



Insurance Brokers &  
Consultants

# Indoor Heat Standard(s)

November 7, 2023

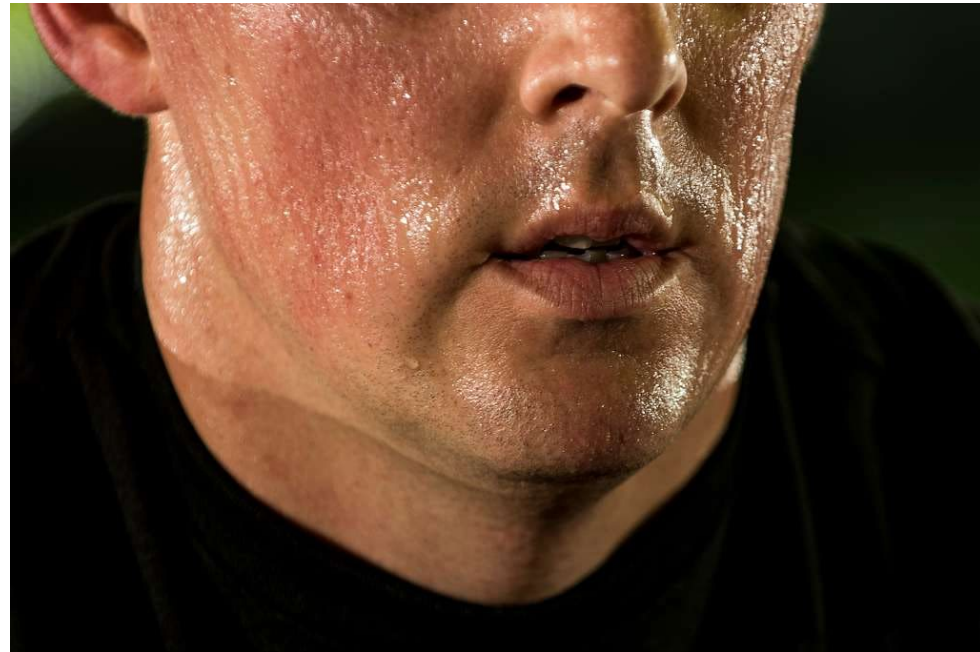
George Brogmus, PhD, CPE

Senior Risk Control Consultant

[EPICBROKERS.COM](https://www.epicbrokers.com)

Today let's  
talk about...

- Some reasons to be concerned
- Higher risk industries
- The “recipe” for heat illnesses
- State-Standards
- The California proposed standard
- Suggestions for anticipating compliance



**Do you currently have an  
Outdoor heat illness  
prevention policy/  
program?**

(Poll Q)

**Do you currently have an  
Indoor heat illness  
prevention policy/  
program?**

(Poll Q)

**Does your organization  
need a regulation before  
creating a  
policy/program?**

# Some reasons to take notice

STATE OF CALIFORNIA - DEPARTMENT OF INDUSTRIAL RELATIONS

GAVIN NEWSOM, *Governor*

## OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD

2520 Venture Oaks Way, Suite 350  
Sacramento, CA 95833  
(916) 274-5721  
[www.dir.ca.gov/oshsb](http://www.dir.ca.gov/oshsb)



### TITLE 8. CALIFORNIA CODE OF REGULATIONS

#### General Industry Safety Orders New Section 3396

(Published on March 31, 2023)

