OSC O'DONNELL CONSTRUCTION SNIDER

BEAT THE HEAT

HEAT SAFETY QUICK GUIDE

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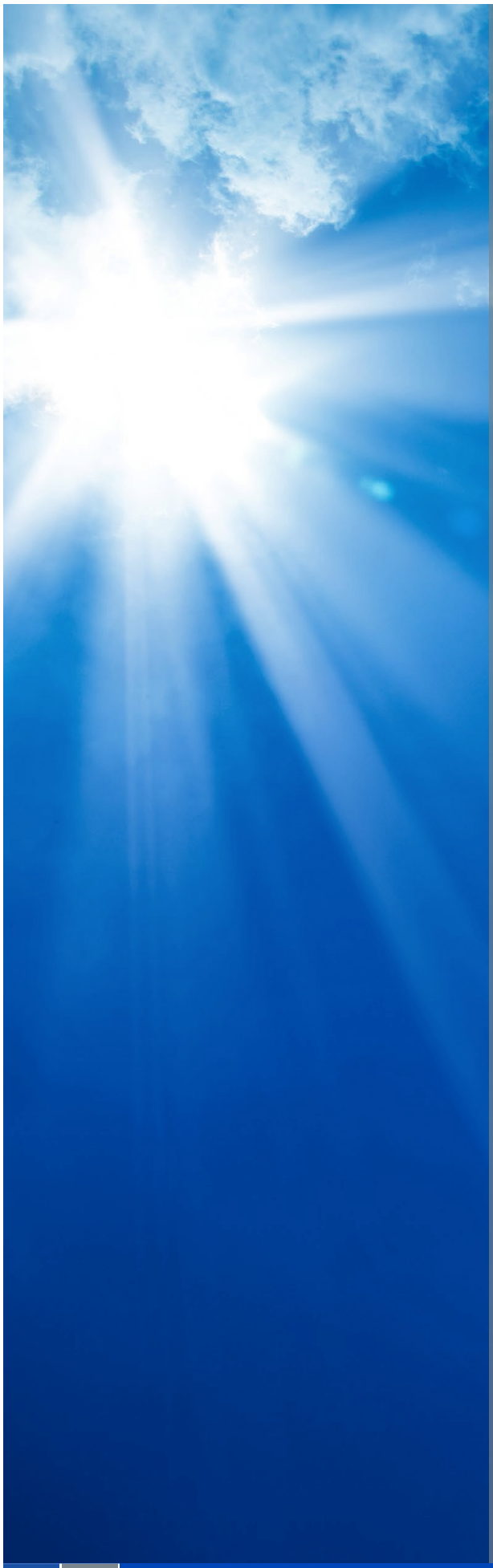

INTRODUCTION

Protecting workers from heat-related accidents is a crucial aspect of ensuring their safety and well-being in the workplace. To achieve this, open communication, education, and proactive measures are essential. In this Heat Safety Quick Guide, we will provide valuable tips and measures that can be implemented to prevent heat-related accidents and safeguard workers.

It is important to note that these tips serve as a foundation, and it is necessary to customize heat safety measures according to the unique needs and conditions of your workplace. Regular assessments, based on ongoing risk evaluations and feedback from workers, should be conducted to update protocols and ensure continuous improvement in protecting workers from heat-related accidents. By prioritizing these efforts, we can create a safer work environment and protect the well-being of our valuable workforce.

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Visit OSHA's Website on Heat Exposure for more Information: https://www.osha.gov/heat-exposure

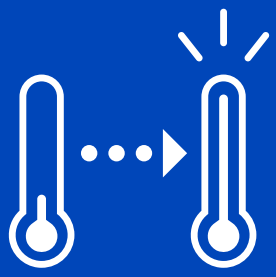
HEAT SAFETY PLAN

Developing a Heat Safety Plan is essential for ensuring the well-being of workers in hot environments and preventing heat-related accidents. The plan should address key aspects such as on-site heat monitoring, acclimation procedures for new/temporary employees, availability of first aid and emergency protocols, comprehensive training for supervisors and employees, measurement of heat stress and hazards, assessment of heat advisories for necessary changes, and implementation of preventive measures. By incorporating these elements into the plan, employers can effectively protect workers and maintain a safe working environment.

