirements to provide personal protective equipment to employees are contained in 1926.28²⁴, 1926.95²⁵, 1910.132(d)²⁶, 1915.152²⁷; 1917.95²⁸ (no requirements in agriculture).

Medical services and first aid requirements are contained in 1926.50²⁹; 1910.151³⁰; 1915.87³¹; 1917.26³²; 1918.97³³ (no requirements in agriculture).

²⁰ OSHRC Docket No. 13-0224, [https://www.oshrc.gov/assets/1/18/A.H. Struggill Roofing Inc.%5E13-0224%5EComplete_Decision_signed%5E022819%5EFINAL.pdf?8324](https://www.oshrc.gov/assets/1/18/A.H._Struggill_Roofing_Inc.%5E13-0224%5EComplete_Decision_signed%5E022819%5EFINAL.pdf?8324)

²¹ Id. at pages 2-3, Contributing factors included that the worker had some preexisting medical conditions, it was his first day on the job, and the outside temperature at the time of collapse was estimated to be 82°F with 51 percent relative humidity. The work took place on a flat roof with periods of direct sun alternating with clouds; and involved removing a single-ply sheet rubber membrane and Styrofoam insulation so that a new roof could be installed.

²² An other than serious violation "means a violation which is not, by itself, a serious violation within the meaning of the law but which has a direct or immediate relationship to occupational safety or health." 16VAC25-60-10.

²³ <https://www.osha.gov/laws-regs/regulations/standardnumber/1926/1926.21>

²⁴ <https://www.osha.gov/laws-regs/regulations/standardnumber/1926/1926.28>

²⁵ <https://www.osha.gov/laws-regs/regulations/standardnumber/1926/1926.95>

²⁶ <https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.132>

²⁷ <https://www.osha.gov/laws-regs/regulations/standardnumber/1915/1915.152>

²⁸ <https://www.osha.gov/laws-regs/regulations/standardnumber/1917/1917.95>

²⁹ <https://www.osha.gov/laws-regs/regulations/standardnumber/1926/1926.50>

³⁰ <https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.151>

³¹ <https://www.osha.gov/laws-regs/regulations/standardnumber/1915/1915.87>

³² <https://www.osha.gov/laws-regs/regulations/standardnumber/1917/1917.26>

³³ <https://www.osha.gov/laws-regs/regulations/standardnumber/1918/1918.97>

Injury and illness recordkeeping requirements are contained in 1904.7(b)(5)³⁴

Three OSH State Plan States have adopted regulations addressing employee exposure to extreme heat, California³⁵ (outdoor only), Minnesota³⁶ (indoor and outdoor), and Washington³⁷ (outdoor only). California is currently in the process of promulgating a regulation addressing “Heat Illness Prevention in Indoor Places of Employment.”³⁸

These state regulations variously include requirements on:

Definitions for such terms as acclimatization³⁹; environmental risk factors for heat illness⁴⁰; heavy, moderate and light work⁴¹; indoor⁴²; outdoor environment⁴³; personal risk factors for heat illness⁴⁴; shade⁴⁵; temperature⁴⁶; vapor barrier clothing⁴⁷; wet bulb globe temperature index, natural wet-bulb temperature, globe temperature⁴⁸

Written heat prevention/training plan

Provision of potable drinking water

Access to shade⁴⁹

Rest periods⁵⁰

High heat procedures when the temperature equals or exceeds 95°F⁵¹

Information and training for employees and supervisors, in a language the employee and supervisor understands⁵²

³⁴ <https://www.osha.gov/laws-regs/regulations/standardnumber/1904/1904.7>

³⁵ <https://www.dir.ca.gov/title8/3395.html>, Title 8 CCR Section 3395, Heat Illness Prevention

³⁶ <https://www.revisor.mn.gov/rules/5205.0110/>, MAR 5205.0110, Indoor Ventilation and Temperature in Places of Employment; <https://www.revisor.mn.gov/rules/5206.0500/> MAR 5205-0500, Harmful Physical Agents; <https://www.revisor.mn.gov/rules/5206.0700/>, MAR 5205-0700, Training

³⁷ <https://app.leg.wa.gov/WAC/default.aspx?cite=296-62&full=true#296-62-095>, WAC 296-62-095, Outdoor Heat Exposure

³⁸ <https://www.dir.ca.gov/dosh/doshreg/Heat-illness-prevention-indoors/>

³⁹ California and Washington

⁴⁰ California and Washington

⁴¹ Minnesota

⁴² Minnesota

⁴³ Washington

⁴⁴ California

⁴⁵ California

⁴⁶ California

⁴⁷ Washington

⁴⁸ Minnesota

⁴⁹ California

⁵⁰ California

⁵¹ California

⁵² California, Minnesota, Washington contains the language requirement

Acclimatization⁵³

Emergency response procedures

Heat is classified as a “harmful physical agent” and where there is a reasonably foreseeable potential for exposure to a harmful physical agent, employer are required to provide a written training to employees⁵⁴

Employees shall not be exposed to indoor environmental heat conditions in excess of certain temperature trigger levels depending on the work activity level⁵⁵

Employees shall not be exposed to indoor environmental cold conditions in excess of certain temperature trigger levels depending on the work activity level⁵⁶

Outdoor temperature action levels tied to the type of clothing being worn by the employee⁵⁷

An exception to the requirements of the regulation for “incidental exposure” which exists when an employee is not required to perform a work activity outdoors for more than 15 minutes in any 60 minute period⁵⁸

