

# HEAT ILLNESS PREVENTION

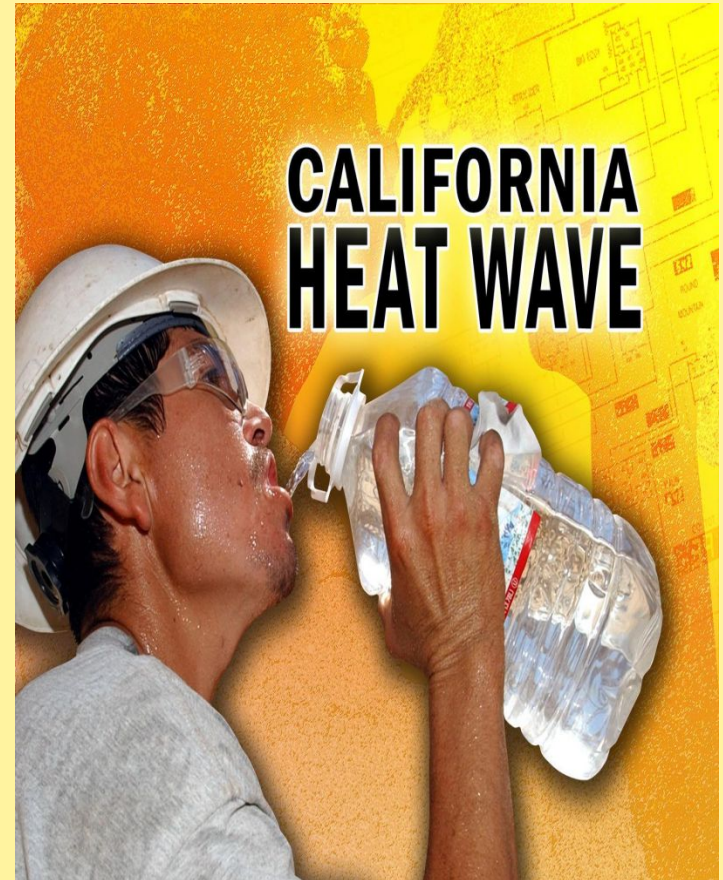
T8 CCR 3395



On-Site Health & Safety

# 2011 Cal OSHA stats

- Average temp for Heat Illness 87°F
- Average age= 35 years old.
- 1,158 citations
- 41 confirmed heat illnesses
- 2 confirmed heat fatality
  - 1 agriculture
  - 1 landscaping





# Heat Fatalities in CA

- 2012 – total of 3
  - 2 construction
  - 1 “other” (not agriculture or landscaping)
- 2013 – total of 3
  - 2 agriculture
  - 1 construction

# Objectives

- Review new requirements of **T8 CCR 3395**
- Employer and employee responsibilities
- Recognize signs and symptoms of heat illness
- Discuss response to suspected heat illness



**WATER.  
REST.  
SHADE.**

*The work can't get done without them.*

# Rule T8 CCR 3395

- Adopted in 2006, covers all outdoor places of employment
- New Requirements go into effect May 1, 2015.
- California is the only state in the country with a heat illness regulation
- This rule is being aggressively enforced by Cal/OSHA





# California Employers are required to:

California employers are required to take these five steps to prevent heat illness.

1. **Planning-** Develop and implement written procedures for complying with the Cal/OSHA Heat Illness Prevention Standard & the New Guidelines.
2. **Water-** Provide enough fresh water so that each employee can drink at least 1 quart per hour, and encourage them to do so.
3. **Shade-** Provide access to shade do not discourage employees to take a rest in the shade for at least 5 minutes if they feel they need it. They should not wait until they feel sick to cool down.
4. **Training-** Train all employees and supervisors about heat illness prevention.
5. **Acclimatization** Implement procedures that allow employees 4-14 days to acclimate to the heat.

# Regulatory Requirements

- Written Program
  - Can be part of the IIPP or a separate document
  - Must be written in English and in the language understood by the majority of employees.
  - **Must be available upon request by Cal/OSHA**
  - Program template available on the website ([www.dir.ca.gov](http://www.dir.ca.gov))
  - Should truly reflect contractor's practices, and be made available to all employees





# Written Program

Detail how your company will:

- Provide access to water & shade
- Monitor the weather.
- Institute high heat procedures
- Address acclimatization methods and procedures.
- Train all employees and supervisors.
- Respond to heat illnesses without delay, provide first aid and emergency services.
- Provide clear and precise directions to the worksite