Preventative Measures

Preventive measures in a Heat Safety Plan include promoting adequate hydration, implementing acclimation programs and rest breaks, and using appropriate personal protective equipment (PPE). These measures aim to minimize heat-related risks and ensure worker well-being in hot environments.

Monitoring Heat Exposure



Procedures for monitoring heat exposure are crucial in a Heat Safety Plan. This involves assigning an on-site individual to regularly assess temperature, humidity levels, and other factors contributing to heat stress.
By monitoring heat exposure, employers can identify high-risk conditions and take proactive measures to protect workers from heat-related illnesses.

Emergency Response Protocols

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Emergency response protocols are vital in a Heat Safety Plan. They provide guidelines for swiftly moving affected workers to a cooler area, cooling them down, and seeking medical assistance when necessary. These protocols ensure a prompt and effective response to protect the well-being of workers in emergency situations.

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Heat Safety Plan

SAFETY MEASURES	PLAN/ACTIONS
Who is the person(s) monitoring the heat throughout the day? (must be on-site at all times)	
Acclimation Procedures for New and Returning Employees.	
Procedures to ensure first aid is readily available	
Emergency Response Protocols.	
Procedures on training for supervisors and employees on Heat Safety Plan and Awareness Symptoms.	
How will heat stress be measured?	
How will heat hazards be determined.	
How will a heat advisory be assessed, along with any changes to work environment/procedures based on this assessment.	
What preventative measures be followed?	

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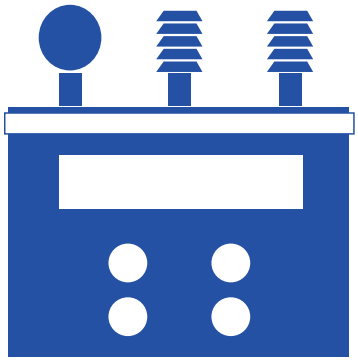
MONITORING HEAT EXPOSURE

Designating a responsible person to monitor heat on a daily basis throughout the workday is a crucial aspect of a Heat Safety Plan. Employers should also stay informed about heat advisories from the National Weather Service to better understand the potential risks. Two primary heat sources contribute to the risk of heat-related illness: environmental heat and metabolic heat. Estimating workload and providing appropriate protections, such as rest breaks and scheduling work during cooler times, is vital. Employers must assess both heat sources to determine workers' total heat stress. By addressing these factors, employers can effectively mitigate the risk of heat-related illnesses in the workplace.

CONTRIBUTORS TO EACH HEAT SOURCE

ENVIRONMENTAL HEAT	METABOLIC HEAT
AIR TEMPERATURE	BODY HEAT PRODUCTION
HUMIDITY	PHYSICAL ACTIVITY LEVEL
RADIANT HEAT	PERSON'S WEIGHT
AIR SPEED	CLOTHING

WET BULB GLOBE TEMPERATURE (WBGT)



The use of a wet bulb globe temperature (WBGT) monitor is recommended to measure environmental heat because it accounts for all four major environmental heat factors.

The three different themometers on the WBGT are:

Dry Bulb Thermometer - Measures ambient air temperature

Natural Wet Bulb Thermometer - Measures the potential for evaporative cooling

Black Globe Thermometer - Measures Radiant heat

Ensure placement of the monitor is close to the active work location and has the same level of heat exposure. For further details on using the monitor's data to calculate measurement visit the OSHA website through the QR Code on the right.

CLOTHING ADJUSTMENT FACTOR (CAF) - ADD THIS FACTOR TO THE WBGT MEASUREMENT

CLOTHING TYPE	CLOTHING ADJUSTMENT FACTOR
NORMAL WORK CLOTHES	0
CLOTH (WOVEN) COVERALLS*	0
SMS POLYPROPYLENE COVERALLS *	0.9°F (0.5°C)
POLYOLEFIN COVERALLS*	1.8°F (1°C)
DOUBLE LAYER OF CLOTHING	5.4°F (3°C)
LIMITED-USE VAPOR-BARRIER COVERALL*	19.8°F (11°C)

*Coveralls: Assume only undergarments are worn underneath.

