Beating the Heat

It’s Not Just Outside Anymore

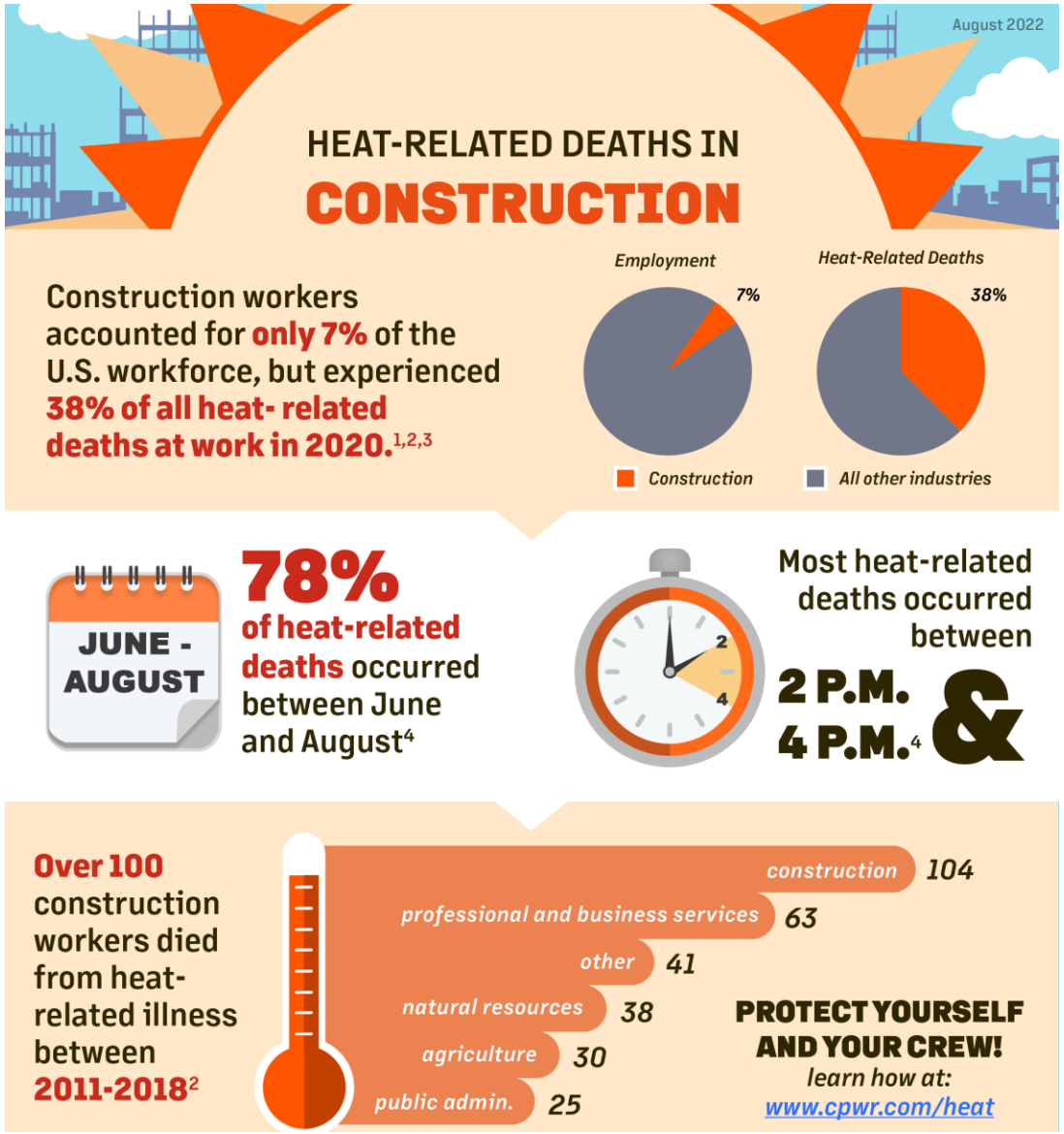
April 2025

Berkshire Hathaway HOMESTATE COMPANIES
Workers Compensation Division

Focus Indoor & Outdoor Heat

"Although illness from exposure to heat is preventable, every year, thousands become sick from occupational heat exposure, and some cases are fatal. Hazardous heat exposure can occur indoors or outdoors and can occur during any season if the conditions are right, not only during heat waves."

Jim Frederick , Acting Assistant Secretary of Labor for Occupational Safety and Health



Fatality Risk

Construction accounts for most heat related fatalities for US Workers

Industries with heat Illness

- Service Workers such as landscapers and groundskeepers
- Natural resource workers (loggers, Oil Workers)
- Agricultural Workers
- Public Administration
- Other (includes kitchens, manufacturing and warehouses)

AGENDA

1. Understand what heat illness is and why it is important to address
2. Understand different methods of assessing heat exposure
3. Identify approaches to reduce risk by improving hydration, shade and rest
4. Understand steps necessary to develop a Formal Heat Illness Prevention Training Program

We will focus on Best Practices

…with a hint of compliance.

The goal of a formal Heat Illness/Injury Program is to prevent injuries.

- Regulatory standards are *minimum* requirements. Best in class employers go above and beyond.
- Remember that every workplace is different. Find the risk potential and address it proactively.

