William Krycia, MPH, CIH (1985-2023)

► This session will equip employers and HR professionals with the knowledge to recognize, prevent, and address heat illness in both indoor and outdoor work environments. Participants will learn about heat illness regulations, effective prevention strategies, and best practices for training employees and responding to heatrelated incidents. Stay compliant and keep your workforce safe and productive.

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- California Heat Illness Prevention Overview
  - ► Heat illness
  - Brief overview outdoor heat enforcement
  - Issues with "indoor"
  - ▶ The Indoor Heat Illness Prevention standard
  - ► Closing thoughts

- ► Heat Illness defined
  - The body's inability to maintain function due to experiencing temperatures outside standard range. Symptoms range from minor to life threatening.
- ► CDC summary page: <a href="https://www.cdc.gov/niosh/heat-stress/about/illnesses.html">https://www.cdc.gov/niosh/heat-stress/about/illnesses.html</a>

### **Occupational Exposure to Heat Stress and Hot Environments**

Brenda Jacklitsch, PhD, MS

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Workers who are exposed to extreme heat or work in hot environments. or even those engaged in strenuous physical activities may be at risk for heat stress. Exposure to extreme heat can result in occupational illnesses, including heat stroke, heat exhaustion, heat cramps, or heat rash. Heat can also increase workers' risk of injuries, as it may result in sweaty palms, fogged-up safety glasses, burns, dizziness, and may reduce brain function responsible for reasoning ability, creating additional hazards. The NIOSH Education and Information Division (EID) develops heat-related guidance and educational materials in collaboration with scientists internal and external to NIOSH.

In 2016, NIOSH published an updated Criteria for a Recommended Standard: Occupational Exposure to Heat and Hot Environments. 1 This document provides technical guidance for managing heat stress in workplaces, and targets safety and health professionals. In addition, NIOSH has created products in many different formats for varying occupational safety and health (OSH) audiences (e.g., workers, employers, safety and health professionals) to ensure the information is translated and disseminated as widely as possible. Future efforts include the development of heat stress training for outdoor workers.

According to data from the U.S. Bureau of Labor Statistics, there were 220 fatal occupational injuries due to exposure to environmental heat from 2011 to 2016.2 Heat-related illnesses (HRIs) can vary in severity, with heat stroke often leading to death.

### Who works in hot environments?

In 2011, the Bureau of Labor stated that 2 out of every 1000 workers are at risk for heat stress, with some occupations at greater risk.3

### **Outdoor Workers**

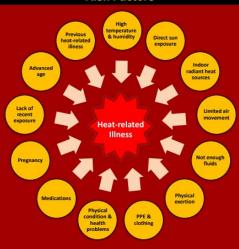
- Construction
- Roofers
- · Farmers/Agricultural
- Lawn care/Landscapers
- Foresters Police

### **Indoor Workers**

- Firefighters
- · Factory/Foundry
- Bakery
- · Anyone in hot, confined
- spaces

### Nonfatal Occupational HRI by Sectors - United States, 2017 Healthcare & Social Assistance 0 100 200 300 400 500 600 700 Number of nonfatal HRI cases

Source: U.S. Bureau of Labor Statistics, U.S. Department of Labor, November 15, 2018.



A brief overview of select risk factors is provided below.

### **Not Enough Fluids**

- · Sweat production rates of about 1 L/hr are common in industrial work.
- · Heavy sweating could result in a 2-3% deficit in body weight at end of shift.

### PPE and Clothing

- · Alters the rate and amount of heat exchange between skin and air.
- · The thicker and greater the air and vapor impermeability, the greater its interference with heat exchange.
- Hot microenvironments created from increased metabolic heat production during exertion and trapped inside clothing or PPE.

### Physical Condition (e.g. obesity)

- Predisposes individuals to heat disorders.
- · Extra weight calls for a greater expenditure of energy.
- · Fat provides additional insulation.
- · Lower physical fitness, decreased maximum work capacity and cardiovascular capacity.