WORKER ACTIVITY LEVEL AWARENESS WITH METABLIC RATE (WATTS)

LEVEL OF PHYSICAL ACTIVITY	ACTIVITY SAMPLES	WATTS
REST	Sitting	115
LIGHT	Standing Watch, Slow Walking, Driving A Car, Kneeling	180
MODERATE	Pushing/Pulling Light Carts, Painting, Tapping And Drilling Using Hand Tools, General Carpentry, Hammering Nails	300
HEAVY	Intense Arm And Trunk Work, Mixing Cement, Shoveling Pushing/Pulling Heavy Carts Or Wheelbarrows, Drilling Rock Or Concrete, Manual Raising/Lowering Loads	415
VERY HEAVY	Climbing Stairs, Ladders, Or Ramps, Sledgehammer Use, Any Activity Done At Near Maximum Pace, Intense Shoveling Or Digging, Brick Or Stone Masonry	520

DETERMINING HEAT EXPOSURE RISK

Factor in the following:

- Level of physical activity/workload
- Environmental heat measurement through a WBGT or other method.
- Protective clothing that might impair heat dissipation
- If the worker is acclimated to the heat or not - assume workers on the job less than 1-2 weeks are not acclimated

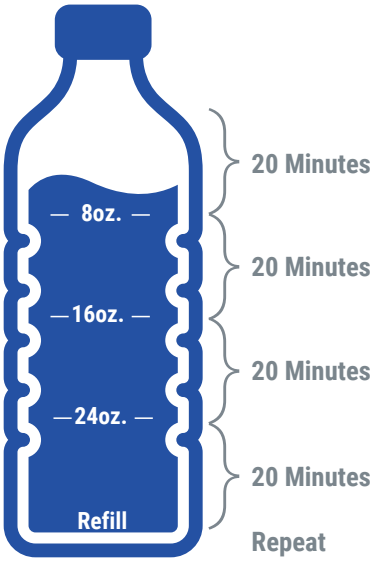
EFFECTIVE WBGT*	UNACCLIMATED WORKER	ACCLIMATED WORKER
Below 70°F (21°C)	Low risk of heat-related illness	Low risk of heat-related illness
70 to 77°F (21 to 25°C)	Strenuous work possibly unsafe	Low risk of heat-related illness
Above 77°F (25°C)	High risk of heat-related illness with strenuous work	Strenuous work possibly unsafe

*Effective WBGT is the WBGT measurement along with added clothing adjustment factor.

PREVENTIVE MEASURES

Preventive measures play a crucial role in safeguarding workers from heat-related illnesses and ensuring their well-being in hot environments. Encouraging regular hydration, implementing acclimation programs, scheduling adequate rest breaks, and providing suitable personal protective equipment (PPE). By prioritizing these preventive measures, employers demonstrate their commitment to creating a safe and healthy work environment, mitigating the risks associated with heat exposure, and promoting the overall welfare of their workers.

HYDRATION



Provide Adequate Hydration: Encourage workers to drink plenty of fluids, particularly water, throughout the workday.

- Workers should be encouraged to drink at least one cup (8 ounces) of water every 20 minutes while working in the heat not just if they are thirsty.
- Make sure that cool, potable water is readily available at convenient locations on the worksite.
- For more prolonged exposure to heat, also provide electrolytes.
- Workers should be aware that use of certain personal protective equipment (e.g., certain types of respirators and impermeable clothing) can increase the risk of heat-related illness.
- Encourage regular hydration breaks and educate workers about the importance of staying hydrated.

ARE YOU DRINKING ENOUGH WATER?

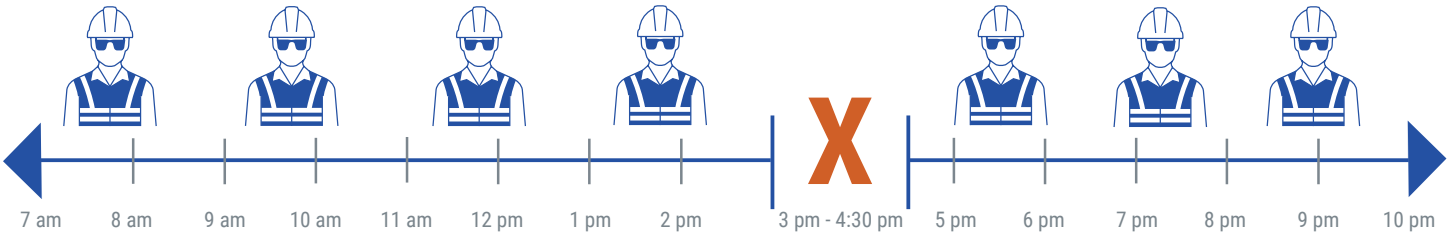
Urine Color Chart to Assess Your Hydration