C.H. Reed Manufacturing

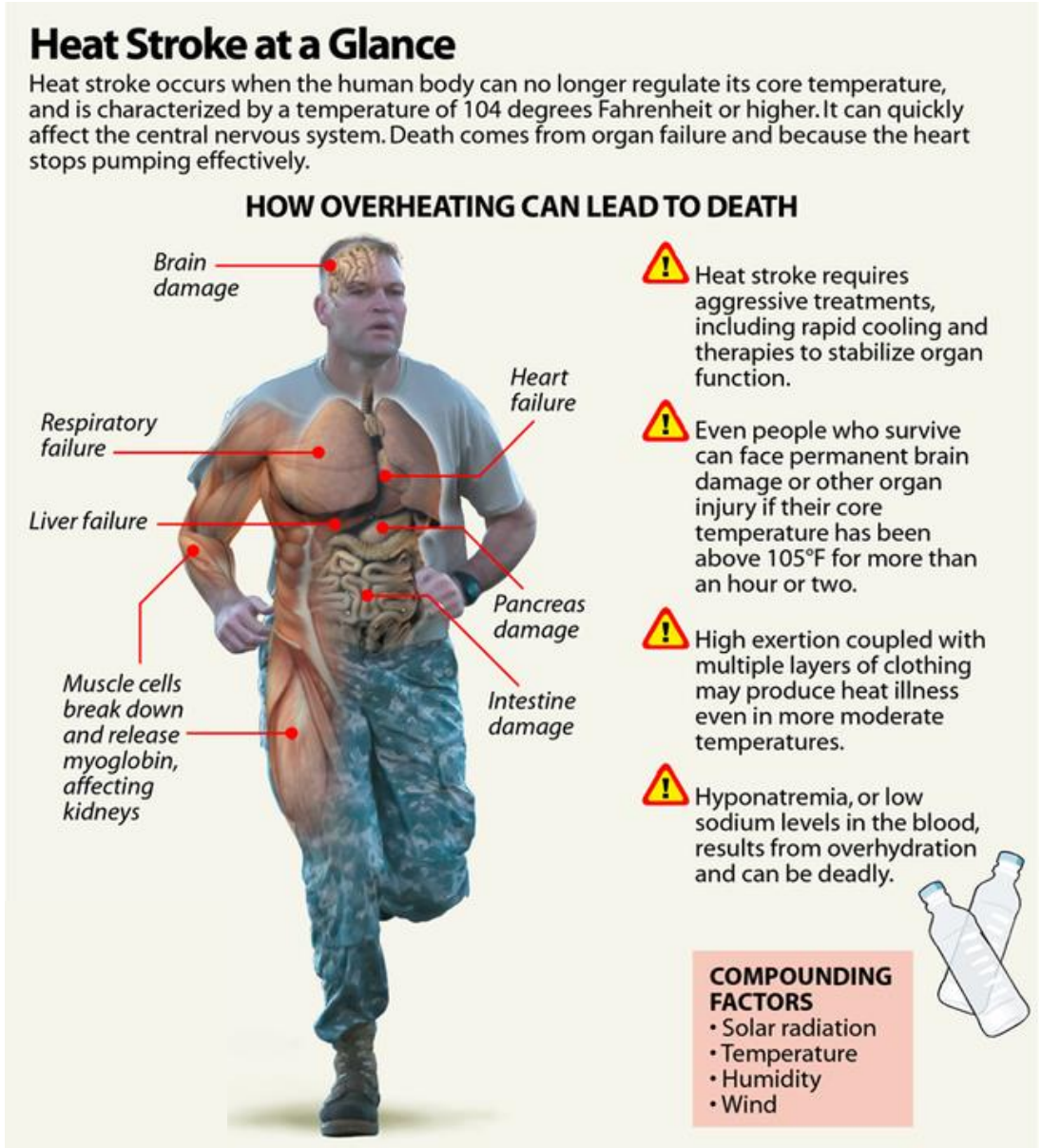
Industries at Risk of Heat Illness

Outdoors

- Agriculture
- Construction – Road workers, Framers
- Construction – Roofers, Masonry workers
- Landscaping
- Mail and package delivery
- Oil and gas well operations

Indoors

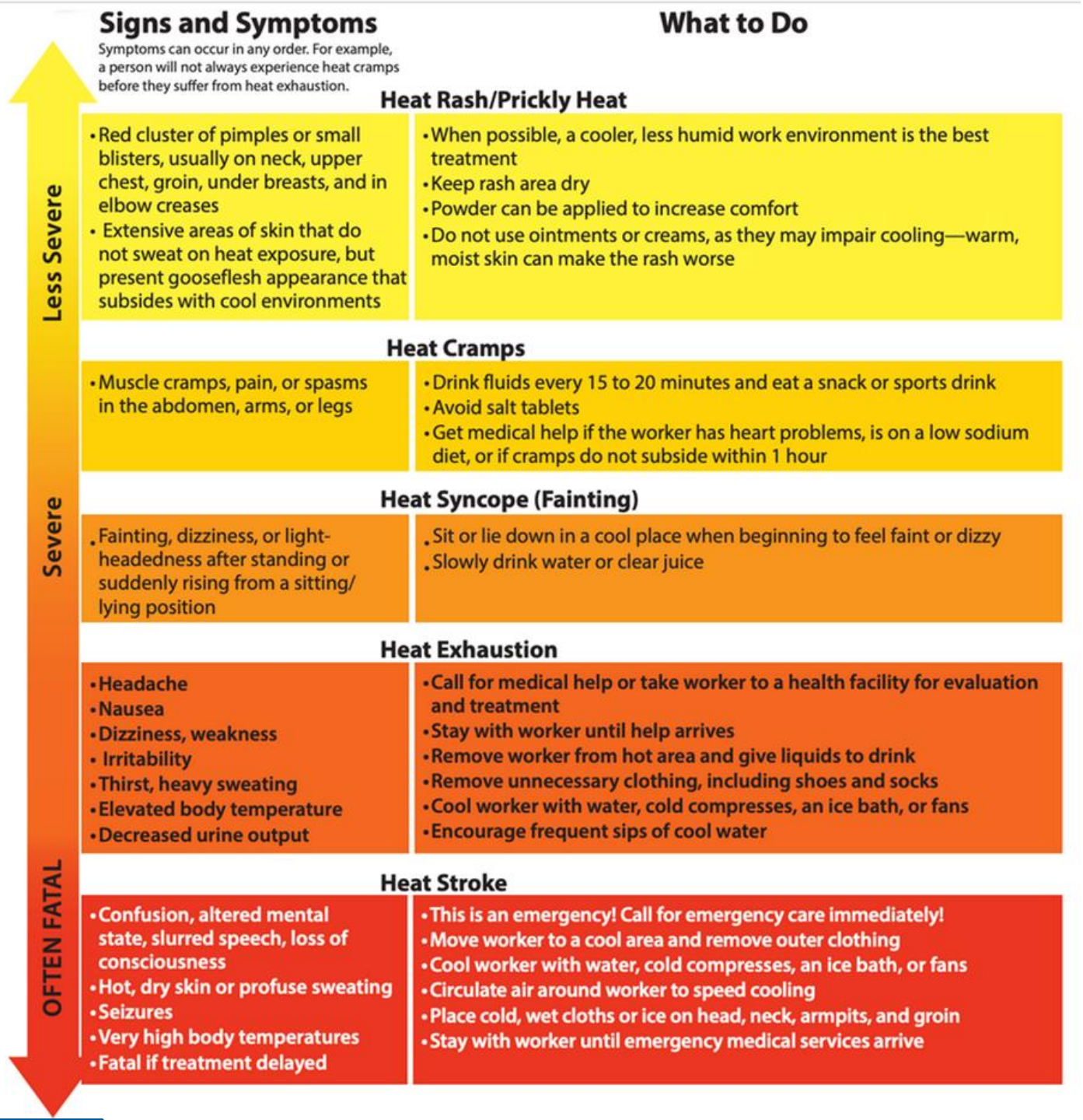
- Bakeries, Kitchens, Laundries (sources with indoor heat-generating appliances)
- Electrical Utilities (particularly boiler rooms)
- Fire Service
- Iron/Steel Mills and Foundries
- Manufacturing with hot local heat sources, like furnaces (e.g., paper products or concrete)
- Warehousing



Source – National Weather Service, CDC

Affects of Heat on Our Bodies

- Rashes
- Muscle Cramps
- Fainting, Dizziness or Lightheadedness
- Headaches and Nausea
- Dizziness and Weakness
- Elevated Body Temperature
- Thirst with Heavy Sweating
- Decreased Urine Output
- Confusion, Altered Mental State, Slurred Speech, Loss of Consciousness
- Hot Dry Skin
- Seizures
- Death



How do we treat it?

