
GLENN COUNTY HEALTH AND SAFETY

HEAT STRESS POLICY

Glenn County is committed to the health and safety of its staff, with the objective to provide a safe and healthful work environment.

In keeping with this objective, and in compliance with California Code of Regulations, Title 8, Section 3395, Glenn County establishes the attached procedures to address and minimize the detrimental effects of excessive heat on Glenn County employees and/or volunteers who are required to work in high heat environments during periods of elevated temperatures.

This policy applies to all Glenn County employees and/or volunteers who are required to work in the above described conditions, and who shall also conform to CCR Title 8, Section 3395 and the attached procedures.

Any questions regarding the implementation of the attached procedures should be referred to the Glenn County Safety Officer.

INTRODUCTION:

Working in environments of extreme temperatures can lead to heat-related illnesses and injuries. Several factors influence the risk of the illnesses and injuries, including but not limited to the following:

Ambient Temperature: This is the naturally occurring temperature. When working indoors, heating, ventilation and air conditioning systems can be used to control the temperature and limit the risk of heat or cold related illnesses and injuries. Working in conditions of temperature extremes outdoors requires the implementation of other types of controls to limit the risk of illness or injury.

Relative Humidity (RH): This is the ratio of the actual amount of moisture in the air compared to the amount of moisture the air could hold if completely saturated at the same temperature. Elevated relative humidity levels increase the sensed temperature impact; cold temperatures feel colder and hot temperatures feel hotter when humidity levels are elevated above 60% RH. (See Table 1 below.)

Work Activity: As employees expend more energy, the body's internal metabolic heat production rises. This increases stress on the cardiovascular system to regulate body temperature (i.e. by increasing blood flow to skin). Work-related factors that influence heat stress include work rate, level of physical effort, and duration of activity.

Clothing: Clothing adds insulation to the body. During hot weather, layers of clothing will increase our level of discomfort and increase the risk of suffering heat related illness or injury. Selecting the appropriate clothing for the anticipated work activity will reduce the probability of the occurrence of these incidents. Other factors that may increase the risk of heat-related

disorders include additional equipment, the use of a respirator, or other personal protective equipment (PPE).

Personal Characteristics: Characteristics such as age, weight, previous heat stress injury, underlying medical conditions (e.g. diabetes, cardiovascular disorders, chronic pulmonary disease, and thyroid disorders), medication use and overall health and physical fitness contribute to an employee’s susceptibility of contracting a heat-related illness.

Table 1: Apparent temperature, Heat Stress Index

Relative Humidity	Environmental Temperature									
	70	75	80	85	90	95	100	105	110	115
0%	64	69	73	78	83	87	91	95	99	103
10%	65	70	75	80	85	90	95	100	105	111
20%	66	72	77	82	87	93	99	105	112	120
30%	67	73	78	84	90	96	104	113	123	135
40%	68	74	79	86	93	101	110	123	137	151
50%	69	75	81	88	96	107	120	135	150	
60%	70	76	82	90	100	114	132	149		
70%	70	77	85	93	106	124	144			
80%	71	78	86	97	113	136	Extreme Danger			
90%	71	79	88	102	122					
100%	72	80	91	108						

 **Extreme Caution**
 **Extreme Danger**

<u>Category</u>	<u>Apparent Temperature (F)</u>	<u>Dangers</u>
Extreme Danger	Greater than 120	Heat stroke imminent
Danger	105 – 120	Heat exhaustion likely
Extreme Caution	90 – 105	Heat cramps, exhaustion possible
Caution	80 -90	Exercise more fatiguing than normal

HEAT-RELATED DISORDERS

The primary ways the human body regulates high temperatures are through blood flow and sweating. Blood is circulated to the skin, increasing the skin temperature and allowing the body to give off the excess heat through the skin. When the body senses the heat loss due to increased blood circulation is not enough to cool the body sweating occurs. Evaporation of the sweat cools the skin and eliminates large quantities of heat from the body.

If the body is unable to release excess heat, it will store it. When this happens, the body’s core temperature rises and the heart rate increases. If the body continues to store heat the person may begin to have difficulty concentrating, may become irritable and lose the desire to drink fluids.

Listed in Table 2 below are the common heat-related disorders, along with the accompanying symptoms and appropriate first aid treatment.

