

Heat Related Injuries/Illnesses



*Bureau of Workers' Comp
PA Training for Health & Safety
(PATHS)*



Learning Objective

To understand how to work safely in the sun



What we'll Talk About

- Types of heat injuries/illnesses and who is affected
- Serious heat related injuries/illnesses
- Other common heat related injuries/illnesses
- Dehydration
- Prevention Tips
- Who is affected
- Methods of prevention



- Heat is the #2 weather-related killer in the United States (206);
- Greater than hurricanes (9), floods (113), and lightning strikes (26) combined.
- Only tornadoes had more fatalities (553)



Generation of Body Heat



- Metabolic Heat – generated through the digestion of food, work, and exercise.



- Environmental Heat – absorbed from the surrounding environment.

- As the body's core temperature rises, several activities increase:
 - ✓ Sweating
 - ✓ Heart rate
 - ✓ Blood flow to the skin
- When the cooling system works well, the core temperature drops and can stabilize at a safe level.

How does Heat Stress Occur?



- During warm weather, the body normally cools itself by perspiring.
- When the air temperature is the same or warmer than the body temperature, cooling the body is more difficult.
- When the humidity becomes higher, perspiration will not evaporate as quickly, preventing the body from releasing heat as fast as it normally would, causing various levels of heat stress.

Heat Rash

Heat Cramps

Heat Syncope

Heat Exhaustion

Heat Stroke

Mild Medical Condition



Dangerous
Medical Emergency

We'll discuss them all during this presentation!

Who is Affected?

- Workers
- Co workers
- Elderly
- Children
- Pets
- Friends
- Neighbors
- Everybody



YOU ARE!



When Working in Sunlight is Necessary

- Limit outdoor work in high temps
- Avoid working in direct sunlight between 10 am–4 pm
- Rest in the shade
- Use a hat with a brim
- Use suntan lotion SPF 30 or higher
- Use eye protection
- Drink plenty of water





So What do You Do?

OSHA recommends three simple words:

WATER. REST. SHADE.

The work can't get done without them.



Three Simple Words

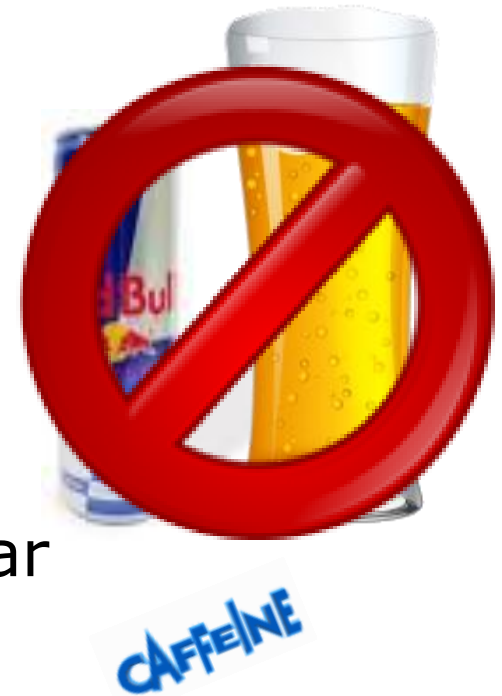


- WATER – drink water (or “electrolyte” beverages) often, even before you become thirsty
- REST – take frequent breaks away from the sun’s rays; recommended air-conditioned or cool, well-ventilated area
- SHADE – anywhere people can take shelter from the sun (tree, canopy, indoors); recovery area

Prevention



- Drink plenty of fluids
- If you're thirsty: it's too late
 - ✓ No caffeine
 - ✓ No alcohol
 - ✓ No large amounts of sugar
 - ✓ Avoid very cold drinks



Ability to Cool Down: Factors

- Acclimation
- Physical condition
- Environment
- High heat
- Humidity
- Proper hydration
- Asset management



Heat Index

| Heat Index | Risk Level | Protective Measures |
|--------------------|-----------------------------|---|
| Less than 91°F | Lower (Caution) | Basic heat safety and planning |
| 91°F to 103°F | Moderate | Implement precautions and heighten awareness |
| 103°F to 115°F | High | Additional precautions to protect workers |
| Greater than 115°F | Very High to Extreme | Triggers even more aggressive protective measures |



The heat index is based on being in the shade

| Work considerations | Degrees to add |
|-------------------------|----------------|
| Heavy work gear | Add 10 |
| Work in direct sunlight | Add 15 |

Heat Exhaustion



Heat Exhaustion

Heat exhaustion is the body's response to an excessive loss of the water and salt, usually through excessive sweating. Workers most prone to heat exhaustion are those that are elderly, have high blood pressure, and those working in a hot environment.