#### [Heat Illness Prevention in Indoor Places of Employment](#)

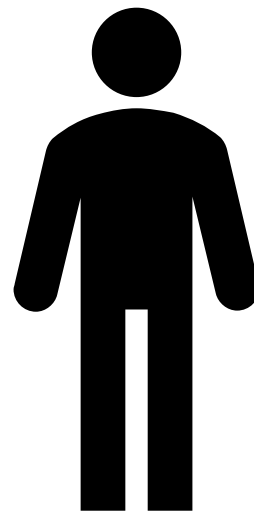
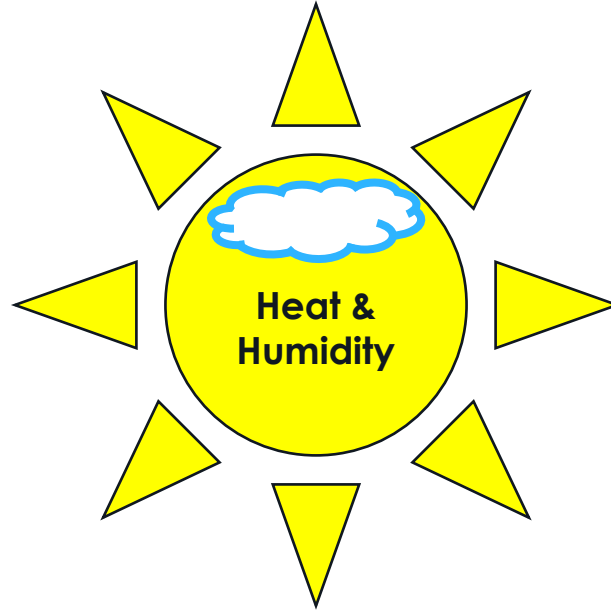
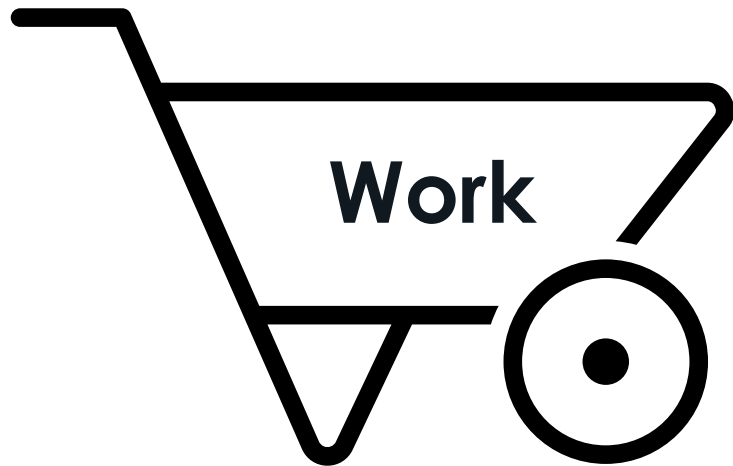
NOTICE IS HEREBY GIVEN that the Occupational Safety and Health Standards Board (Board) proposes to adopt the foregoing provisions of title 8 of the California Code of Regulations in the manner described in the Informative Digest, below.

# Industries with heat-related illness exposures

<b>Outdoors</b>	<b>Indoors</b>
Agriculture	Bakeries, kitchens, and laundries (sources with indoor heat-generating appliances)
Construction – especially, road, roofing, and other outdoor work	Electrical utilities (particularly boiler rooms)
Construction – roofing work	Fire Service
Landscaping	Iron and steel mills and foundries
Mail and package delivery	Manufacturing with hot local heat sources, like furnaces (e.g., paper products or concrete)
Oil and gas well operations	Warehousing

<https://www.osha.gov/heat-exposure>

# The “Recipe” for heat illnesses - Key Ingredients





# The Key Ingredients

- Environmental
  - Air Temperature
  - Humidity
  - Radiant Heat Sources (e.g., Direct Sun, Ovens, Foundry)
  - Air Circulation
- Occupational
  - Metabolic Load - Energy Expenditure (internally created heat due to work)
  - Clothing
  - Rest Breaks
  - Acclimation
- Personal Susceptibility
  - Dehydration
  - Medications (prescription and “recreational”)
  - Prior Heat Illness
  - Certain Health Conditions (e.g., Diabetes, Heart Disease)
  - Fitness, Obesity
  - Older Age
  - Alcohol Use (w/in 24 hours)
  - Caffeine and other diuretics
  - Pregnancy



# Heat Illnesses

- **Miliaria (heat rash)**

- Sweat pores, glands, and ducts get blocked

- **Heat Cramps**

- Depleted salt and water – cramps, pain, spasms in abdomen, arms, legs; symptom of heat exhaustion & Rhabdomyolysis (breakdown/death of muscle).

- **Heat Syncope**

- Dizziness, light headedness, or fainting.

- **Rhabdomyolysis**

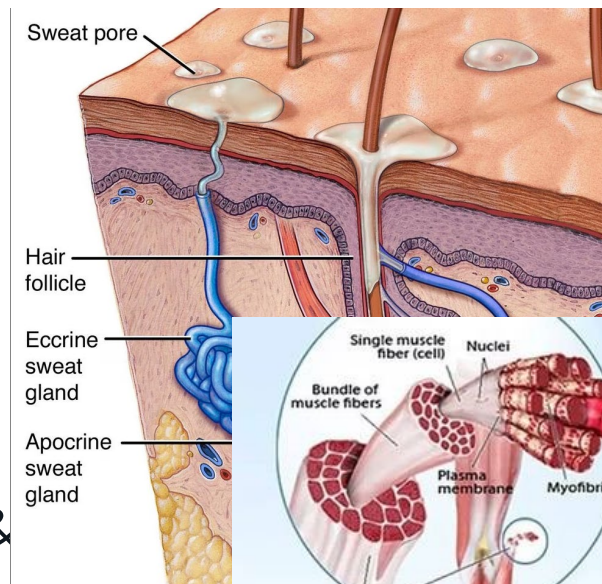
- Irregular heartbeat, seizures, kidney damage.

- **Heat Exhaustion**

- Headache, nausea, syncope, thirst, heavy sweating, increased body temperature, decreased urine.

- **Heat Stroke (911!)**

- Rapid body temperature increase, confusion, slurred speech, loss of consciousness, hot dry skin, seizures, FATAL if treatment delayed. Requires RAPID cooling.



