

TIPS FOR HEAT ILLNESS PREVENTION

INTRODUCTION

Extreme temperatures during summer months can impact worker safety, putting them at a greater risk for heat-related illnesses. Construction teams should prepare adequate measures to protect their craft workers and construction personnel. A heat illness prevention plan provides project leadership teams guidance on how to recognize, evaluate, and control potential heat stress conditions in their construction crews. Following are some of the key points to this plan.

INSTRUCT WORKERS ON HEAT-RELATED ILLNESSES

Construction project leadership and construction workers may not know the signs of heat illness or how to mitigate the issue. Vaughn Construction's program includes hosting town hall discussions, presenting a training video, and conducting virtual trainings in small groups. We host virtual town hall meetings to discuss the heat illness prevention policy with everyone from project management to craft workers. On every job site, we present a standard training video, geared towards craft workers, that describes the symptoms of heat illness and how to mitigate complications. Our safety department personnel lead small group virtual trainings that involve all workers on a project. On large projects, we provide these in-depth trainings in person. The program's goal is to instruct workers and project leadership on the symptoms of the varying levels of heat illness and the proper course of action. Workers and project leaders take heat illness prevention more seriously when they understand how it impacts them. Following are some of the heat-related illnesses, signs, symptoms, and actions to mitigate them:

HEAT RASH	
Signs and symptoms <ul style="list-style-type: none">▪ Looks like clusters of pimples or blisters▪ Appears often on the neck, upper chest, groin, or elbow creases	Actions <ul style="list-style-type: none">▪ Move to a cooler, less humid work environment▪ Dry the affected area <p>TIP: Do not apply ointments as they can make it worst</p>
HEAT CRAMPS	
Signs and symptoms <ul style="list-style-type: none">▪ Heavy sweating▪ Muscle pains	Action <ul style="list-style-type: none">▪ Move to a cool area▪ Replace fluid loss with water or carbohydrate electrolyte replacement liquids▪ Wait for cramps to cease before continuing work
HEAT EXHAUSTION	
Signs and symptoms <ul style="list-style-type: none">▪ Headache▪ Nausea▪ Weakness▪ Irritability▪ Dizziness▪ Thirst▪ Heavy sweating▪ Cold, pale, and clammy skin▪ Elevated body temperature▪ Decreased urine output	Actions <ul style="list-style-type: none">▪ Move to a cool area and drink appropriate liquids▪ Apply cold compresses to the head, face, and neck▪ Loosen clothes
HEAT STROKE	
Signs and symptoms <ul style="list-style-type: none">▪ Body temperature of 104 degrees Fahrenheit or higher▪ Lack of sweating▪ Slurred speech▪ Confusion▪ Loss of consciousness▪ Seizures	Actions <ul style="list-style-type: none">▪ Get medical help immediately.▪ Move worker to a shady, cool area.▪ Remove as much clothing as possible.▪ Circulate the air to speed cooling.▪ Place cold wet cloths or ice all over the body or soak workers clothes in water.▪ Do not give them liquids!

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The OSHA Heat Index app can be used to measure the heat index for the day and provide useful protocols in the event of a heat-related illness or emergency. By empowering employees to protect themselves and watch out for the well-being of their teammates, they will be much safer. Some things workers can do to avoid heat-related illnesses include:

- Hydrate (and hydrate some more)
- Avoid or limit caffeine intake
- Wear sunscreen and appropriate clothing
- Take cover from the harsh sun
- Acclimate to the hot weather
- Eat a light and healthy lunch
- Pay attention to the warning signs.

MAINTAIN A COOLER JOB SITE THROUGH ENGINEERING CONTROLS

Engineering controls are a construction team's most significant measure against heat-related illness. Through the controls listed below, various work environments can be made cooler, which keeps projects on schedule:

- Use reflective heat shields and insulation to reduce radiant heat. You can use insulation and surface modifications to substantially reduce radiant heat from sources like heating pipes.
- Shade work areas, rest areas, and other enclosures to significantly decrease heat load and radiant solar heat.
- Set up misting fans, which produce a spray of fine water droplets, on the project site.
- Use mechanical equipment like forklifts to reduce manual work.
- Place air conditioning and air treatment devices where possible. Portable blowers with a built-in air chiller are effective for cooling enclosures like asbestos abatement areas. Blowers are advantageous at times due to their portability and minimal set-up time.
- Place exhaust fans in the walls or roof of a building to reduce temperature levels. In smaller areas, portable or local exhaust systems may be more effective and practical.
- Reduce heat stress by increasing the airflow and velocity with fans and other movers in the work area. The air flow must contact the worker directly to be effective.