# Training Requirements

Employers must train all employees on:

- Heat Illness Prevention (Company Protocol)
- Must be given in a language employees understand
- OSHA reps often ask questions to confirm that the training was understood. (FAQ sheet)



# Training Requirements..

- New rule sets temperature triggers of **80** and **95°**
- Does everybody know how to check the weather report?
  - [www.weather.gov](http://www.weather.gov)
    - enter city and state (1week)
  - [www.weather.yahoo.com](http://www.weather.yahoo.com)
    - enter your zip code (10 days)



**Supervisors should be trained on how to check the weather report.**



# When temps reach 80 °

- Heat Illness program must be in place
  - Shade
  - Water
  - Training
  - Emergency response plan
  - Acclimatization procedures



## Below 80°F

- When the temperature does not exceed 80° F, provide timely access to shade upon request.





# Water

- Fresh, pure, suitably cool, & free of charge
- Must be fit to drink (potable)
- Free from odors
- Must be cooler than the ambient temperature





# Water...

- Must provide 1 quart per hour per employee, or the ability to replenish accordingly
- Large bottles/jugs are ok, must be replenished, kept clean and include cups
- Individual bottles should be labeled with the employee's name (cross contamination)
- As close as practicable to where employees are working
- Gatorade does not meet the requirement for water



**Unacceptable**

# Shade

Temps of **80°** or higher,  
employer must provide:

- Shade to hold the number of employees on rest/recovery periods without touching.
- Must be readily accessible for all employees
- workers must be allowed and not discouraged to take time (at least 5 minutes) in the shade as needed.



Access to shade must be permitted  
at all times

# What is shade ?

- Must block sunlight-No Shadow
- Can be the truck cab, office trailer if air conditioned
- Where shade is not feasible, misters can be considered if they work as well as shade to cool people down







# Shade

## Cool Down Period

- Encourage employees to take a cool-down rest in the shade.
- Monitor employees on cool down rests
- Ask them if they're experiencing symptoms of heat illness
- Don't order back to work until symptoms abated, allow at least a 5 minute rest
- Take appropriate first aid steps or emergency response as necessary





# Citations

You risk serious citations if the temperature in the outside work area exceeds 80° F and any of these required elements is not present at the site:

- Drinking water
- Shade
- Trained employees or supervisor
- Emergency response procedures



# Citations...

You risk an Order Prohibiting Use (OPU) and a Serious Citation if the heat and lack of facilities create an imminent hazard.

An OPU may be issued if:

- $\geq 95^\circ$  and water, shade, training or emergency procedures are not in place;
- $\geq 80^\circ$ , and there is a heat wave, heavy workload or other critical factor putting employees in danger.

An OPU:

- Will shut down the operation, and;
- Work will not be allowed to resume until the employer demonstrates that the imminent hazard has been corrected.



# High Heat Procedures

95°F or higher- Employer must implement additional preventive measures:

- Ensure effective communication (by voice, observation or electronic means).
- Observe employees for alertness and signs and symptoms of heat illness
  - Supervisor (or designee) observation of 20 or fewer employees. OR
  - Mandatory buddy system AND
  - Ability to call for help (phones, radios, etc.)





# 95° or Higher

- Designate one or more employees to call for emergency services
- Give more frequent reminders to drink plenty of water.
- Hold pre-shift meetings on prevention





# Acclimatization

- Allow 4-14 days to gradually “get used to” the heat (2 hours per day is best)
  - drink lots of water
- Most deaths from heat occur during the first 4-14 days
- People who are diabetic, asthmatic, or have cardiac issues may have difficulty getting used to the heat.
  - check with your doctor!
- Age, weight and personal health habits can affect ability to acclimate.  
(caffeine, alcohol, tobacco etc.)





# Agriculture

- Temps 95 or above, ensure employees take a minimum ten minute rest break every two hours. (OK to correspond with legally required breaks)
- Additional ten minute cool-down rest at end of 8th and 10th hour of work





# Emergency Response

The employer shall implement effective emergency response procedures including:

- All crews must have a cell phone or radio to contact their supervisors and or activate ems. (ie. 911)
- Employees must be trained to recognize the signs of heat illness and how to help.
- Employees showing signs of heat illness shall be monitored. Do not leave the employee alone or send him/her home without providing first aid or medical care.
- If indicators of serious heat illness, implement emergency response procedures
  - review site location with crew
  - is there an address?
  
  - review site access for emergency crews
  - is there a gate where a guide should wait?





# What is Heat Illness?

The spectrum of conditions which result from the effects of excessive heat.