- REMOVE THEM FROM THE HEAT
- Drink Fluids every 15 to 20 minutes – slower the more severe the illness
- Sit or Lay down if feeling dizzy

Berkshire Hathaway HOMESTATE COMPANIES
Workers Compensation Division

SEVERE CASES (Exhaustion and Stroke)

Remove unnecessary clothing including shoes and socks

Cool worker with water, cold compresses, an ice bath or fans

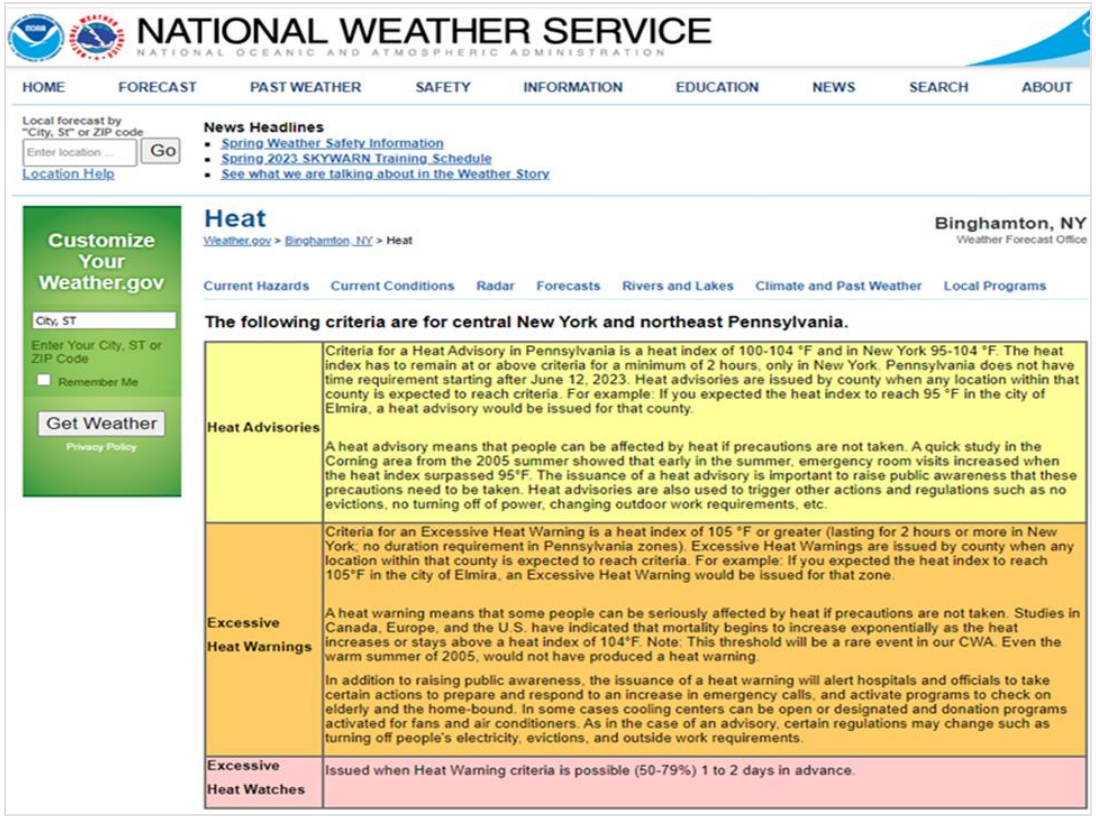
Circulate air around worker to speed cooling

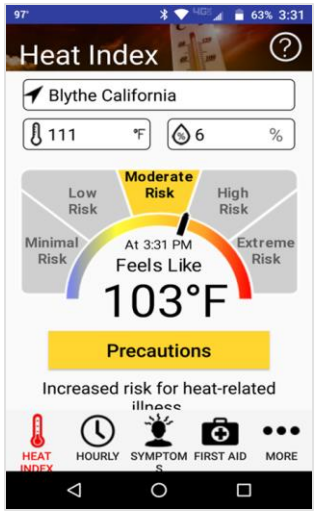
CALL FOR EMERGENCY SERVICES or get the employee to a Medical Facility

Assessing the Heat

Supervisors, Foremen, Managers and Owners

- Employers must develop a process to monitor the weather and procedures for notifying employees about heat waves.
- Supervisors must understand methods of reducing the risk of injury including:
  - Modifying work schedules
  - Increasing water breaks
  - Reducing work daily work hours
  - Ceasing operations altogether.