### Lack of Recent Exposure (i.e., unacclimatized)

- · Readily show signs of heat stress
- · Difficulty replacing water lost in sweat.
- · Failure to replace the water lost will slow or prevent acclimatization.

### **NIOSH Recommendations**

### **Engineering Controls**

- Increase air velocity
- · Use reflective or heat-absorbing shielding or barriers
- · Reduce steam leaks, wet floors, or humidity

### **Work Practice Recommendations**

- . Limit time in heat and/or increase rest time in a cool environment
- · Increase the number of workers per task
- Implement a buddy system
- · Require workers to conduct self-monitoring
- Implement a heat alert program when a heat wave is likely

### Training

### **Workers and Supervisors**:

- · Recognize symptoms of HRI
- First aid
- HRI risk factors
- · Importance of acclimatization
- · Importance of reporting HRI symptoms

### Additional Training for Supervisors:

- · Implementation of an acclimatization plan
- · Procedures for when HRI symptoms are present
- · Monitoring weather reports and responding to advisories
- Monitoring and encouraging adequate hydration and rest breaks

### Acclimatization Plan



### Hydration

### Employers should provide appropriate hydration

- · Water should be cool and near the work area
- · Provide individual drinking cups
- · Encourage workers to hydrate

### Workers should drink an appropriate amount

If you are:	Drink:
In the heat < 2 hours and involved in moderate work activities	1 cup (8 oz.) of water every 15-20 minu
Experiencing prolonged sweating lasting several hours	Sports drinks containing balanced electrolytes

### **Rest Breaks**

### Ensure and encourage rest breaks

- · Permit breaks when a workers feels discomfort
- · Assign new workers lighter work and longer, more frequent breaks
- · Shorten work and increase rest periods · As temperature, humidity, and sunshine increase
- · When there is no air movement
- For heavier work
- · If protective clothing or PPE is worn

### Disseminating to OSH Audiences



### Past Publications

Dissemination efforts of heat-related guidance have been ongoing. Technical guidance has been translated and disseminated to target audiences that have included: safety and health professionals, medical professionals, employers, and workers.

Heat stress-related publications and products have ranged from fact cards and smartphone heat app for outdoor workers, and information for emergency responders during the Ebola response in Africa and hurricane responses in the U.S.

### **Future Projects**

Stakeholders have shown ongoing interest in having training modules made available based on the information found in the NIOSH Criteria Document. In the next year, there are plans to develop online heat stress training for outdoor workers and evaluating the training among different sectors.

Along with developing online heat stress training, the NIOSH Small Business Assistance Program is interested in developing tools that could be of use to small businesses. Small businesses are often found in occupational sectors (e.g., construction, agriculture, services, etc.) that experience a high heat burden, in addition to having OSH-related challenges specific to their small size and lack

### References

1 NIOSH [2016]. NIOSH criteria for a recommended standard: occupational exposure to heat and hot environments. By Jacklitsch B, Williams WJ, Musolin K, Coca A, Kim J-H, Turner N. Cincinnati, OH: US Department of Health and Human Services, CDC, NIOSH, DHHS (NIOSH) Publication 2016-106. https://www.cdc.gov/niosh/docs/2016-

<sup>2</sup> U.S. Bureau of Labor Statistics [November 15, 2018], U.S. Department

3 U.S. Department of Labor [2011]. Occupational outlook handbook. 2010-2011. New York: Skyhorse Publishing.

### Contact Info

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- ► April 2024 Cal/OSHA Heat Illness Prevention Network Webinar
  - Noted decrease in confirmed heat related illnesses
    - ▶ 45 in 2023, down from 82 in 2022
  - Complaints down to 183 in 2023 compared to 251 in 2022