- Heat Cramps- Pain in muscles caused by electrolyte imbalance (early sign)
- Heat Syncope- Fainting
- Heat Stress- early symptoms such as fatigue, headache
- Heat Exhaustion- later symptoms such as fatigue, headache, nausea
- Heat Stroke- life threatening symptoms including altered level of consciousness



# HEAT ILLNESS

- Starts with compensated pressure (constricted arteries and low volume)
  - person feels tired, thirsty, hot, maybe headache
- Progresses to all of the above plus nausea and paleness
  - person can still talk, but feels sick and maybe vomits; water might not stay down
- Progresses to decreased level of consciousness
  - this is a life threatening emergency



## EARLY SIGNS OF ILLNESS -- (Heat stress) HOT \*THIRSTY \*FATIGUED

- GET OUT OF THE HEAT
- DRINK WATER AND REST IN THE SHADE

REMEMBER:

**SWEAT GOES OUT FAST BUT  
WATER GOES IN SLOW**





# HEAT EXHAUSTION

## HOT \* THIRSTY\* PALE \* NAUSEOUS

- GET OUT OF THE HEAT!
- CONSIDER COLD PACKS ON BACK OF NECK OR ARMPITS
- DRINK WATER SLOWLY AND WAIT IN THE SHADE!
- GET MEDICAL ATTENTION
  - FIRST AID STATION
  - LOCAL CLINIC

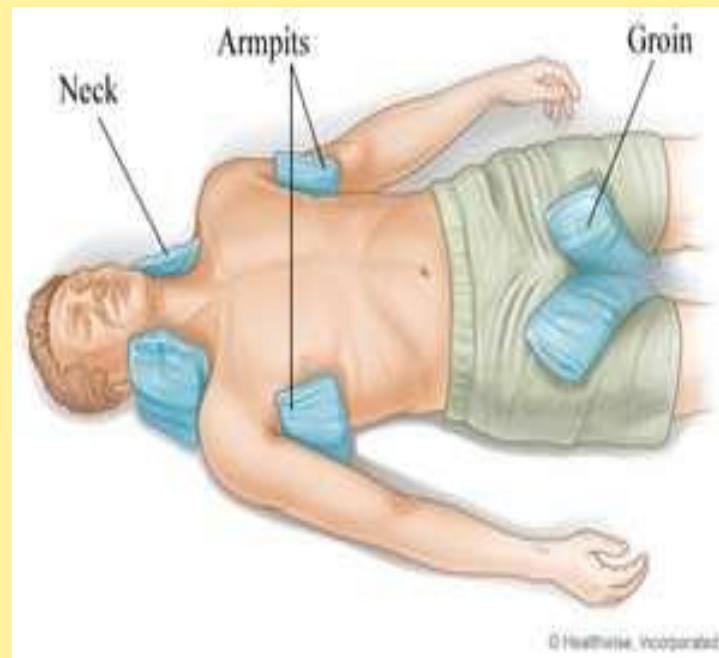
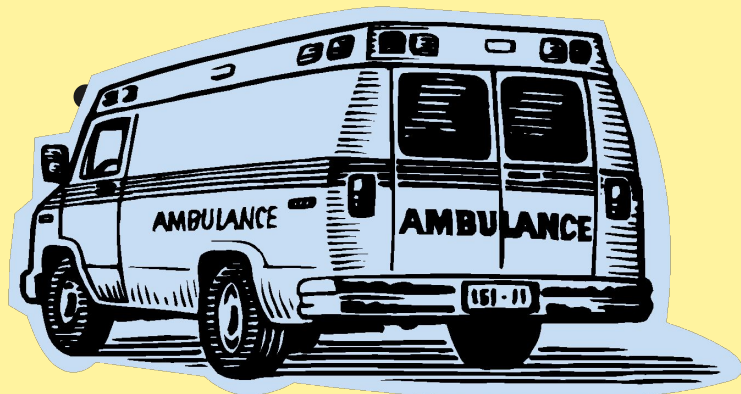