THE MOST COMMON CAUSES OF LEG CRAMPS:

- Dehydration or inadequate intake of water

### Heat Exhaustion

**ACT FAST**

- Move to a cooler area
- Loosen clothing
- Sip cool water
- Seek medical help if symptoms don't improve

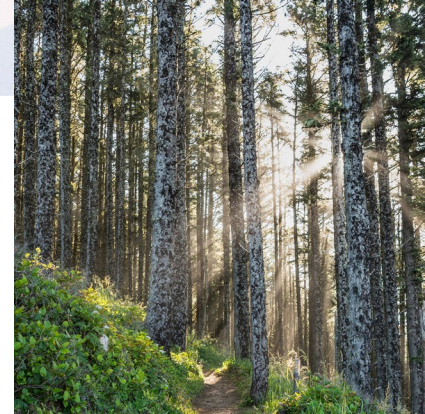
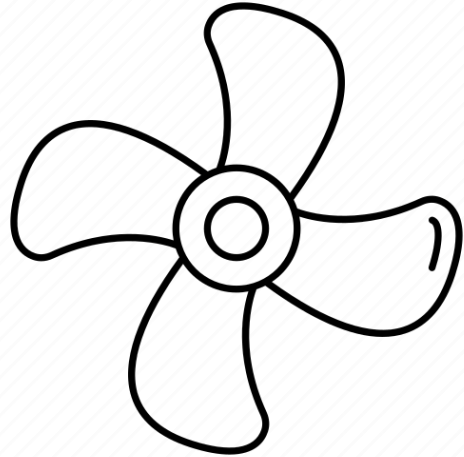
Dizziness  
Thirst  
Heavy Sweating  
Nausea  
Weakness

Heat exhaustion can lead to heat stroke.



# Primary controls for preventing heat illnesses

- Control temperature & humidity
- Keep hydrated
- Provide shade
- Acclimate
- Air circulation
- Lightweight, light-colored clothes
- Isolation of radiant heat sources
- Personal cooling equipment



# No Joke – Dark Pee Indicates Dehydration

## Dehydrated? Urine trouble.



**Well hydrated**  
No trouble here!  
Maintain hydration.



**Hydrated**  
Drink a little more water  
to stay out of trouble!



**Dehydrated**  
Trouble! Drink water until  
you are well hydrated.



**Severely dehydrated**  
Big trouble!  
Drink water immediately!

**Don't wait to hydrate! Prevent heat illness.**



**Heat Illness  
Prevention**

[osha.gov/heat](https://www.osha.gov/heat)



**OSHA** Occupational  
Safety and Health  
Administration

The darkness of urine is a reasonable indicator of hydration level (less accurate if >60)

Source: Kostelnik, et al, 2020. Journal of the American College of Nutrition.

***(Thirst is NOT a reliable indicator of being dehydrated.)***

# Above what temperature should you be concerned about heat illness risks? (Poll Q)

- 70°F
- 75°F
- 80°F
- 85°F
- 90°F

**“Heat-related fatality cases show that workplaces with temperatures above 70 degrees Fahrenheit may have a heat hazard present when work activities are at or above a moderate workload.”**

(OSHA Technical Manual

<https://www.osha.gov/otm/section-3-health-hazards/chapter-4>)



# OSHA's Heat Stress Calculator

<https://www.osha.gov/heat-exposure/calculator>



U.S. DEPARTMENT OF LABOR

Occupational Safety and Health Administration

[CONTACT US](#) | [FAQ](#) | [A TO Z INDEX](#) | [LANGUAGES](#)

Search

[OSHA](#) | [STANDARDS](#) | [ENFORCEMENT](#) | [TOPICS](#) | [HELP AND RESOURCES](#) | [NEWS](#)

Safety and Health Topics > Heat

## Heat



### [Prevention](#) » Heat Stress Calculator

Fill in the following form to determine whether a worker's heat stress is above recommended limits. Please read OSHA's [Heat Hazard Recognition page](#) for more information about WBGT, workload, acclimatization status, and clothing.

Planning and Supervision	>
Heat-Related Illnesses & First Aid	>
Prevention	>
Personal Risk Factors	>
Standards	>
Case Studies	>
Additional Resources	>
<b>Workers' Rights</b>	>

Wet bulb globe temperature (WBGT, degrees Fahrenheit):	<input type="text" value="73"/>
Workload:	<input type="text" value="Heavy"/>
Acclimatization status:	<input type="text" value="Unacclimatized"/>
Clothing:	<input type="text" value="SMS polypropylene coveralls"/>
Body weight:	<input type="text" value="Normal weight"/>