*Note: Certain foods, medications and vitamin supplements may change your urine color even if you are hydrated
*This chart should only be used as a guide and should not replace the advise of a health professional

ACCLIMATION

Acclimation and Proper Rest Breaks: Implement an acclimation program for new workers and those returning from prolonged absences.

- Gradually expose them to increased levels of heat and workload over a period to help their bodies adjust and adapt to the environmental conditions.
- Schedule frequent rest breaks in shaded or air-conditioned areas to allow workers to cool down and recover from heat exposure.
- Avoid scheduling demanding tasks during the hottest parts of the day and consider adjusting work schedules to minimize heat exposure.



*On average the hottest part of the day is 3 pm to 4:30 pm

PERSONAL PROTECTIVE EQUIPMENT

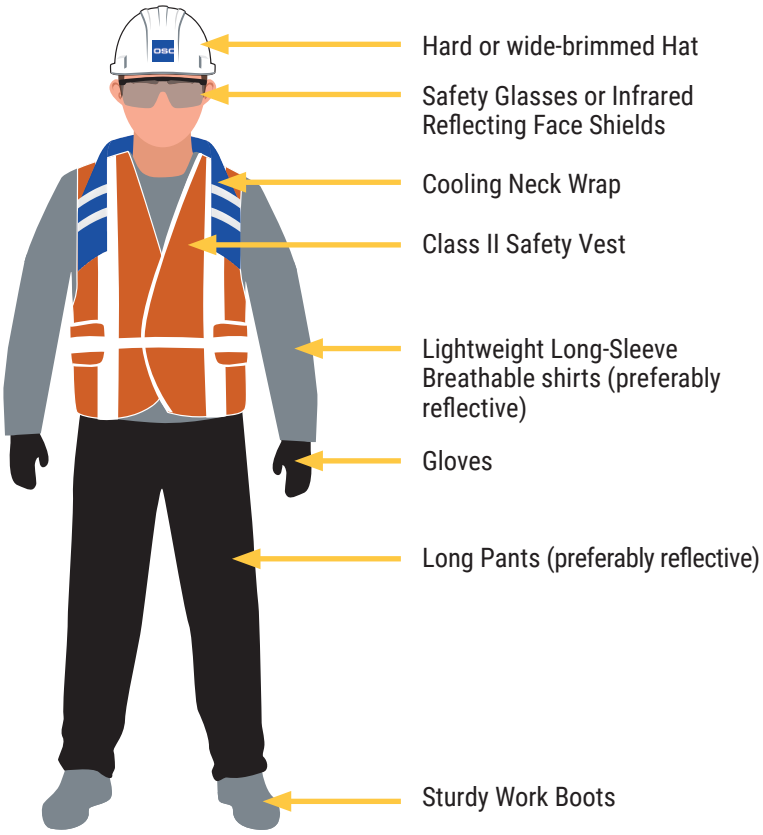
Use Appropriate Personal Protective Equipment (PPE): Provide workers with suitable PPE designed to minimize heat stress. This may include lightweight, breathable clothing, wide-brimmed hats or caps, and cooling vests. Encourage the use of PPE and ensure that it is worn correctly.

In most cases, heat stress should be reduced by engineering controls or work practice modifications. However, in some limited situations, special cooling devices can protect workers in hot environments:

- Insulated suits
- Reflective clothing
- Infrared reflecting face shields
- Cooling neck wraps

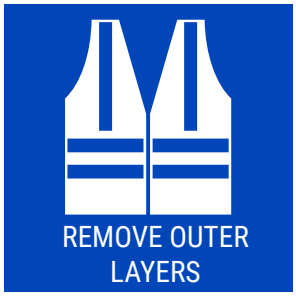
In extremely hot conditions, the following thermally conditioned clothing might be used:

- Vest that receives cooled air from a vortex tube connected to an external compressed air source.
- Jackets or vests with reusable ice packs or phase change cooling packs in the pockets.