# Heat Stroke

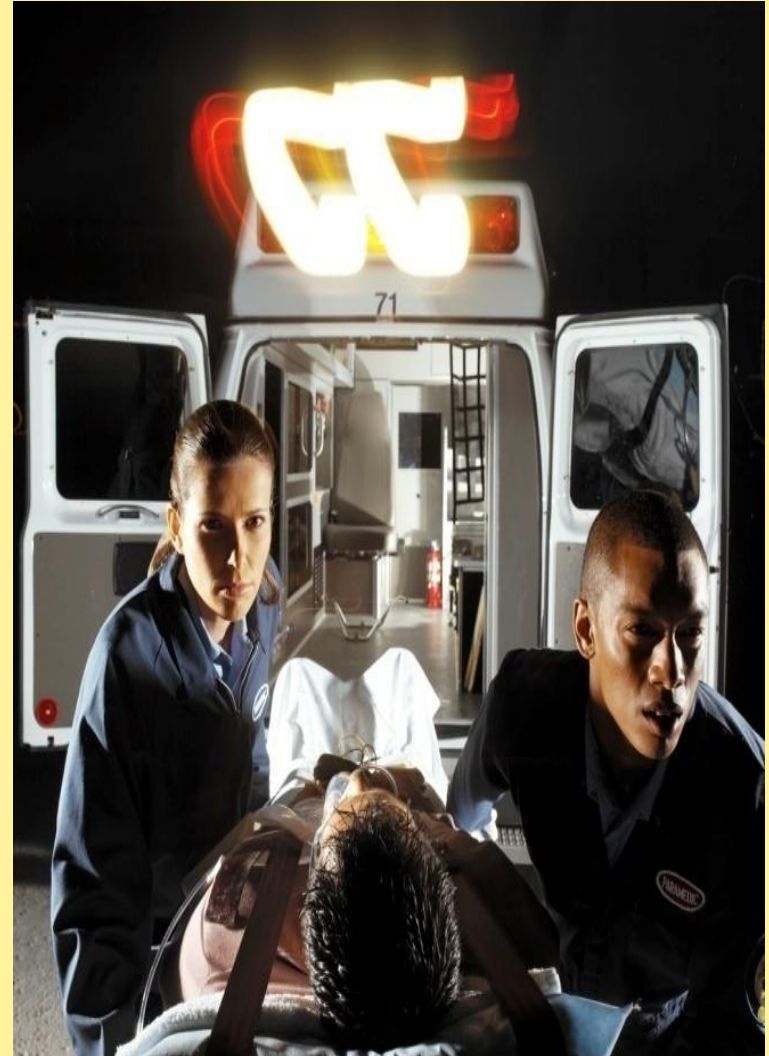
EMERGENCY: HOT\*THIRSTY\*PALE

- NAUSEOUS AND ALTERED MENTAL STATUS
- COWORKERS SHOULD ASSIST WITH GETTING THE WORKER OUT OF THE HEAT
- COOL WITH COLD PACKS
  - DO NOT CAUSE WORKER TO SHIVER



# WHAT WILL THE PARAMEDICS DO?

- Turn on the air conditioner in the van
  - to cool the body temperature
- Give IV fluids to increase volume in the blood vessels
  - to correct low pressure



# What Causes Heat Illness?

Heat Illness can be caused by:

- Environmental: Working conditions that heat up the body
- Personal risk factors





# Environmental Factors

- Air temperature, Air movement
- Relative humidity
- Radiant heat (sun, other sources)
- Conductive heat (ground, asphalt)
- Workload (severity, duration)
- PPE







# PERSONAL PROTECTIVE EQUIP.

- Non breathers
  - (impermeable to air and vapor)
- Rubber
- Leather
- Insulators
- Too many layers
- Dark colors
- Hatless heads

PPE can add to your body temp





# HEAT SOURCES

- Temperature outside the body
  - sun, machinery, etc.
- Heat created by physical activity
  - these heat sources can cook the body just like the barbeque cooks chicken.



# Personal Risk Factors

- Water retention
- Alcohol, Caffeine, Drugs
- Acclimatization
- Diet, Health





# About Water Intake...

- Water goes through the stomach, and takes a long path to the blood vessels
- Sweat has a short route from the vessels to the skin surface
- The body doesn't start to feel thirsty until the fluid levels are low so drink water before feeling thirsty ( go to work with a full tank!!! )
- Humidity slows the evaporation of the sweat interfering with the cooling process.