- Several significant cases impacting enforcement of the outdoor heat standard
  - ► Rios Farming
  - ► Ruiz Farm Labor
  - ► Parkwood Landscape Maintenance

- Rios Farming Company
  - Decision after reconsideration on access to water
    - Vines and trellis wires are impediments to access
    - Water must be as close as practicable





### NEWS RELEASE

elease Number: 2023-19

Date: February 27, 2023

### OSH Appeals Board Decision in Heat Illness Prevention Case Adds Clarity to Provision of Water Requirements

Sacramento—The Department of Industrial Relations' Occupational Safety and Health Appeals Board (OSHAB) has issued a precedential decision regarding the provision of water at outdoor worksites, affirming that it must be as close as practicable to the areas where employees are working to encourage frequent consumption.

"This decision provides clarity and should serve as a reminder that employers must take adequate steps to ensure that potable drinking water is as close as practicable to workers," said Cal/OSHA Chief Jeff Killip. "Staying adequately hydrated is essential to preventing heat illness, particularly during the hot summer months."

The case clarified the definition of what "as close as practicable" means with water placement at the workplace.

Cal/OSHA opened a complaint-initiated safety inspection at the Rios Farming Co. vineyard in St. Helena on August 6, 2018. Inspectors found some workers had to climb through multiple grape trellises to access drinking water. On January 7, 2019, Cal/OSHA cited Rios Farming Co. for a repeat-serious violation for not having water as close as practicable for their employees.

Rios Farming Co. appealed the citation and an administrative law judge affirmed the citation on October 12, 2022, with a modified penalty of \$27,000.

OSHAB issued its decision on February 6, 2023, which clarifies that the term "as close as practicable" in terms of providing water to prevent heat illness means that the water must be as close as reasonably can be accomplished in order to encourage frequent water consumption. In this case, the ALJ found, and the OSHAB affirmed, that the trellies were an obstacle that discouraged employees from frequently drinking water. The ALJ and Board further found that other reasonable options were available to the employer, such as providing a jug of water in each row where the employees were working or providing individual water bottles that employees could carry with them and refill from the jugs.

The California Division of Occupational Safety and Health, or Cal/OSHA is a division with the

- Ruiz Farm Labor
  - Employees allegedly fired after leaving work during heat wave
  - Significant press coverage
  - Training, acclimatization, emergency response
  - Citations under appeal





### NEWS RELEASE

Release Number: 2024-85

Date: October 7, 2024

▶ españo

### Cal/OSHA cites farm labor contractor for serious heat-related safety violations

What you need to know: Cal/OSHA has cited a farm labor contractor in Dixon \$17,550 for failing to protect its employees from heat illness. The inspection was opened in June after receiving reports that the employer allegedly fired farmworkers who left their work shifts early during a heat wave due to inadequate protections.

Sacramento—Cal/OSHA has cited Ruiz Farm Labor in Dixon S17,550 for three serious-category violations of California's heat illness prevention standard. The complaint-based inspection was launched on June 13, 2024, following reports that the farm labor contractor turned a group of farmworkers, known as the Yolo Six, away after they left their work shifts early during a heat wave. Cal/OSHA's investigation determined the employer did not:

- · Implement high heat or emergency response procedures.
- Provide effective heat illness prevention training for supervisors and non-supervisory employees.
- Follow its own written heat illness prevention plan for acclimatizing employees during the first
   14 days of working in direct sun and in temperatures that reached over 95 degrees.

Cal/OSHA Chief Debra Lee said: "Every worker should be treated with dignity and respect, and no one should face retaliation for protecting their health. Employees deserve a safe work environment especially in extreme conditions, and businesses that fail to follow the rules will be held accountable."

The Labor Commissioner's Office is investigating the alleged retaliatory action, and the Agricultural Labor Relations Board & is investigating unfair labor practice claims that agricultural workers filed against Cooley Enterprises, Inc., the company that hired Ruiz Farm Labor Contractor.