https://www.weather.gov/bgm/heat

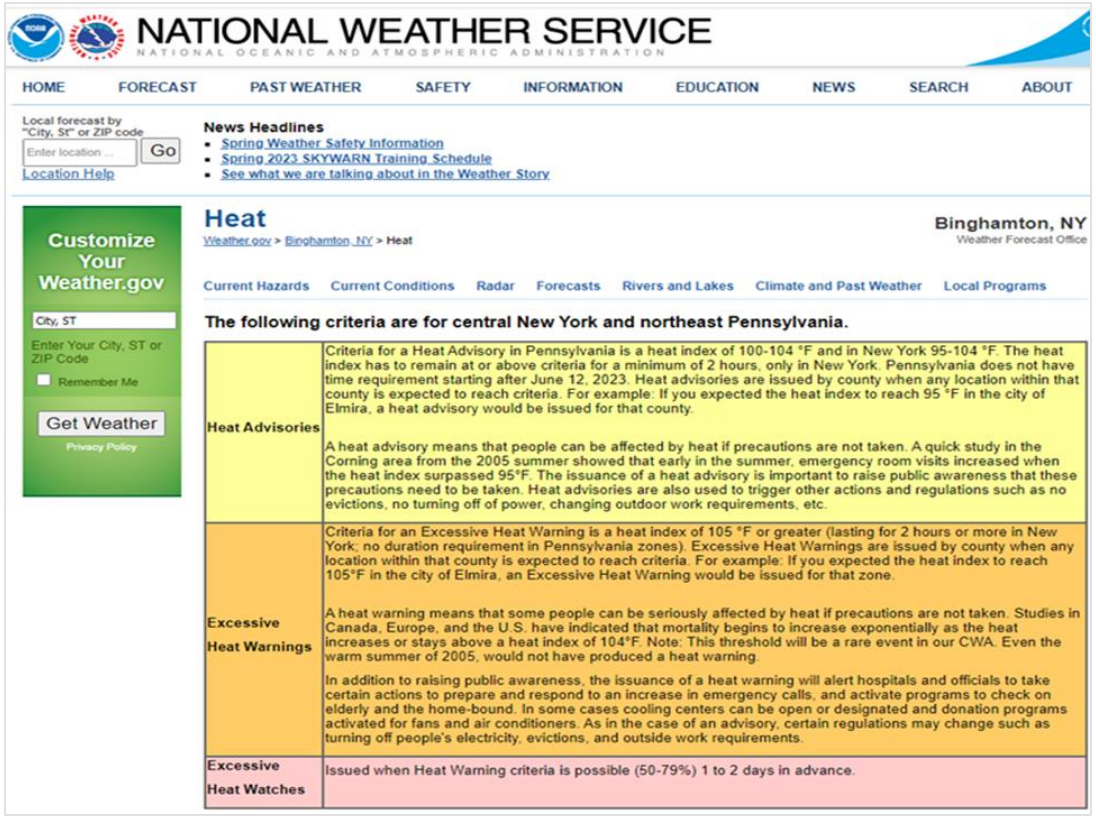
Berkshire Hathaway HOMESTATE COMPANIES
Workers Compensation Division

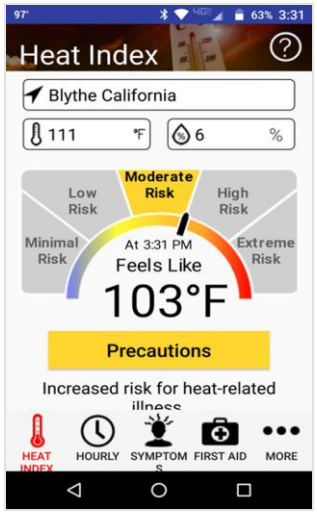
Assessing the Heat

Supervisors, Foremen, Managers and Owners

Methods

- Heat Index – Basically temperature and humidity at nearest measuring station
- Heat Index Local – Using locally collected Temperature and Humidity using Heat Index Grid
- Wet Bulb Globe Thermometer – Best in Class measure temperature, radiant heating and evaporative cooling into a WBGT Temperature





weather.gov/bgm/heat

Unacclimated and Acclimated Work/Rest and Water Intake Chart

Heat Risk Category		Wet Bulb Globe Temp	Light Work		Moderate Work		Heavy Work	
			Work/Rest	Water Intake (quart/hr)	Work/Rest	Water Intake (quart/hr)	Work/Rest	Water Intake (quart/hr)
No Risk	Unacclimated	78 – 79.9	50/10 min	½	40/20 min	¾	30/30 min	¾
	Acclimated	78 – 79.9	continuous	½	continuous	¾	50/10 min	¾
Low	Unacclimated	80 – 84.9	40/20 min	½	30/30 min	¾	20/40 min	1
	Acclimated	80 – 84.9	continuous	½	50/10 min	¾	40/20 min	1
Moderate	Unacclimated	85 – 87.9	30/30 min	¾	20/40 min	¾	10/50 min	1
	Acclimated	85 – 87.9	continuous	¾	40/20 min	¾	30/30 min	1
High	Unacclimated	88 – 90	20/40 min	¾	10/50 min	¾	avoid	1
	Acclimated	88 – 90	continuous	¾	30/30 min	¾	20/40 min	1
Extreme	Unacclimated	> 90	10/50 min	1	avoid	1	avoid	1
	Acclimated	> 90	50/10 min	1	20/40 min	1	10/50 min	1

Example of WBGT Equipment

National Weather Service

Assessing the Heat

Wet bulb Globe Thermometer

Measures Multiple Environmental Factors

WBGT takes into account temperature, humidity, wind speed, and radiant heating

Radiant Heating Impact

Unlike the heat index, WBGT measures the effects of direct sunlight and other radiant sources