Employees showing signs or demonstrating symptoms of heat illness must be relieved from duty and provided sufficient means to reduce body temperature⁵⁹

Training must be provided to employees prior to initial assignment and at least annually thereafter⁶⁰

The National Institute for Occupational Safety and Health (NIOSH), created by Congress in the OSH Act of 1970 to research occupational safety and health hazards, has published criteria for a recommended standard for occupational heat stress⁶¹. The NIOSH document includes recommendations for employers about how to prevent heat-related illnesses:

“Heat-related occupational illnesses, injuries, and reduced productivity occur in situations in which the total heat load (environmental plus metabolic heat) exceeds the capacities of the body to maintain normal body functions. The reduction of adverse health effects can be accomplished by the proper application of engineering and work practice controls, worker training and acclimatization, measurements and assessment of heat stress, medical monitoring, and proper use of heat-protective

⁵³ California and Washington

⁵⁴ Minnesota

⁵⁵ Id.

⁵⁶ Id.

⁵⁷ Washington

⁵⁸ Id.

⁵⁹ Id.

⁶⁰ Minnesota

⁶¹ <https://www.cdc.gov/niosh/docs/2016-106/pdfs/2016-106.pdf?id=10.26616/NIOSH PUB2016106>

clothing and personal protective equipment (PPE).”⁶²

During the 2020 Virginia General Assembly Session, three bills have been introduced and carried over to the 2021 Session pending action by the Safety and Health Codes Board:

House Bill No. 805⁶³

House Bill No. 1610⁶⁴

Senate Bill No. 411⁶⁵

The bills are similar but not identical, and would direct the Safety and Health Codes Board to adopt a regulation to protect employees from heat illness. The bills variously address the following heat-related employee exposure issues:

Definitions for such terms as acclimatization, environmental risk factors, heat illness, heat wave, personal risk factors, shade, and temperature⁶⁶

Application to outdoor workplaces in Virginia

Application to indoor workplaces in Virginia⁶⁷

Access to potable drinking water, and electrolytes as needed⁶⁸

Cool down rest periods with access to shade or a climate controlled environment at certain temperature trigger levels for outdoor and indoor work

Employees shall not be ordered back to work until any signs or symptoms of heat illness have abated

Acclimatization procedures

Additional communication, observation, monitoring requirements, first aid and emergency response requirements at certain temperature trigger levels

Employee and supervisory training on heat illness hazards and preventative measures in a language the employee and supervisor understands

Requirement for a written heat illness prevent plan⁶⁹

⁶² Id. at page 1.

⁶³ <http://lis.virginia.gov/cgi-bin/legp604.exe?201+sum+HB805>

⁶⁴ <http://lis.virginia.gov/cgi-bin/legp604.exe?201+sum+HB1610>

⁶⁵ <http://lis.virginia.gov/cgi-bin/legp604.exe?201+cab+SC10108SB0411+SBREF>

⁶⁶ SB 411 contains the definition for “temperature”.

⁶⁷ HB 805 is the only bill that applies to indoor as well as outdoor workplaces.

⁶⁸ HB 805 includes the provision on electrolytes.

⁶⁹ HB 1610.

Special requirements for agriculture, construction, landscaping, oil and gas extraction and certain transportation employers when the temperature equals or exceeds 90°F⁷⁰

The regulation established by the Board shall take into consideration the NIOSH Criteria for a Recommended Standard: Occupational Exposure to Heat and Hot Environments published by the National Institute for Occupational Safety and Health in 2016.⁷¹

B. Purpose.

The purpose of the proposed change is to reduce/eliminate employee injuries, illnesses, and fatalities by considering for adoption a comprehensive regulation to address employee exposure to heat illness hazards during indoor and outdoor work activities in all industries under the jurisdiction of the Virginia State Plan.

C. Impact on Employers.

Employers with employees in the affected industry would have to familiarize themselves with the requirements of any new regulation and train employees on the requirements of the regulation. Employers should benefit from reductions in injuries, illnesses, and fatalities associated with employee exposure to heat illness hazards which would be addressed by any comprehensive regulation. In addition, there may be a beneficial increase in productivity for employers as a result of managing the heat exposure of employees.

D. Impact on Employees.

Employees would benefit from increased safety and health protections provided by a comprehensive regulation to address heat illness hazards. Employees in the affected industries would have to be trained on the requirements of any new regulation.

E. Impact on the Department of Labor and Industry.

No significant impact is anticipated on the Department. VOSH employees would be trained on the requirements of any new regulation. Equipment to measure extreme temperatures will be purchased for Compliance Safety and Health Officer (CSHO) use during inspections. Training and outreach products would be developed by VOSH Cooperative Programs staff and made available to the regulated community, employees, and the general public.

Contact Person:

Mr. Jay Withrow

⁷⁰ HB 805 and SB 411.

⁷¹ HB 805 and SB 411.

Director, Division of Legal Support, ORA, OPPPI, and OWP
804.786.9873
jay.withrow@doli.virginia.gov

RECOMMENDED ACTION

Staff of the Department of Labor and Industry recommends that the Safety and Health Codes Board direct the Department to initiate a Notice of Intended Regulatory Action (NOIRA) to adopt regulations applicable to Heat Illness Prevention.

The Department also recommends that the Board state in any motion it may make regarding this NOIRA that it will receive, consider and respond to petitions by any interested person at any time with respect to reconsideration or revision of this or any other regulation.