Table 2: Signs and Symptoms of Heat-Related Disorders

DISORDER	SIGNS	SYMPTOMS	TREATMENT
Dehydration	<ul style="list-style-type: none"> • Loss of work capacity • Delayed response to stimuli 	<ul style="list-style-type: none"> • Fatigue • Weakness • Dry mouth 	<ul style="list-style-type: none"> • Rest • Drink cool fluids such as water or sports beverages
Heat rash	<ul style="list-style-type: none"> • Skin eruptions 	<ul style="list-style-type: none"> • Itching skin, prickly sensation 	<ul style="list-style-type: none"> • Provide cooler, less humid environment • Keep affected area dry • Use dusting powder to increase comfort
Heat Cramps	<ul style="list-style-type: none"> • Incapacitating pain in muscle 	<ul style="list-style-type: none"> • Muscle cramps (abdominal and lower extremities) • Fatigued muscles 	<ul style="list-style-type: none"> • Drink water • Massage cramped area • Rest
Heat Exhaustion	<ul style="list-style-type: none"> • High pulse rate, confusion, anxiety • Profuse sweating • Low blood pressure • Pale face, or flushing • Body temperature increased but below 104 degrees F. • Excessive thirst, decreased urine output 	<ul style="list-style-type: none"> • Fatigue, malaise • Weakness • Blurred vision • Dizziness • Headache • Nausea • Loss of appetite 	<ul style="list-style-type: none"> • Move to shade or air conditioned space • Rest, lying down legs elevated • Loosen clothing • Drink water • Get medical treatment if symptoms worsen or last longer than 1 hour.
Heat Stroke	<ul style="list-style-type: none"> • Red face • Mental status changes such as Disorientation, Confusion or irritability • Hot, dry skin • Erratic behavior • Collapse • Shivering • Body temperatures greater than 104 degrees F. 	<ul style="list-style-type: none"> • May be same as those for heat exhaustion (see above) 	<p>MEDICAL EMERGENCY</p> <ul style="list-style-type: none"> • Immediately call for emergency help • Get victim to shady area • Place victim in cool water • Massage body with ice

RESPONSIBILITY

DEPARTMENTS

Departments are responsible for:

- Ensuring employees working in high heat environments during periods of elevated temperatures take the necessary precautions and that appropriate controls measures described in this policy are implemented.
- Provision of sufficient drinking water, at least 1 quart per employee per hour.
- Provision of shade for employees who feel they need a preventative recovery break. Those employees may rest for at least 5 minutes in the shade. (Shade is sufficient when the object does not cast a shadow in the shaded area and there is sufficient space for the employee to be comfortable. Shade is not adequate if the temperature in the shaded area prevents cooling.)

SUPERVISORS

Supervisors are those primarily responsible for the implementation of this program within their division, unit, etc. Supervisors have the ultimate responsibility for the safety of their employees. Their duties related to the prevention of heat-related disorders include but are not limited to the following:

- Evaluation/scheduling of work to be performed;
- Employees ready access to drinking water, at least 1 quart per employee per hour;
- Encouraging workers to drink water frequently;
- Provision of shade for preventative recovery breaks;
- Ensuring self and employees are familiar with signs, symptoms and appropriate first aid treatment for heat-related disorders;
- Employee acclimatization;
- Work/rest regimes;
- Ensuring employees receive Heat Stress Training;
- Monitoring for signs and symptoms of heat-related disorders in their employees; and
- Ensuring the guidelines of this policy and procedure are followed when working outdoors during periods of elevated temperatures.

EMPLOYEES

Employees who work in high heat environments during periods of elevated temperatures have the following responsibilities:

- Participate in heat stress training. Learn the signs and symptoms of heat stress, as well as the risk factors and first-aid treatments.
- Take extra precaution if you are at high risk. High risk factors include being older, overweight, overexertion, chronic medical conditions including diabetes, heart or lung disease, thyroid disease, or high blood pressure. If you take medications you should check with your doctor to see if any of the medications put you at a higher risk for heat-related disorders.
- Compliance with this policy and procedure. Following the preventative measures listed in this policy as well as the County's Heat Stress Training.
- Take time to acclimate to the heat and/or humidity. You will have a greater tolerance for heat if you limit your physical activity until you have become accustomed to the heat.
- Stay hydrated by drinking small amounts of cool water frequently throughout the day. Consider periodically supplementing some of your water with a sports beverage to ensure the minerals and electrolytes your body needs. Be aware of sports beverages as they contain high levels of salts and sugar, check with your physician before consuming these.
- Wear appropriate clothing. Choose light weight, light colored loose-fitting clothing.
- Monitoring self for signs and symptoms of heat-related disorders.
- Pace yourself.

PROCEDURES

PREVENTATIVE CONTROLS

Controls are mechanisms that are implemented to minimize or eliminate exposures to hazards, such as heat. There are three types of controls that can be implemented: Administrative, Engineering and Personal Protective Equipment (PPE). The following are types of controls that may be used to reduce exposure to heat hazards and heat-related

illnesses and injuries. Each person and situation is unique, so controls and their applications may vary.