Guides Work-Rest Cycles

Use WBGT readings to schedule work and rest periods

Informs Hydration Strategies

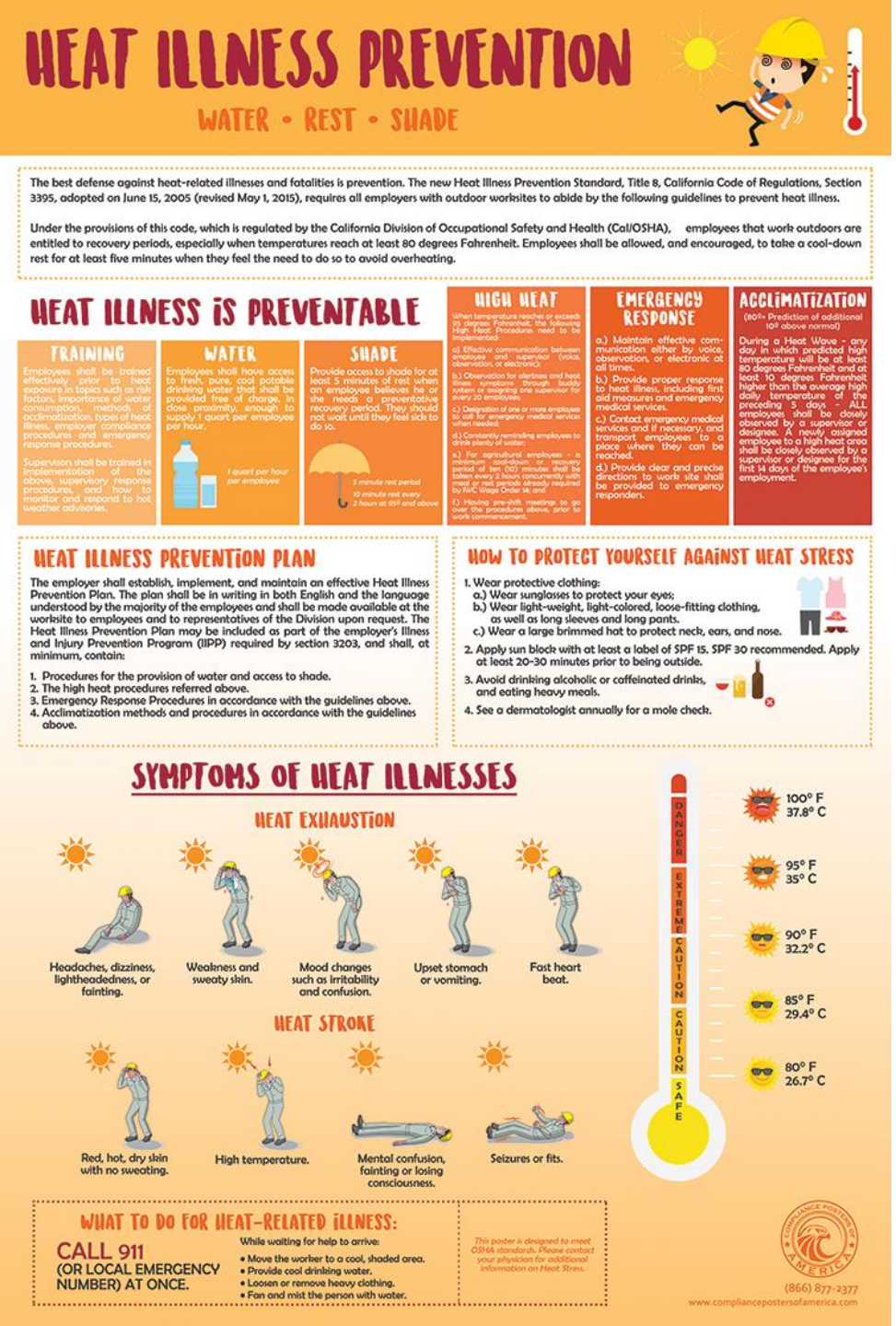
Higher WBGT values indicate the need for increased hydration to prevent heat-related illnesses1

Helps Plan Safe Work Schedules

Adjust work schedules based on WBGT levels, performing strenuous tasks during cooler parts of the day

Applicable Regulations

Requirements	California	Minnesota	Oregon	Washington *(emergency in Italics)*
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	*At 100 °F.*
Water/Hydration	1 qt./hr./worker	No	1 qt./hr./worker, cool or cold	1 qt./hr./worker *Suitably cool.*
Shade	Yes	N/A	Yes	*Yes.*
Training	Yes (new hire)	Yes (new hire and annual)	Yes	Yes (new hire and annual).
Breaks	Yes (Encouraged, mandatory if symptoms)	Yes (After two hours at threshold)	Yes (Mandatory if symptoms at any temp. every 2 hours for all at 90 °F)	Yes. (*Encouraged preventative and must be paid;* Mandatory if symptoms; Mandatory at 100 °F).
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.



Applicable Regulations

(Cal/OSHA in California)

California Code of Regulations (CCR), Title 8, General Industry Safety Orders Section 3395

- Applies to all outdoor places of employment regardless of industry
- High Hazard Regulations:
  - High Hazard sections apply specifically to Agriculture, Construction, Landscaping, Oil and Gas Extraction, …

Berkshire Hathaway HOMESTATE COMPANIES
Workers Compensation Division

Indoor Heat Regulations (Cal/OSHA)

Rule	2024 Cal/OSHA Indoor Heat Safety Regulations
Monitor Indoor Temperature	• Employers must closely monitor the indoor temperature conditions and identify any heat hazards. • Employers must keep accurate temperature and heat index records and monitor environmental risk factors for heat illness.
Mandatory Heat Illness Prevention Plans (HIPP)	• Employers must maintain a detailed Heat Illness Prevention Plan, and take steps to protect workers. • Provide access to potable drinking water that is fresh, pure, cool, and at no cost to employees.
Implement Engineering Control Measures	• Employers must implement engineering control measures to cool down the work area, such as ventilation, air conditioning, or cooling fans. • If engineering controls are not feasible, administrative controls such as rotating employees, rescheduling work, and reducing work intensity must be implemented.
Medical Monitoring and Emergency Response	• Train supervisors on recognizing signs and symptoms of heat stress, implementing the HIPP, and providing first aid. • Educate workers on the dangers of heat stress, proper hydration techniques, and how to stay cool on the job.
Maintain Heat Monitoring Data	Employers will be required to have protocols in place for monitoring workers for signs of heat stress and ensuring access to medical care in case of emergencies.

On June 20, 2024, approved California Code of Regulations, Title 8, section 3396, "Heat Illness Prevention in Indoor Places of Employment“.

This standard applies to most indoor workplaces where the temperature reaches 82°F or higher.

Applicable Regulations (Fed/OSHA)

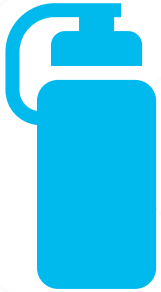
Applicable Code of Federal Regulations

- General Duty Clause
- 1926.23 Access to first aid and medical care on jobsites
- 1926.51 (a)(1) Adequate supplies of potable water in all places of employment
- 1926.51 (a)(2) Containers tightly closed and equipped with a tap
- 1926.51 (a)(3) Any container used for drinking water must be clearly marked as to its contents
- 1926.51 (a) (4-5) Common cups are prohibited and single service cups must be kept in a sanitary condition

Best In Class Heat Illness Controls

Awareness is Key.