Result

Heat Stress is Above Limits

# OSHA-NIOSH Heat Safety Tool (app)



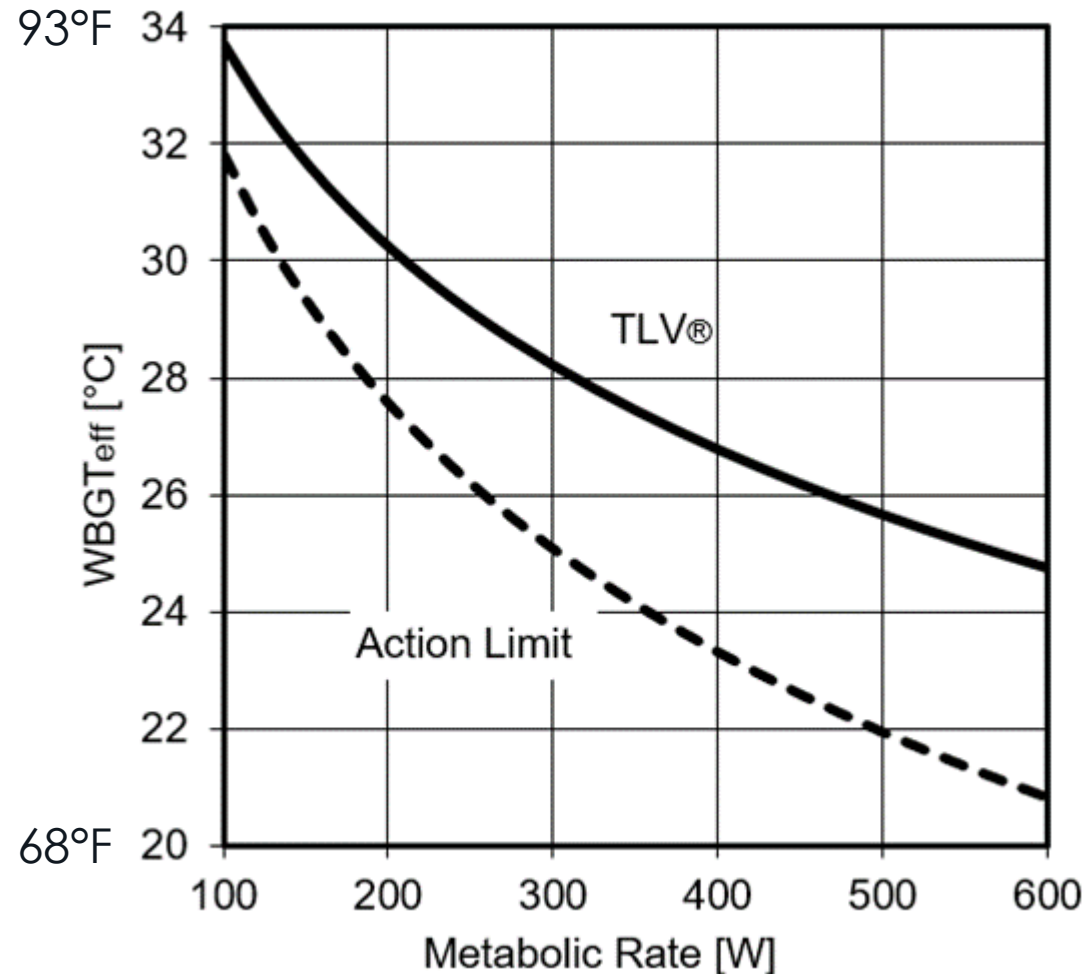


## Workload adds to the internal heat!

During intense exertion (exercise or work)  
body temperature can rise 6 or more  
degrees Fahrenheit!



# American Conference of Governmental Industrial Hygienists (ACGIH). Heat Stress and Strain: TLV® Physical Agents



## True/False

**When temperatures are high, increasing air circulation reduces the risk for heat illnesses?**

(Poll Q)

## When is air movement NOT beneficial?

When temperature is  $\geq 95^{\circ}\text{F}$ , and humidity is  $< 50\%$ , air movement acts like a convection oven, **INCREASING** the heat