Ruiz Farm Labor has appealed the citations issued by Cal/OSHA

Employees who believe that they have been discharged or retaliated against for complaining about safety or health conditions, practices or who refused to work because such work would violate a

- Parkwood Landscape
  Maintenance
  - Prior heat violations2022
  - First willful heat violation in over 5 years





### NEWS RELEASE

Release Number: 2024-105

Date: December 12, 2024

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### Cal/OSHA issues \$276,425 citation for willful-serious heat violations

Sacramento—The California Division of Occupational Safety and Health (Cal/OSHA) has issued S276,425 in penalties to Parkwood Landscape Maintenance, based in Van Nuys, California, for willfully violating state heat illness prevention regulations. Cal/OSHA, a division of the Department of Industrial Relations (DIR), determined that the employer deliberately and knowingly failed to follow heat protection requirements, marking its first willful heat violation citation in more than five years.

What Cal/OSHA Chief Debra Lee Said: "Employers have a responsibility to protect their workers from the dangers of extreme heat. It is unacceptable for any business to blatantly ignore safety protocols, putting their employees at serious risk. This enforcement action underscores our commitment to holding employers accountable and ensuring safe workplaces across California."

This investigation began on June 6, 2024, when the Cal/OSHA Van Nuys District Office received a complaint about employees working outdoors without access to water or heat illness training provided by their employer.

The company failed to provide employees with required protections, such as access to water, shaded areas, and proper training on preventing heat-related illnesses. Additionally, they lacked written procedures for addressing work conditions in high temperatures, which often exceeded 95 degrees Fahrenheit. Employees also had to purchase their own drinking water, a breach of California's heat illness prevention standard.

- Outdoor heat
  - ► <u>PLEASE</u> have copies of your written program available out in the field where the workers are
    - In English and the language the majority of the workers understand.
    - ► Communicate frequently with employees
    - ▶Be empathetic

- ► Indoor Heat Issues
  - Previous issues with defining "outdoor" and "indoor"
    - Former Cal/OSHA outdoor FAQ document
  - Enforcement utilized the IIPP to cite indoor heat

- ► Indoor Heat Issues
  - Legislature passes SB 1167, Mendoza in 2016 requiring creation of an indoor heat standard by 2019
    - ▶ <a href="https://www.dir.ca.gov/oshsb/Indoor-Heat.html">https://www.dir.ca.gov/oshsb/Indoor-Heat.html</a>
  - Approved by Standards Board after contentious hearings
    - ► Was effective July 2024

Outdoor/IndoorStandardComparison Chart

Requirement	Outdoor Heat (T8CCR 3395)	Indoor Heat (T8CCR 3396)
Scope and Application	Applies to outdoor workplaces	Applies to indoor workplaces when the indoor temperature is greater than 82°F
Provide Clean Drinking Water	Provide access to potable water that is fresh, suitably cool, and free of charge  Located as close as possible to work areas	Provide access to potable water that is fresh, suitably cool, and free of charge Located as close as possible to work areas and cool-down areas
Access to Shade and Cool-Down Areas	80°F. When temperatures are less tha For indoor workplaces, provide access kept at a temperature below 82°F Shade and cool-down areas must be: Blocked from direct sunlight Large enough to accommodate the sit comfortably without touching a Close as possible to the work area.	ns areas must be kept at less than 82°F and
Cool-Down Rest Periods	Encourage workers to take preventation     Allow workers who ask for a cool-dow     Monitor workers taking such rest period	
High-Heat Procedures	Have and implement procedures to deal with heat when the temperature equals or exceeds 95°F	Not applicable to Indoor Workplaces

- ► Indoor Heat
  - ► California Title 8 Section 3396
    - Scope: <u>all</u> indoor work areas where the temperature equals or exceeds 82 degrees Fahrenheit when employees are present.
    - From the approved standard:
      - ▶ "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 airflow, whether open or closed. All work areas that are not indoor are considered outdoor and covered by section 3395.