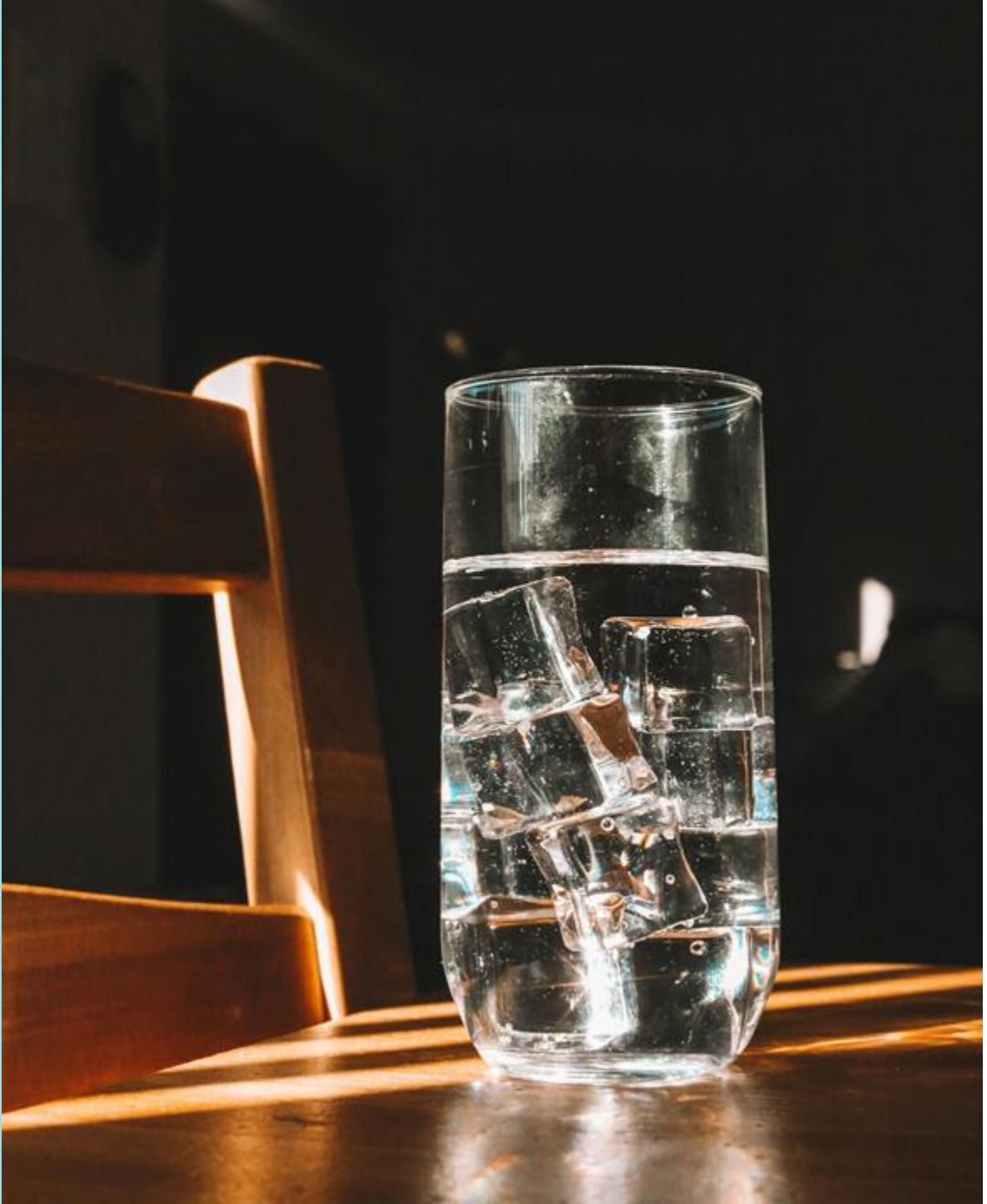
Staying Cool is Important



Hydration is a Must.

Elements of a formal Heat Illness Prevention Plan

- A formal program is required in some states (CA, OR, MN, WA) and suggested at all employers with exposure t excessive heat
- The plan should be in writing and in both English and the language understood by most of the employees
- The Plan should be available at the worksite:
  - Procedures for assessing Heat
  - Procedures to access to water and shade
  - High heat procedures
  - Emergency Response
  - Acclimatization methods and procedures



Employees shall have access to potable water

- Must be fresh and suitably cool (?)
- Maintained in a sanitary manner
- Supplied to employees free of charge
- Located as close as practicable
- In sufficient quantities for the workday (i.e., enough to provide one quart per hour for the entire shift)

Berkshire Hathaway HOMESTATE COMPANIES
Workers Compensation Division

Keeping Water Accessible

- All employers must have an effective process for replenishing water supplies
- Designate supervisors, foremen or managers to ensure the process is implemented and monitor supplies throughout the day
- Remember:
  - Water coolers are portable. Keep them as close as practicable.
  - Move them with the workers!
  - Encourage frequent drinking of water.

Industries at Risk of Heat Illness

Outdoors

- Agriculture
- Construction – Road workers, Framers
- Construction – Roofers, Masonry workers
- Landscaping
- Mail and package delivery
- Oil and gas well operations

Indoors

- Bakeries, Kitchens, Laundries (sources with indoor heat-generating appliances)
- Electrical Utilities (particularly boiler rooms)
- Fire Service
- Iron/Steel Mills and Foundries
- Manufacturing with hot local heat sources, like furnaces (e.g., paper products or concrete)
- Warehousing

Access to Shade - Outdoors

Under 80°

- Shade shall be available, or
- Provided in a timely manner upon request
- Best Practices for any employer include considerations for shade regardless of temperature

Over 80° but under 95°

- Shade shall be present
- Shall maintain one or more areas that can accommodate the number of employees on recovery periods, lunch, breaks
- Located as close to employees as practicable

Access to Cooling-Indoors

Over 82°

Temperature Control

Cooldown areas must be kept at a temperature below 82°F and shielded from other high-radiant heat sources.

Accessibility

These areas should be easily accessible and located as close as possible to the work areas.

Capacity

Cooldown areas must be large enough to accommodate the number of workers on rest breaks so they can sit comfortably without touching each other.

Encouragement and Monitoring

Workers should be encouraged to take preventative cooldown rest periods and must be monitored for symptoms of heat-related illness during these breaks.

Shade & Cooling-Best Practices

Foremen/Supervisors/Managers MUST:

Encourage preventative cool-down rest in the shade or cool down areas

Monitor employees on cool down rest periods

Ask employees if they are experiencing symptoms of heat illness

- DO NOT order the employee back to work until symptoms abate, allow at least a five-minute rest
- Provide appropriate first aid or emergency response if necessary

What is Shade or Cooling?

- Direct blockage of sunlight outdoors
- Maintained below 82 Degrees Indoors
- Objects should not cast a shadow in the shade.
- Shade is *not* adequate when heat in the area defeats the purpose of the shade.
- Cooling can be accomplished with air movement
- Shade can be provided by natural or artificial means.