# How much can you sweat?

- The human body cools itself down with sweat.  
SWEAT = MOISTURE ON THE SKIN + AIR = COOLING SYSTEM
- Initially, blood vessels dilate to remove heat = (red face)
- Sweat comes from the blood stream, so it causes a drop in fluid volume if not replaced.
- Drop in total fluid volume causes a drop in blood pressure
- Blood vessels constrict to maintain pressure  
SO.....
  - skin becomes pale
  - body feels thirsty, stomach shuts down, oxygen to brain becomes restricted



# Alcohol & Caffeine

- Alcohol causes dehydration!!!!
- Caffeine causes the body to eliminate water...a bad thing in hot weather
- So drink more water.
- Avoid alcohol, coffee, and energy drinks!!!!
- Drugs - Cocaine, Speed, etc.  
increases HR= increased perspiration=Faster dehydration





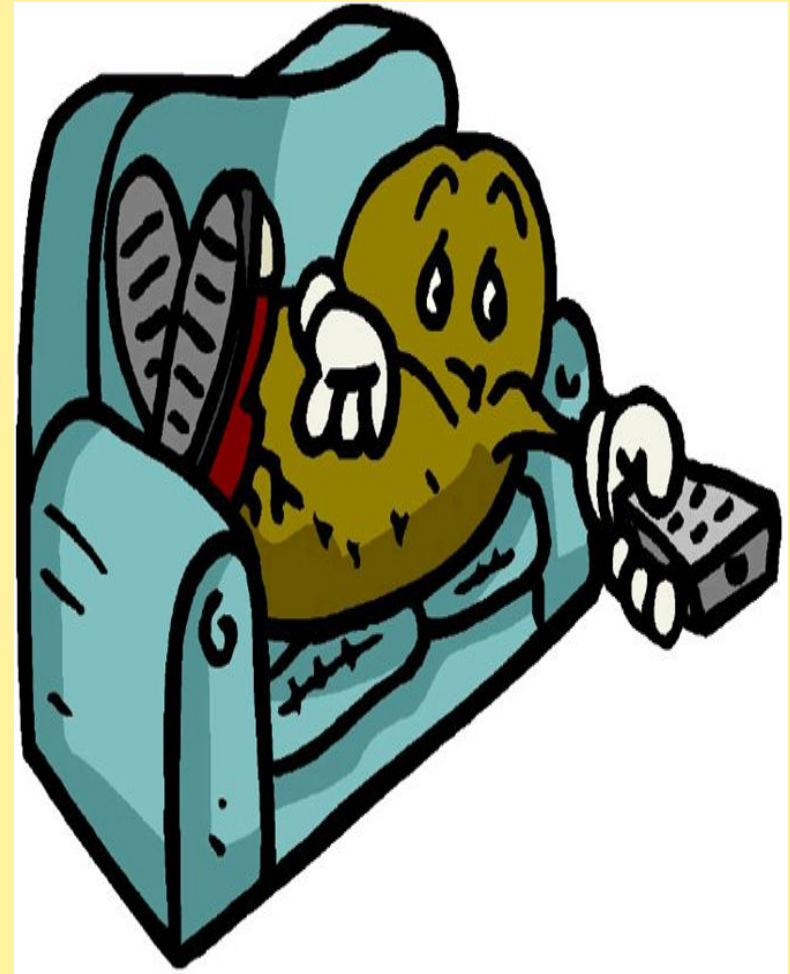
# Poor Fitness-Medical Conditions “Fit to Kill”

## Overweight, Out of shape –

- cardiovascular disease,  
diabetes, etc.

## Lack of sleep-

- increases stress on the body =  
weaker immune system



# DIABETES

## WHY ARE DIABETICS AT RISK?

- Impaired ability to sweat and a diminished thirst reflex.
- Encourage diabetic employees to:
  - Check blood sugar
  - Avoid sunburns - spikes glucose
  - Stay hydrated, cool, Avoid caffeine, & alcohol to prevent dehydration
  - Keep meds cool - heat degrades meds = decrease in efficacy





# Cardiovascular disease

- Cardiac meds can increase susceptibility to heat illness
- Some BP Meds lower the amount of fluid in the body
- Some meds can alter your sense of thirst.
- Less blood flow to skin = less sweat (very bad)  
We need sweat to cool the body



# What about electrolytes?

- Sodium, potassium, calcium, etc. go out of balance when **water** levels get low
- It is **very important** to eat healthy foods throughout the day (heat cramps are a result of an electrolyte imbalance)





# Did we get help in time?

- BODY TEMPERATURE NOT HIGH ENOUGH TO “COOK” CELLS = FULL RECOVERY
- BODY TEMPERATURE HIGH ENOUGH TO “COOK” A FEW CELLS = BRAIN AND ORGAN DAMAGE
- A LOT OF “COOKED” CELLS = DEATH  
(REMEMBER THAT MEAT CAN’T “UNCOOK”)





# Summary

- Get acclimated
- Drink plenty of water
- Get in the shade when needed
- Make healthy choices