- Indoor Heat Standard
  - ► Additions over existing outdoor standard:
    - ► Humidity/heat index
    - ► Cool down area (vs shade)
    - ► Radiant heat & wbgt (wet bulb globe thermometer)
      - ► "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.
    - "clothing that restricts heat removal"

### ► Heat index

### **Heat Index Chart**

The 'Heat Index' is a measure of how hot weather 'feels' to the body. This table uses relative humidity and air temperature to produce the "apparent temperature" or the temperature the body 'feels'. These values are for shady locations only. Exposure to full sunshine can increase heat index values by up to 15°F. Also, strong winds, particularly with very hot, dry air, can be extremely hazardous as the wind adds heat to the body.

### Temperature & Relative Humidity

Classification	Heat Index/Apparent Temperature	General Affect on People in High Risk Groups
Extremely Hot	≥130°F	Heat/Sunstroke HIGHLY LIKELY with continued exposure
Very Hot	105°F - 129°F	Sunstroke, heat cramps, or heat exhaustion LIKELY, and heatstroke POSSIBLE with prolonged exposure and/or physical activity
Hot	90°F - 104°F	Sunstroke, heat cramps, or heat exhaustion POSSIBLE with prolonged exposure and/or physical activity
Very Warm	80°F - 89°F	Fatigue POSSIBLE with prolonged exposure and/or physical activity

Relative Humidity (%)

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Relative Humidity (%)

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18

- Radiant heat
  - Wet Bulb Globe
    Thermometer
    - Multiple sensors for dry bulb, wet bulb and globe temperatures
  - Price range
    - ▶\$100 to over \$2,300



Indoor WBGT = 0.7tnwb + 0.3tg

- Assessing and measuring heat:
  - Employers must measure the temperature and heat index and record whichever is greater whenever the temperature or heat index reaches 87°F (or temperature reaches 82°F for employees working in clothing that restricts heat removal or high radiant heat areas).
  - "obtain the active involvement of employees and their union representatives"

### Clothing that restricts heat removal

- "Clothing that restricts heat removal" means full-body clothing covering the arms, legs, and torso that is any of the following:
- (A) Waterproof; or
- (B) Designed to protect the wearer from a chemical, biological, physical, radiological, or fire hazard; or
- (C) Designed to protect the wearer or the work process from contamination.
- Exception to subsection (b)(3): "Clothing that restricts heat removal" does not include clothing demonstrated by the employer to be all of the following:
- (A) Constructed only of knit or woven fibers, or otherwise an air and water vapor permeable material; and
- ▶ (B) Worn in lieu of the employee's street clothing; and
- ▶ (C) Worn without a full-body thermal, vapor, or moisture barrier.

- Exceptions to subsection (e)(1)\*:
- ► (A) In lieu of complying with subsection (e)(1), an employer may assume a work area is subject to one or more of the conditions listed in subsection (a)(2). Such employers shall comply with subsection (e)(2).

\*Subsection (e)(1) is the monitoring heat section

- ► Subsection (e)(2):
- ► The employer shall use control measures as specified in subsections (e)(2)(A) through (e)(2)(C) to minimize the risk of heat illness. The selection of control measures shall be based on the environmental risk factors for heat illness present in the work area.
  - ► (A) Engineering controls
  - ► (B) Administrative controls.
  - ▶ (C) Personal heat-protective equipment..