ADMINISTRATIVE CONTROLS

Administrative controls are strategies used by supervisors to limit exposures to a hazard. For example changes to work schedules can limit the amount of time an employee is exposed to the elevated temperatures. The following are all examples of administrative controls:

1. Training – This is the key to good work practices. Unless all employees understand the reasons the chances of a program succeeding are greatly reduced. A good heat-stress training program should include the following:
 - a. Knowledge of the hazards of heat stress;
 - b. Recognition of predisposing factors, danger signs, and symptoms;
 - c. Awareness of first-aid procedures for, and the potential health effects of, heat stroke;
 - d. Employee responsibilities in avoiding heat stress;
 - e. How to provide directions to work location;
 - f. Dangers of using drugs, including therapeutic ones, and alcohol in hot work environments; and
 - g. Use of protective clothing.
2. Acclimatization - Employees need to adapt to new temperatures. This adaptation period may take a few days.
3. Weather Conditions - Check weather conditions frequently during the day and adjust the work schedule. It might be appropriate to change the actual hours of work to minimize working during the heat of summer months. Heavy work should be scheduled for the cooler hours of the day.
4. Work/Rest Cycles - Heavy and minimal work activities should be alternated. Tasks should be rotated among workers. Employees should be allowed sufficient breaks in a cool area to avoid heat stress and promote recovery. Shade or an air-conditioned break room should be provided. (This air conditioned environment must already have the air conditioner running and be cooler than outside.) Employees who feel as though they are suffering from heat-related disorders shall be given recovery breaks in a shaded area and provided first aid treatment appropriate for their symptoms.
5. Fluid Intake - Cool fluids such as water or electrolyte replacement drinks need to be conveniently available to workers so they can drink about 8 oz. of liquids every 20 minutes. The ideal temperature for liquids should be 50 - 60 F. For remote outdoor work locations this means providing these fluids in such a way that can be transported by employees with them to the location. There should either be enough fluids on hand for all employees or the ability and procedures to replenish this supply throughout the day.

ENGINEERING CONTROLS

Engineering controls are physical changes made to the work environment. Heat may be controlled through general ventilation and spot cooling by local exhaust ventilation at the point of high heat production. Shielding may be needed for protection against radiant heat sources. Another control measures would be the use of fans to create air flow. Outdoor work areas must have a shaded area accessible to the employees. Shaded areas can be created by using tarps or canopies. To be considered “shade” the employee must not cast a shadow while in the shade.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Some examples of PPE that help in the prevention of heat-related disorders include hats, loose-fitting clothing, cool vests, etc.

In some cases PPE such as impermeable clothing, respirators, coveralls, etc. may increase the risk of developing a heat-related disorder. This type of equipment shall be used when necessary. When use of this type of PPE is necessary during work outdoors in high temperatures, other administrative or engineering controls should be considered to reduce the risks associated with the development of heat-related disorders. Contact your supervisor or the Glenn County Safety Officer for assistance with these issues.

When selecting appropriate clothing consider the work you will be doing and any other hazards associated with the job. (i.e. be careful that the loose fitting clothing is not too loose fitting, you do not want to create another hazard of clothing that could get caught in moving parts and or equipment.)

MONITORING FOR SIGNS AND SYMPTOMS OF HEAT STRESS

Supervisors, co-workers and employees themselves are all responsible for monitoring for the signs and symptoms of heat-related illnesses. See the above table for signs and symptoms of heat related illnesses. Supervisors and co-workers are often in the best position to observe the on-set of heat-related illnesses in co-workers.

- When heat stress risks are present supervisors should check workers regularly (by observation and questions) for signs and symptoms of heat stress.
- Monitor yourself for the signs and symptoms of heat-related illnesses, such as taking your own pulse.
- When working in heat, use a buddy system. Monitor the condition of your co-workers and have someone do the same for you.
- Supervisors should check to ensure that employees are self-monitoring and ask for their determinations.

CONTACTING EMERGENCY MEDICAL SERVICES

If emergency medical services are needed staff should contact the following:

Glenn County Sheriff's Dispatch

530-934-6431 OR 911

Glenn Medical Center – Emergency Room

530-934-1800

When contacting emergency medical services staff should give clear and concise directions to the work location. If working in locations without physical street addresses staff should be familiar with information such as the closest cross streets, etc. Please remember those taking the directions or responding to calls for emergency services may not be familiar with references such as "Old Man Johnson's place".

TO LEARN MORE

Employers and employees seeking further and revised information on the topic of Heat Stress should review the following resources:

- Cal OSHA's Heat Illness Prevention Regulations at <http://www.dir.ca.gov/Title8/3395.html>;
- Cal OSHA's Heat Illness Prevention outreach and education information at <http://www.dir.ca.gov/DOSH/HeatIllnessInfo.html>;
- Working in Extreme Temperatures course on MemberLink; or
- Heat Illness resources in the File Center in MemberLink.