When Infeasible or Unsafe…

- Alternative measures for cooling are allowed if it can be shown that a shade structure, cooling room or its equivalent is not feasible.
- Except for agriculture, cooling measures other than shade (e.g. misting machines) may be provided if it can be demonstrated that they are at least as effective.
- What is NOT allowed (in any state)?
- Shade under tractors, trucks, heavy equipment
- Rest areas where an employee can’t find protection from high heat

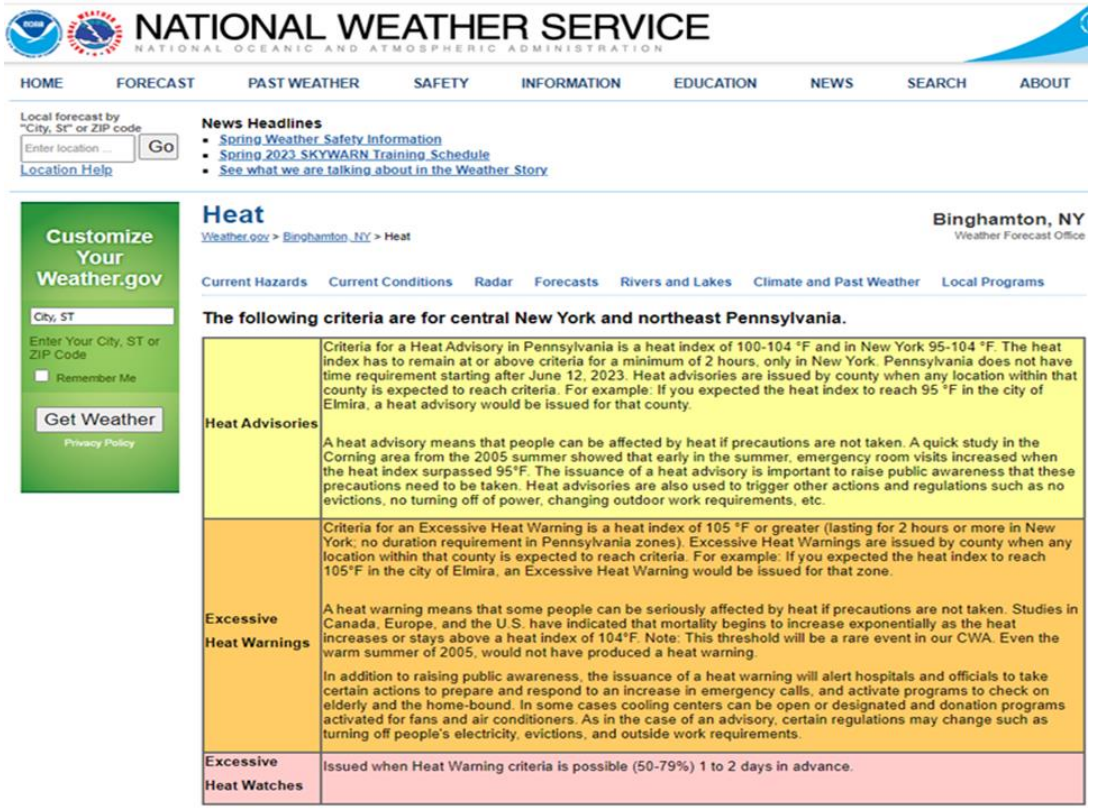
Assessing the Heat

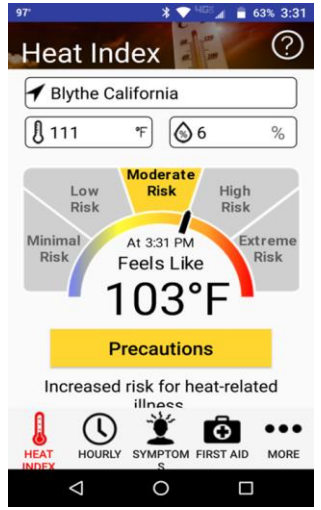
Supervisors, Foremen, Managers and Owners

- Employers must develop a process to monitor the weather and procedures for notifying employees about heat waves.
- Supervisors must understand methods of reducing the risk of injury including:
  - Modifying work schedules
  - Increasing water breaks
  - Reducing work daily work hours
  - Ceasing operations altogether.

Methods

- Heat Index – Basically temperature and humidity at nearest measuring station
- Heat Index Local – Using locally collected Temperature and Humidity using Heat Index Grid
- Wet Bulb Globe Thermometer – Best in Class measure temperature, radiant heating and evaporative cooling into a WBGT Temperature





https://www.weather.gov/bgm/heat

Berkshire Hathaway HOMESTATE COMPANIES
Workers Compensation Division

NIOSH Acclimatization Recommendations for New Workers	
1st day	20% usual work duration
2nd day	40% usual work duration
3rd day	60% usual work duration
4th day	80% usual work duration
5th day	100% usual work duration

NIOSH Acclimatization Recommendations for Workers with Previous Experience* with the Same Job	
1st day	50% usual work duration
2nd day	60% usual work duration
3rd day	80% usual work duration
4th day	100% usual work duration

*Workers returning from an absence

Acclimatization

- The temporary adaptation of the body to work in the heat that occurs gradually when a person is exposed to it.
- Acclimatization peaks within four to fourteen days of regular work for at least two hours per day in the heat."
- Supervisors/Managers must plan ahead for heat waves and heat "events" to allow employees to become acclimated.

High Heat Procedures in California - 3395, (e)