IMPLEMENT ADMINISTRATIVE CONTROLS

Beyond the engineering controls described above, project teams can implement further administrative measures like the ones below:

- **Schedule modification.** If possible, perform potentially hot jobs when heat stress conditions are at their minimum. Schedule work for the cooler part of the day. Perform routine maintenance and repair work in hot areas during the cooler seasons of the year.
- **Fluid replacement.** Place ample supplies of liquids, preferably water, close to the work area. Encourage workers to frequently drink small amounts of water. The recommended intake is between four and six ounces of water every 20 minutes. Additionally, commercially available balanced electrolyte replacements are perfectly acceptable when diluted 50 percent in water.
 - » NOTE: Under most circumstances, fluid intake should not exceed six cups per hour or 12 quarts per day.
- **Acclimation.** Progressively expose employees to working in a hot environment. After a short period of adjustment, most people become accustomed to heat exposure. This process, called acclimation, results in less cardiovascular demand for a given activity. The worker will sweat more efficiently and may lose less salt, and thus will more easily maintain normal body temperature.
- The National Institute of Occupational Safety and Health (NIOSH) recommends the following regimen:
 - » For workers who, in the past two weeks, have worked on a job site where heat levels may produce heat stress, schedule the worker for 50 percent of normal exposure on day one, 60 percent on day two, 80 percent on day three, and 100 percent on day four.

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- » For new workers, or those who have not worked recently in hot environments, schedule the worker for 20 percent of normal exposure on day one, 40 percent on day two, 60 percent on day three, 80 percent on day four, and 100 percent on day five.
- **Recovery areas.** If a worker shows signs of heat stress, move worker to a cooler recovery area to permit the dissipation of stored body heat. After an individual experiences heat stress, their physiological state needs to return to its pre-exposure condition, which means their excess body heat has been dissipated, lost fluid has been replaced, and electrolytes are in balance.
- **Buddy system.** Put employees in pairs or small teams so they can observe each other for signs of heat-related disorders. Employees may also share activities to reduce the workload on any one individual.
- **Other administrative controls.** Increase the number of workers assigned to a task, use relief workers to reduce physical exertion, and limit worker occupancy in confined areas.

PROVIDE PERSONAL PROTECTIVE EQUIPMENT

In most cases, heat stress should be reduced by engineering or administrative controls. However, special cooling devices, like those listed below, also can protect workers in hot environments:

- Insulated suits
- Reflective clothing
- Cooling neck wraps
- Vests with reusable icepacks.

COMMUNICATE THE HIERARCHIES OF RESPONSIBILITY

Everybody should know their role in preventing heat-related illness. Project leaders should serve as day-to-day role models for other workers. Their actions and behavior may influence their subordinates, particularly employees just arriving at the project site who may not be fully acclimated to the heat. The breakdown below delineates responsibilities:

- Project managers and superintendents ensure guidelines are implemented and administered to the extent feasible on the project.
- Site safety personnel train employees on heat illness detection and prevention and provide guidance to operations personnel.
- Front-line supervisors regularly monitor the condition of each employee assigned to them. They should pay attention to the employee's task, environment, and clothing, as well as any engineering and administrative controls and personal protective equipment in use.
- Employees should monitor their own conditions, since no empirical measure can determine when an individual senses heat stress.

The implementation of heat illness prevention training should be consistent from project to project, to increase accountability and awareness. A good program improves the contractor's ability to maintain safe working conditions for all their personnel and trade contractors, resulting in better outcomes for the project.

ABOUT VAUGHN CONSTRUCTION

Vaughn Construction is a Texas-based construction company that specializes in new construction, renovations and additions to civic, health-care, education and research facilities. The privately-held company has offices in Austin, Bryan/College Station, Dallas/Fort Worth, El Paso, Houston, Lubbock, San Antonio, and the Texas Medical Center (Houston).

For additional information, visit www.vaughnconstruction.com.