- Weakness
- Heavy sweating
- Extreme weakness or fatigue
- Dizziness, confusion
- Nausea
- Clammy, moist skin
- Pale or flushed complexion
- Muscle cramps
- Slightly elevated body temperature
- Fast and shallow breathing

Heat Exhaustion is considered a Medical Emergency!

- Call 911 and notify their supervisor.
- Have them rest in a cool, shaded or air-conditioned area.
- Have them drink plenty of water or other cool, nonalcoholic beverages.
- Have them take a cool shower, bath, or sponge bath.



Heat Stroke



Heat Stroke

- Is the most serious heat-related disorder.
- Occurs when the body becomes unable to control its temperature.
- Body's temperature rises rapidly, sweating mechanism fails, body is unable to cool down.
- When heat stroke occurs, body temperature can rise to 106 degrees Fahrenheit or higher within 10 to 15 minutes.
- Heat stroke can cause death or permanent disability if emergency treatment not given.



- Hot, dry skin or profuse sweating
- Hallucinations
- Chills
- Throbbing headache
- High body temperature
- Confusion/dizziness
- Slurred speech



- Call 911 and notify their supervisor.
- Move the sick worker to a cool shaded area.
- Cool the worker using methods such as:
 - ✓ Soaking their clothes with water.
 - ✓ Spraying, sponging, or showering them with water.
 - ✓ Fanning their body.



Heat Stroke – Summary

- This is a medical emergency
- Never allow the person to return to work or go home without medical attention & clearance
- Return to work will vary depending on individual's physical fitness & timing of first aid treatment



Other Common Heat Related Injuries/Illnesses



Heat Syncope

- Symptoms:
 - Fainting
 - Dizzy
 - Light Headed
- Treatment:
 - Sit or lie down in cool place when they begin to feel symptoms.
 - Slowly drink water, clear juice, or a sports beverage.



Heat Cramps

- Symptoms
 - Muscle pain or spasms usually in the abdomen, arms, or legs.
- First Aid
 - Stop all activity, and sit in a cool place.
 - Drink water, clear juice or a sports beverage.
 - Do not return to strenuous work for a few hours after the cramps subside because further exertion may lead to heat exhaustion or heat stroke.
 - Seek medical attention if any of the following apply:
 - The worker has heart problems.
 - The worker is on a low-sodium diet.
 - The cramps do not subside within one hour.



Heat Rash

- Symptoms:
 - Red cluster of pimples or small blister
 - Can happen anywhere on body
 - Neck
 - Back
 - Groin
- First Aid:
 - Work in a cooler area if possible
 - Keep area dry
 - Powders may be used for comfort



- Sunburn is the sun's ultraviolet radiation, which can significantly retard the skin's ability to shed excess heat.
- Must apply sunscreen (SPF 30 or higher) to avoid redness and pain. Severe cases could be swelling of skin, blisters, fever, and headaches.
- Ointments may be used for blisters, sterile dressing if blisters break. If serious, seek medical attention.

Controlling Heat Stress



- How to control heat stress.
- How to recognize, treat, and prevent heat illness.
- The role of weather, workload, PPE, and the individual's physical condition.





- Workload determines the amount of heat generated by the body
- Light and moderate work = less heat
- Heavy work = more heat

- The more clothing worn, the longer it takes evaporation to cool the skin.
- Lightweight, light-colored clothing reflects heat and sunlight and helps your body maintain normal temperatures.
- Wear loose-fitting clothes such as cotton.
- Wide brimmed hats block sun from head, neck and shoulders.

- Use lightest weight garments and respirators available.
- If cooling vests are used, they must be selected carefully and washed daily.
- Coated and non-woven personal protective garments block evaporation of sweat.

- Follow instructions and training for controlling heat stress.
- Pay attention to symptoms of self and others.
- Avoid dehydration by drinking plenty of water.
- Get adequate rest and sleep.
- Avoid alcohol, drugs, and excessive caffeine.