- ► Controls
  - ► Potential issues over "feasibility"
  - ► Standard hierarchy of control:
    - ► (A) Engineering controls
    - ► (B) Administrative controls.
    - ► (C) Personal heat-protective equipment

### Cal/OSHA **Annual Heat Illness Prevention Network Meeting**

April 24, 2024

### **Feasibility**

- Not defined in proposal because:
  - Complexity
  - · Determination varies depending on:
    - Individual circumstances of work environment
    - · Conditions where engineering or administrative controls will be implemented
- Guidance documents can describe scenarios & examples
  - Infeasible engineering control examples:
    - Unoccupied locations with short term/intermittent exposures
      - Administrative controls feasible limit time in spaces when temp is over threshold
    - Controls would contradict other legal requirements
    - Burn units where high temperatures needed for patient safety



### Screenshot from Cal/OSHA HIPN 2024 Webinar

Haga clic aguí para Españo



















- During the webinar, further discussion on feasibility highlighted 3 factors:
  - **Economic**
  - ► Technical
  - ▶ Operational

- (c) Provision of Water
  - From T8 3396:
    - ▶ "Adequate water is required at all times and must be made available at no cost to the worker. The water must be potable (i.e., fit to drink), fresh, pure, suitably cool, and provided to workers free of charge. To ensure that water is fresh, pure, and suitably cool, Cal/OSHA advises employers or supervisors to visually examine, smell/taste the water, and pour some on their skin."

- Access to cool down areas
  - "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. Blockage is sufficient when objects do not cast a shadow in the area of blocked sunlight.
  - The temperature in indoor cool-down areas must be maintained at less than 82 degrees Fahrenheit unless the employer demonstrates it is infeasible."

- Emergency Response
- ▶ Training
- Written program

► Cal/OSHA Indoor Heat FAQ: <a href="https://www.dir.ca.gov/dosh/heat-illness/Indoor-faq.html">https://www.dir.ca.gov/dosh/heat-illness/Indoor-faq.html</a>

- ► Cal/OSHA citation types (<a href="https://www.dir.ca.gov/DOSHPol/P&pc-1B2.pdf">https://www.dir.ca.gov/DOSHPol/P&pc-1B2.pdf</a> )
- Penalties increased in 2025
  - ► General up to \$16,285
  - Regulatory up to \$16,285
  - Serious remains up to \$25,000
  - ► Willful Serious up to \$162,851

# Agricultural Enforcement Task Force and Outreach Unit (AETFO)

- Enforcement District Offices
  - Lodi

Bakersfield

Salinas

- El Centro
- Satellite Locations
  - Merced

Santa Barbara

Madera

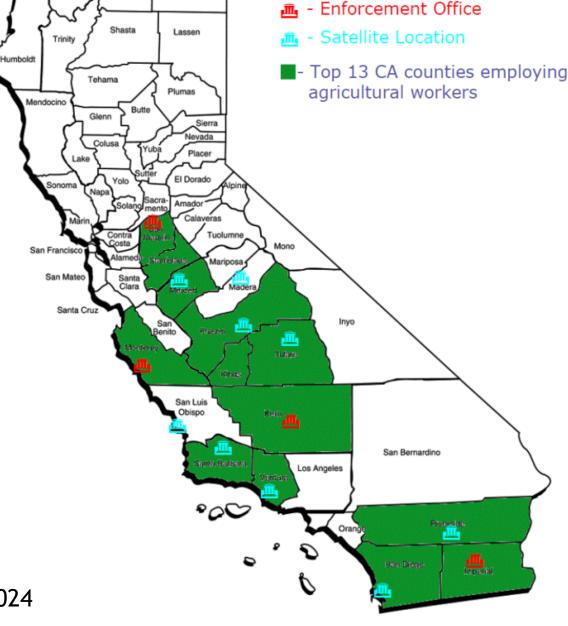
Ventura

Fresno

Riverside

Tulare

- San Diego
- San Luis Obispo





Source: Cal/OSHA Advisory Meeting August 2024

- ► Thoughts
  - Increased concern over "upgrading" acclimatization requirements in both indoor and outdoor standards
  - Draft legislation requiring employee access to HIPP, similar to requirements of IIPP

- Thank you!
- Bill Krycia MPH, CIH (1985-2023)
- ► <u>WjkyciaO2@outlook.com</u>