Industries covered by this subsection

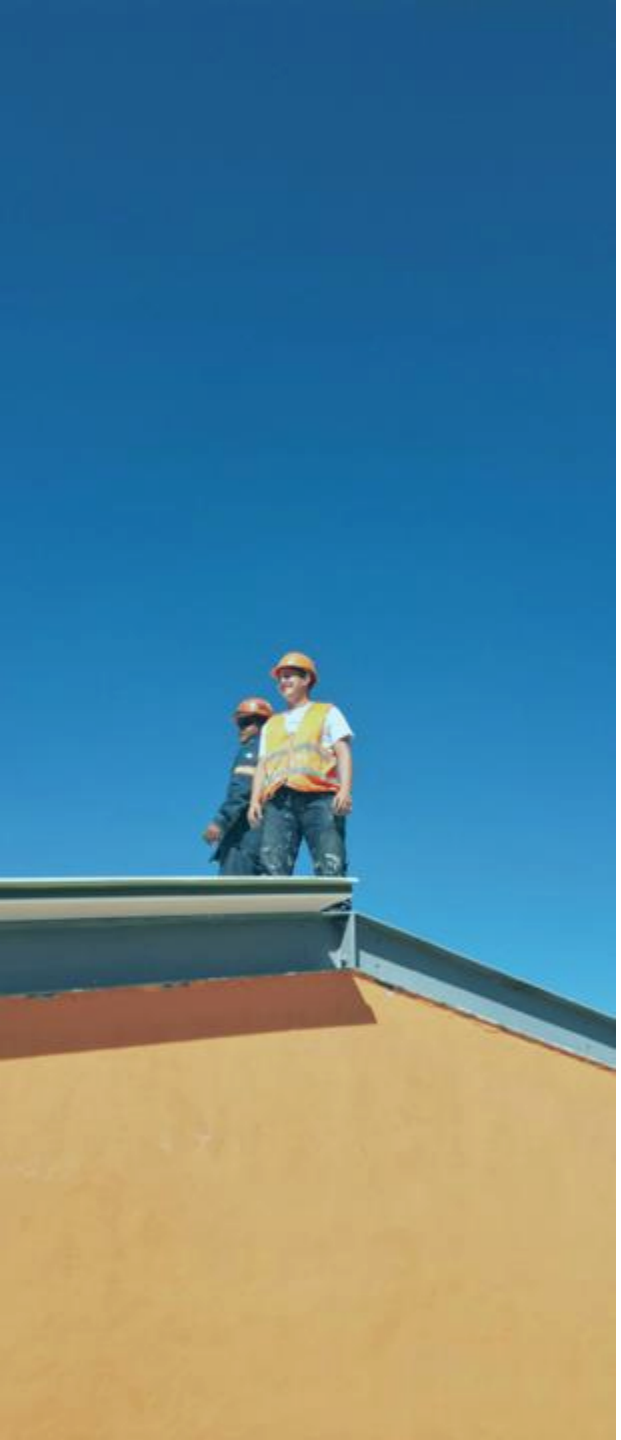
Agriculture

Construction

Landscaping

Oil and Gas Extraction

Transportation or delivery of agricultural, construction materials or other heavy materials



High Heat Procedures

- Ensure **effective** communication with all employees (by voice, observation, or electronic means)
- Observe Employees for alertness and signs/symptoms of heat illness
  - Supervisors or designee observation of 20 or fewer employees, or
  - Mandatory buddy system, or
  - Regular communication, or
  - Other effective means of observation.

High Heat Procedure

- One or more employee must be designated to call for EMS and allow other employees to call when no designated employee is available.
- Give more frequent reminders to drink plenty of water.
- Hold pre-shift meetings on prevention:
  - Review high heat procedures
  - Encourage drinking of water
  - Remind employees to take cool-down rest periods if necessary

High Heat Procedures

Agricultural Employees

- Temps 95° and above, ensure employees take a minimum ten-minute preventative cool-down rest every two hours
- Additional ten-minute cool-down rests are required by regulations at the end of the 8th and 10th hours of work

Emergency Response Procedures

- Respond to signs/symptoms of possible heat illness.
- Supervisors/Foremen/Designated First Aid onsite must take immediate action
- If situation is serious, implement emergency response procedures. Do not wait!
- Any employee with signs or reporting symptoms of heat stress must be monitored and not left alone.
- Employees must not return to work until and unless symptoms abate, or emergency medical response requires transportation of the employee.
- Contact EMS and provide clear directions to the site.

> Employers are obligated to provide for adequate emergency response procedures. Heat Illness is treatable, but time is a factor.

Train Employees To

Recognize the symptoms of heat stress.

Understand acclimatization and the company policy toward it.

Understand the policy of “water”, shade and rest.

Speak with employees every day about risk factors.

Complete pre-shift awareness meetings during heat events.

First Aid and Response

1. Take the affected worker to a cooler area (e.g., shade or air conditioning).

2. Cool the worker immediately. Use active cooling techniques such as:
   - Immerse the worker in cold water or an ice bath. Create the ice bath by placing all of the available ice into a large container with water, standard practice in sports. **This is the best method to cool workers rapidly in an emergency**.
   - Remove outer layers of clothing, especially heavy protective clothing.
   - Place ice or cold wet towels on the head, neck, trunk, armpits, and groin.
   - Use fans to circulate air around the worker.

First Aid and Response

3. If the person is conscious and not suffering from heat stroke, offer chilled water, a sports drink containing electrolytes or other nonalcoholic beverage without caffeine.

4. Never leave a worker with heat-related illness alone. The illness can rapidly become worse. Stay with the worker.

First Aid and Response

5. When in doubt, call 911! - Confusion, slurred speech, or unconsciousness are signs of heat stroke. When these types of symptoms are present, call 911 immediately and cool the worker with ice or cold water until help arrives.

6. During a worker's first few days, absolutely all symptoms should be taken seriously. Workers who develop symptoms should be allowed to stop working. They should receive evaluation for possible heat-related illness.

Training- Supervisors

Train supervisors to:

Recognize the signs/symptoms of heat stress.

Commit to the company policies to ensure adequate reminders about drinking water, providing shade, and proper rest periods.

Commit to monitoring employees who show symptoms of heat stress.

Understand the need to monitor the weather and to communicate to every employee, every day!

Training Opportunity-Risk Factors

Environmental and Personal Risk Factors

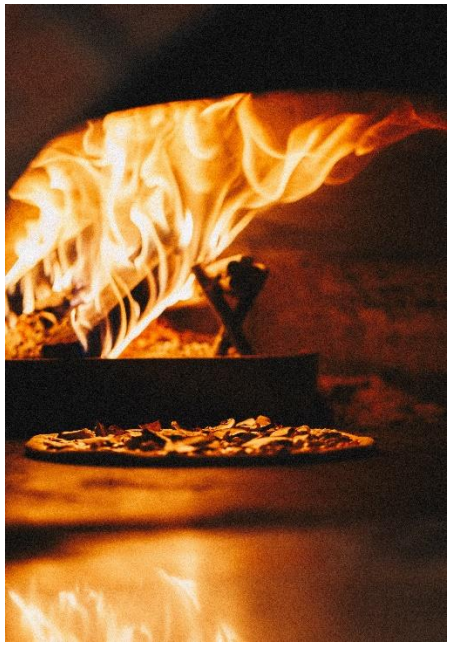


Photo by Klara Kulikova on Unsplash

Photo by Provincial Archives of Alberta on unsplash

Photo by Samuel Ramos on Unsplash

Written Heat Illness Prevention Program

If it isn’t documented, it didn’t happen!

Written Programs are the roadmap for implementation and provide training guidance.

Compliance is important but daily activities save lives!

Additional Resources

- https://www.cdc.gov/niosh/docs/2016-106/pdfs/2016-106.pdf
- https://www.osha.gov/SLTC/heatstress/
- https://www.dir.ca.gov/dosh/heatillnessinfo.html
- Texas Department of Insurance-TDI, Arizona Division of Occupational Safety and Health-ADOSH, Nevada Safety Consultation and Training Section-SCATS, and many others….

SUMMARY

1. What is heat illness and why it is important?
2. Different methods of assessing heat exposure
3. Approaches to reduce risk by improving hydration, shade, and rest
4. Necessary steps to develop a Formal Heat Illness Prevention Training Program