Dehydration

- Fluid loss of 2%
 - Impaired cognitive and physical performance
- Fluid loss of 5-7%
 - Shortness of breath, headaches, dizziness and apathy



Simple Hydration Check

Good, probably well hydrated; drink water normally

OK/fine; drink a little water now

Warning: Drink about ½ bottle of water within the hour, or whole btl if you're outside and/or sweating

Caution: Drink about ½ bottle of water immediately or drink a whole bottle of water if you're outside & sweating

STOP: Drink 2 bottles of water immediately; if your urine is darker than this red or brown, there may be another medical condition, seek medical advice

Use Caution

- NEVER take a nap/rest in a closed, parked vehicle.
 - Especially if you have certain medical conditions such as diabetes or high blood pressure.
 - If you are feeling ill.
 - Unless air conditioning is on and functioning properly.



- The sun's radiation can heat a dashboard, steering wheel, or child seat up to 180-200 degrees Fahrenheit.
- It also warms the air trapped inside the vehicle:
 - In 10 minutes: Outside 80, inside 99 degrees
 - In 20 minutes: Outside 80, inside 109 degrees
 - In 30 minutes: Outside 80, inside 114 degrees
 - In 60 minutes: Outside 80, inside 123 degrees

Tips for Prevention

- Stay indoors and utilize AC
- Fans
- Cool shower
- Wear lightweight, light colored & loose fitting clothes.
- Limit your outdoor activity to morning and evening hours.
- Protect yourself from the sun by wearing a wide-brimmed hat, sunglasses and by putting on sunscreen of SPF 30 or higher.
- Drink more fluids (nonalcoholic)



Review

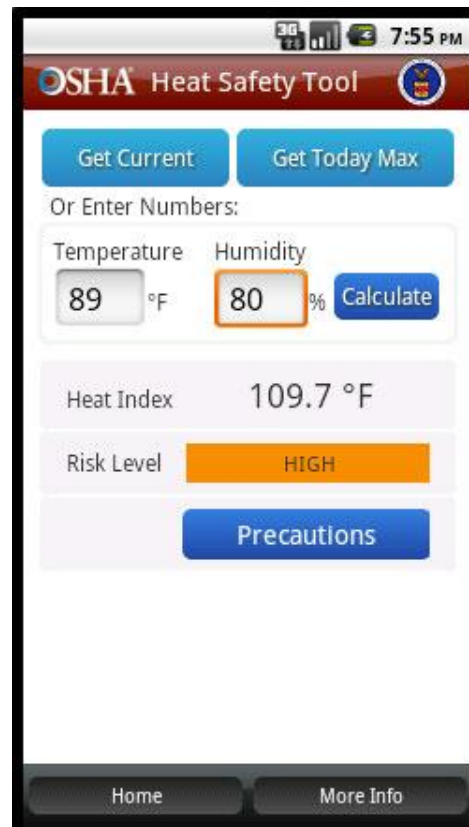
- Slow down
- Dress for activity
- Watch what you eat
- Drink plenty of fluids
- Spend more time in AC
- Don't get too much sun
- Consult with doctor if any medical questions



- Heat Stroke & Heat Exhaustion
 - Most dangerous- seek medical attention
 - Watch for signs & symptoms
- Heat Syncope
 - Can lead to Heat stroke or exhaustion-Monitor
 - Remove from heavy workload
- Heat Cramps
 - Increase fluids, be aware of other conditions
- Heat Rash
 - Wearing lightweight clothing made of fabrics that "breathe" and limiting physical activity

OSHA Heat Safety Tool app

http://www.osha.gov/SLTC/heatillness/heat_index/heat_app.html

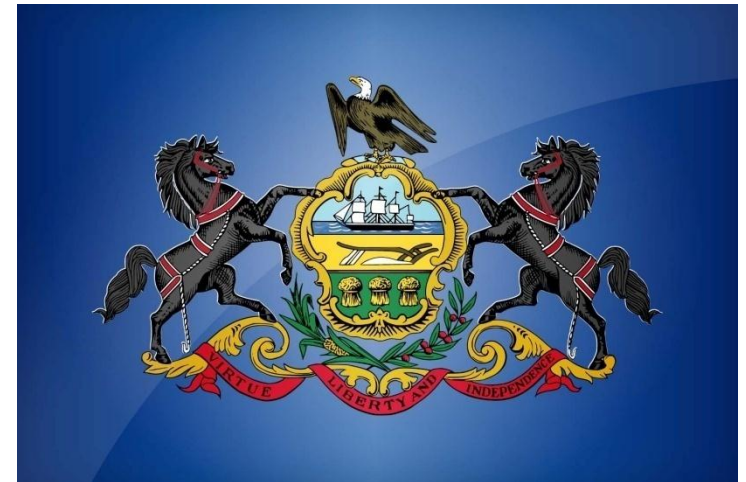


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????? Questions & Answers