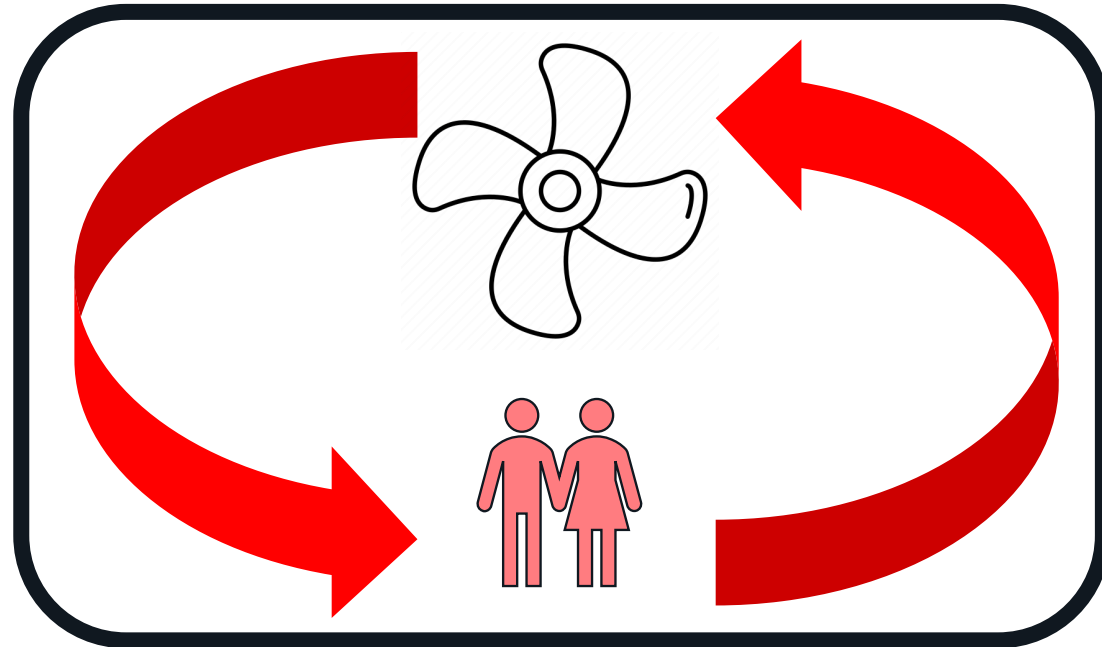


TABLE II.D.1—STATE RULES ON HAZARDOUS HEAT AS OF AUGUST 2021



Standard requirements	CA*	MN**	OR***	WA**** <i>(emergency rule additions in italics)</i>
Worksite coverage .....	Outdoor, year-round .....	Indoor, year-round .....	Indoor and outdoor, emergency rule.	Outdoor, May 1–Sept. 30.
Thresholds triggering protection requirements.	80 °F (ambient temp.) .....	Between 77 °F–86 °F (WBGT) based on workload.	80 °F (NOAA NWS Heat Index).	89 °F (ambient temp.); lower if wearing heavy clothing/PPE.
Add'l high heat protections	At 95 °F (certain industries only).	No .....	At 90 °F .....	<i>At 100 °F.</i>
Water/Hydration .....	1 qt./hr./worker .....	No .....	1 qt./hr./worker, cool or cold.	1 qt./hr./worker <i>Suitably cool.</i>
Shade .....	Yes .....	N/A .....	Yes .....	Yes.
Training .....	Yes (new hire) .....	Yes (new hire and annual)	Yes .....	Yes (new hire and annual).
Breaks .....	Yes (Encouraged generally, mandatory if symptoms).	Yes (After two hours exposure at threshold).	Yes (Mandatory if symptoms at any temp. every 2 hours for all at 90 °F).	Yes. <i>(Encouraged preventative and must be paid; Mandatory if symptoms; Mandatory at 100 °F).</i>
Acclimatization Plan .....	Yes .....	No .....	Yes (in practice at 90 °F) ..	No (only included in training).
Heat Illness Prevention Plan.	Yes .....	No .....	No .....	Yes (as part of accident prevention plan).
Emergency Medical Response Plan.	Yes .....	No .....	Yes .....	Yes.
Medical Monitoring .....	Reactive, Proactive when above 95 °F.	Reactive .....	Reactive .....	Reactive.
Record-keeping requirements.	Yes .....	Yes .....	No .....	Yes.

\* CAL/OSHA, Title 8, section 3395. Heat Illness Prevention. <https://www.dir.ca.gov/Title8/3395.html>.

\*\* Minnesota Administrative Rules. Section 5205.0110 Indoor ventilation and temperature in places of employment. <https://www.revisor.mn.gov/rules/5205.0110/>.

\*\*\* Oregon Administrative Rules. 437-002-0155 Temporary Rule Heat Illness Prevention. <https://osha.oregon.gov/OSHArules/div2/437-002-0155-temp.pdf>.

\*\*\*\* Washington Administrative Code (WAC) Title 296, General Occupational Health Standards. Sections 296-62-095 through 296-62-09560. Outdoor Heat Exposure. <https://app.leg.wa.gov/WAC/default.aspx?cite=296-62&full=true#296-62-095>; Emergency Rule 2125 CR103E. <https://ini.wa.gov/rulemaking-activity/AO21-25/2125CR103EAdoption.pdf>.

# Additional State Activities

- NY – New Law Proposed 2021 (includes indoor)
- MI – 7/22 – Heat Illness Prevention emphasis program (includes indoor)
- VA – 3/20 – Notice of Intended Regulatory Action Heat Illness Prevention Standard (includes indoor)
- CO – 1/22 – Outdoor for Agricultural workers
- NV – 5/22 – National Emphasis Program – targeted industries (includes indoor)
- MD – 8/22 – Proposed Heat Stress (presumably includes indoor)

**If your state was NOT mentioned, but they have some kind of heat illness prevention rulemaking underway, please type your state in the chat.**

# Minnesota's Indoor Standard

- Minn. R. 5205.0110 - INDOOR VENTILATION AND TEMPERATURE IN PLACES OF EMPLOYMENT

- Requirements:

- Airflow and circulation
- Training for exposed workers
- Indoor environmental heat conditions:

Employees shall not be exposed to indoor environmental heat conditions in excess of the values listed in Table 1. The values in Table 1 apply to fully clothed acclimatized workers.