EMERGENCY RESPONSE PROTOCOLS

First aid for heat-related illnesses involves essential principles aimed at providing immediate relief and support to affected workers. These include promptly moving the worker to a cooler area, actively cooling them by methods such as cold water immersion or ice baths, removing outer layers of clothing, applying ice or cold wet towels to specific areas, ensuring air circulation with fans, and never leaving the worker unattended. Offering comprehensive training on heat-related illnesses is crucial for proper response and management. In case of uncertainty or severe symptoms, it is vital to call for professional medical assistance, such as dialing 911, to ensure prompt and appropriate care.



Recognizing the symptoms of heat illnesses is essential for everyone. If any of these symptoms are observed in an individual, it is crucial to provide immediate medical attention without attempting to diagnose the specific illness. The complexity and overlapping nature of symptoms make timely action vital. Heat-related symptoms can rapidly worsen and potentially lead to fatal consequences. Therefore, swift response and prioritizing medical attention are of utmost importance in ensuring the well-being and safety of individuals experiencing heat-related symptoms.

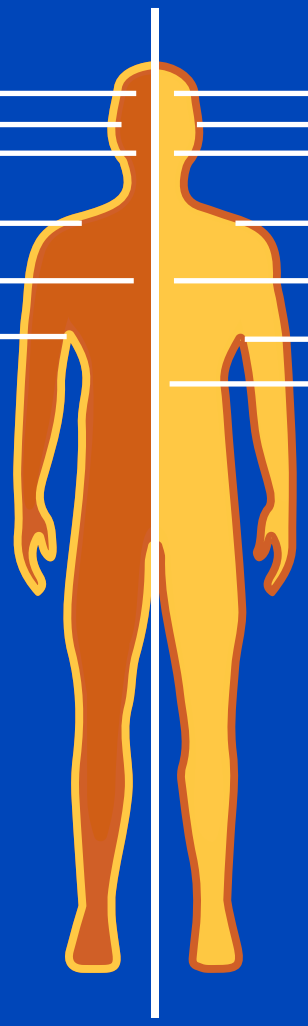
Training your employees to recognize the symptoms of heat-related illnesses is vital for quick action to be taken.

HEAT STROKE SYMPTOMS

- Confusion
- Unconsciousness or Seizures
- Slurred Speech
- Very High Body Temperature
- Rapid Heart Rate
- Extreme Sweating or Hot, Dry Skin

Heat Stroke is the result of the body no longer being able to control its temperature. The body's temperature elevates, the sweating body system fails, and the body is not able to cool down.

Heat Stroke can be fatal if emergency treatment is not received.



HEAT EXHAUSTION SYMPTOMS

- Dizziness or Lightheadedness
- Irritability or Fatigue
- Thirst
- Higher Body Temperature
- Fast Heart Rate
- Heavy Sweating
- Nausea or Vomiting

Heat Exhaustion is the body's response to excessive loss of water and salt.
It is most likely to affect people with high blood pressure and those working in a hot environment.

OTHER HEAT ILLNESSES	SYMPTOMS
HEAT CRAMPS	Muscle Spasms or Pain - Usually in legs, arms, or trunk
HEAT SYNCOPE	Fainting, Dizziness
HEAT RASH	Clusters of Red Bumps on Skin - Often on Neck, Upper Chest, and Skin Folds
RHABDOMYOLYSIS (Muscle Breakdown)	Muscle Pain, Dark Urine or Reduced Urine Output, Weakness

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It is crucial to keep in mind that the tips provided are a foundation, and customizing heat safety measures to suit the unique requirements and conditions of your workplace is imperative. Regular assessment and updating of protocols should be conducted, taking into account ongoing risk assessments and feedback from workers. This ensures a continuous improvement process in protecting workers from heat-related accidents and maintaining a safe working environment. By staying proactive and adaptable, you can enhance the effectiveness of your heat safety measures and prioritize the well-being of your workforce.

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