Work Activity	WBGT, °F
Heavy work	77
Moderate work	80
Light work	86

*(Standard includes Cold temperature limits as well.)*



# Cal/OSHA Indoor Heat Illness Prevention Standard



- Outdoor Heat Illness Prevention Standard (Title 8, Section 3395)
- Proposed new Indoor Heat Illness Prevention Standard (Title 8, Section 3396)
- 45-day & 1<sup>st</sup> 15-day comment period completed in 2023
- **Additional** modifications & 2<sup>nd</sup> 15-day comment period: Scheduled **November 9, 2023**
- Updates: <https://www.dir.ca.gov/oshsb/Indoor-Heat.html>
- Standards Board Vote Expected early 2024

# Cal/OSHA Indoor Heat Illness Standard SCOPE

- Applies to indoor work areas when temp  $\geq 82^{\circ}$  F
  - Additional Assessment/Control Measures required when temp  $\geq 87^{\circ}$  F, or Heat Index  $\geq 87^{\circ}$  F, or temp  $\geq 82^{\circ}$  F & (wearing heat-retaining clothing **or** exposed to high radiant heat)
- Exceptions:
  - Teleworking at employee-chosen location, not under employer control
  - Shaded area that meets requirements of **outdoor** standard (3395) and used exclusively as source of shade for outdoor employees less than 15 minutes in any one-hour period.
    - This exception does **not** apply to vehicles or shipping containers
- Employers may comply w/ **Indoor** Heat Illness Standard **in lieu of the Outdoor** Heat Illness Standard when employees go back and forth between outdoors and indoors

# Cal/OSHA Indoor Heat Illness Standard REQUIREMENTS

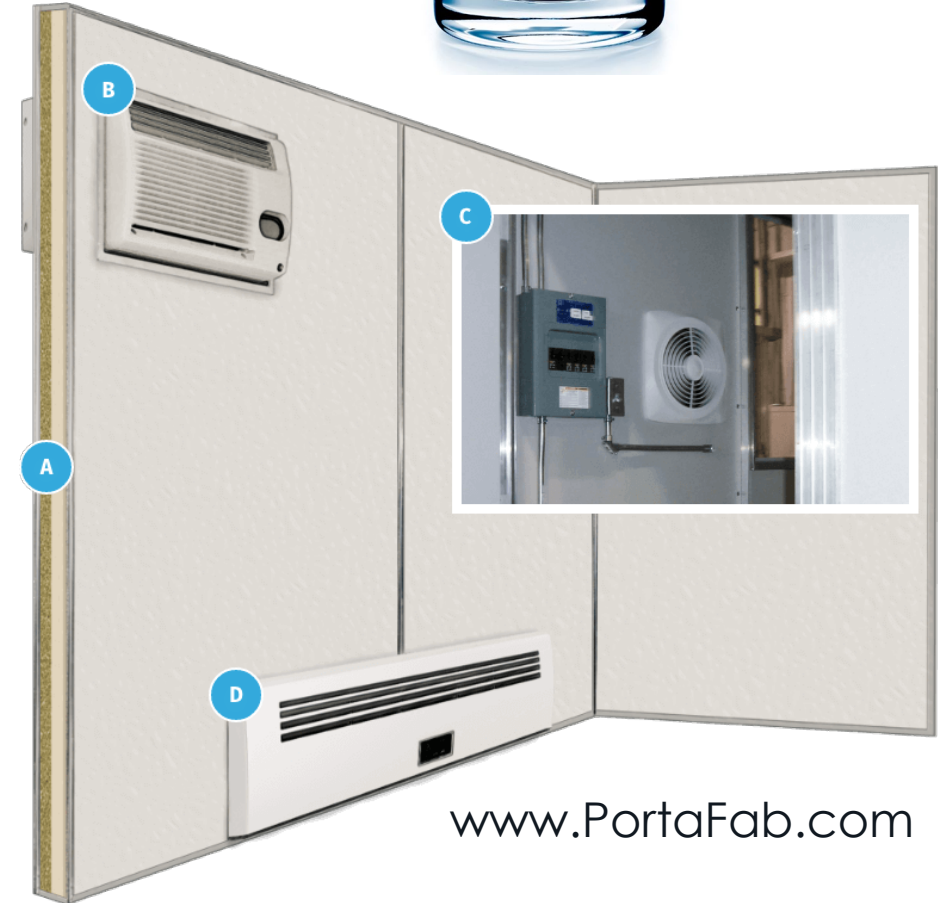
- **Water**

- Fresh, pure, cool, free
- Close to work & in indoor cool-down areas
- 1Qt/hour/person
- Consumption encouraged



- **Cool-down areas ( $\geq 1$ )**

- $< 82^{\circ}$  F (safe, blocked from sun & radiant sources)
- Large enough for employees on meal, rest, &/or recovery periods to sit without physical contact
- Close to work area, available always to all employees
- Encourage cool-down rest, whenever employees feel the need, they may go.
- Monitor for symptoms of heat illness and provide 1<sup>st</sup> aid/emergency support as needed
- Encourage to remain and not allowed back to work until any signs or symptoms of heat illness have abated



# Cal/OSHA Indoor Heat Illness Standard REQUIREMENTS

- **Emergency Response Procedures**

- Reliable communication: employee-supervisor/emergency response
- Immediate response to signs/symptoms commensurate with severity (1<sup>st</sup> aid to Emergency)
- Employees with signs/symptoms never left alone
- Transport if needed to reach emergency responders

- **Acclimatization**

- Close supervisory observation during heat waves (predicted day's outdoor temp  $\geq 80^{\circ}\text{F}$  &  $\geq 10^{\circ}\text{F}$  more than average of high temp in previous 5 days)



# Cal/OSHA Indoor Heat Illness Standard REQUIREMENTS



## • Training

- Risk Factors (Environmental & Personal)
- Employer's Program (Water, Cool-down areas, controls, 1<sup>st</sup> aid, emergency response)
- Importance of up to 4 cups/hr water
- Acclimatization
- Different types of heat illness, signs/symptoms, and responses needed (1<sup>st</sup> aid to emergency response)
- Importance of early reporting of signs/symptoms
- Supervisors:
  - Signs/symptoms response responsibilities
  - Monitoring relevant weather reports and responding to weather advisories

# Cal/OSHA Indoor Heat Illness Standard REQUIREMENTS



## • Written Heat Illness Prevention Plan

- In English and majority workforce language
- Available at worksite for employees & Cal/OSHA
- May be included in the Illness and Injury Prevention Plan (IIPP)
- Must contain:
  - Provision of water
  - Access to cool-down areas
  - Assessment & Control procedures (measurements, records, risk factors, control measures)
  - Emergency response procedures
  - Acclimatization procedures
- Cal/OSHA has a sample program for OUTDOOR heat illness prevention standard:  
[https://www.dir.ca.gov/dosh/dosh\\_publications/HIP-sample-procedures.pdf](https://www.dir.ca.gov/dosh/dosh_publications/HIP-sample-procedures.pdf)
- Michigan – based on CA's

## EMPLOYER SAMPLE PROCEDURES FOR HEAT ILLNESS PREVENTION

Cal/OSHA Publications Unit

Rev. May 2019



California employers with any outdoor places of employment must comply with the new heat illness prevention standard, California Code of Regulations, title 8, section 3395.10. The standard is designed to assist employers in establishing their own procedures to prevent work-related heat illnesses to their employees.

These procedures are not intended to be used in place of, particularly 8 CCR 3203, Inj. Prevention. You must also be aware of other applicable standards for construction, agriculture, and emergency response.

**Note:** These procedures describe the minimum requirements for outdoor work settings. In work settings with heat waves or other severe working conditions, employers must take protective measures beyond what is described in these procedures.

To effectively establish your company's heat illness prevention program as well as the examples provided, the Heat Illness Prevention Plan must be written and available to all employees and must be available at all worksites. Your company procedures, and follow the examples provided.

To tailor these procedures to your work site such as:

1. The size of the crew.
2. The length of the work-shift.
3. The ambient temperature (which can vary throughout the day).

Prevention procedures have been developed to reduce the risk of heat illness.

Employers must establish, maintain, and update their Heat Illness Prevention Plan.

at your worksite.

Michigan Occupational Safety and Health Administration (MIOSHA) Consultation, Education and Training Division

**"Sample"**  
[Your Company Name Here]  
Heat Illness Prevention Plan

[Date]

Note: This program was developed in part based upon the State of California OSHA Employer Sample Procedures for Heat Illness Prevention Rev. May 2019. This document is provided as an informational service under the authority of Public Act 154 of 1974. Its purpose is to aid in the development of written programs related to heat illness. This program is designed to be adapted to each individual employer's need; this example program should be shortened, expanded, or edited as needed.

Consultation, Education and Training (CET) Division  
Michigan Occupational Safety and Health Administration (MIOSHA)  
Michigan Department of Labor and Economic Opportunity (LEO)  
www.michigan.gov/miosha • 517.254-7720  
CET-0157 • Revised 07/05/22





# Cal/OSHA Indoor Heat Illness Standard REQUIREMENTS

## Additional Assessment/Controls



- Applies when:
  - Temp  $\geq 87^{\circ}\text{F}$ , or
  - Heat Index  $\geq 87^{\circ}\text{F}$ , or
  - Temp  $\geq 82^{\circ}\text{F}$  & (wearing heat-retaining clothing or exposed to high radiant heat)
- **Assessment**
  - Maintain records of the greater of Temp or Heat Index (w/ date, time, location)
  - When exposures expected to be greatest
  - Retained for 12 months or until remeasured
  - Active involvement of employees and union reps
  - **Exception:** *Vehicles with effective air conditioning*
- **Acclimatization**
  - Supervision must closely observe newly assigned workers the first 14 days



# Cal/OSHA Indoor Heat Illness Standard REQUIREMENTS

## Additional Assessment/Controls

- Applies when:
  - Temp  $\geq 87^{\circ}\text{F}$ , or
  - Heat Index  $\geq 87^{\circ}\text{F}$ , or
  - Temp  $\geq 82^{\circ}\text{F}$  & (wearing heat-retaining clothing or exposed to high radiant heat)
- Controls
  - Engineering controls to reduce Temp & HI  $<87^{\circ}\text{F}$  (or  $<82^{\circ}\text{F}$  for heat-retaining clothing or high radiant heat)
  - Administrative controls – where feasible engineering controls are insufficient – **personal heat-protective equipment** shall be used to minimize heat illness risk.
  - “**Personal heat-protective equipment**” examples: water-cooled garments, air-cooled garments, cooling vests, wetted overgarments, heat-reflective clothing, and supplied-air personal cooling systems





# Suggestions

- Look into your own state's rulemaking efforts
- Keep watch on the CA standard developments  
<https://www.dir.ca.gov/oshsb/Indoor-Heat.html>
- Consider beginning to draft a policy based on CA's existing Outdoor draft policy/template:  
[https://www.dir.ca.gov/dosh/dosh\\_publications/HIP-sample-procedures.pdf](https://www.dir.ca.gov/dosh/dosh_publications/HIP-sample-procedures.pdf)
- Keep in mind the importance of Workload and Personal Risk Factors
- Keep asking yourself the question, "Do I want to comply with regulations or protect workers?"

# Additional Resources

- NIOSH's Criteria for a Recommended Standard: Occupational Exposure to Heat and Hot Environments. <https://www.cdc.gov/niosh/docs/2016-106/pdfs/2016-106.pdf?id=10.26616/NIOSH PUB2016106>
- American Conference of Governmental Industrial Hygienists (ACGIH). Heat Stress and Strain: TLV® Physical Agents 7th Edition Documentation (2017). TLVs and BEIs with 7th Edition Documentation, CD-ROM. Cincinnati, OH, 2017.
- OSHA Technical Manual (OTM), Section III: Chapter 4. Heat Stress. <https://www.osha.gov/otm/section-3-health-hazards/chapter-4>
- Dempsey, P.G., Ciriello, V.M., Maikala, R.V. and O'Brien, N.V., 2008. Oxygen consumption prediction models for individual and combination materials handling tasks. *Ergonomics*, 51(11), pp.1776-1789.
- Centers for Disease Control and Prevention (CDC). National Environmental Public Health Tracking. Heat & Heat-Related Illness. <https://www.cdc.gov/nceh/tracking/topics/Heat.htm>
- Cal/OSHA's Heat Illness Prevention eTool. <https://www.dir.ca.gov/dosh/etools/08-006/index.htm>
- Cal/OSHA's proposed regulation for Heat Illness Prevention in Indoor Places of Employment. <https://www.dir.ca.gov/oshsb/documents/Indoor-Heat-proptxt.pdf>
- Federal OSHA's Advanced Notice of Proposed Rulemaking (ANPRM) for Heat Injury and Illness Prevention in Outdoor and Indoor Work Settings. <https://www.govinfo.gov/content/pkg/FR-2021-10-27/pdf/2021-23250.pdf>

# Upcoming Webinars

<b>November 7, 2023</b>	<b>Indoor Heat Illness Prevention</b> <ul style="list-style-type: none"><li>• <b>The Recipe for Heat Illnesses</b></li><li>• <b>Elements of the Proposed Standard(s)</b></li><li>• <b>Sample Policy Wording - be Prepared</b></li></ul>
<b>December 5, 2023</b>	<b>This Might Hurt – An Introduction to Back Pain</b> <ul style="list-style-type: none"><li>• What causes back pain?</li><li>• How effective is treatment?</li><li>• Can it be prevented?</li><li>• Some “new” thinking</li></ul>
<b>January 10, 2024</b>	<b>Wearables – What to Watch &amp; Watch Out For</b> <ul style="list-style-type: none"><li>• The challenge with technology</li><li>• Challenging assumptions</li><li>• Buyer Beware</li></ul>

# Other EPIC Upcoming Webinars

**November  
16, 2023  
11:00 AM -  
Noon PST**

**2023 Compliance Webinars  
Fiduciary Responsibilities  
Under the CAA & Gag  
Clause Prohibition**

# Questions

