

Town of Kernersville Safety and Health Policy and Procedure Manual	Heat Stress Policy Section 0140	Date 1/06	Revised 08/25
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I. Introduction

The Town of Kernersville is committed to the health and safety of employees. The goal of this Policy is to minimize the detrimental effects of excessive heat on employees who are required to work outdoors or within indoor environments with elevated temperatures. Background information is also included. Effective measures to prevent heat stress vary by job duties and the work environment. See Appendix A for *Suggested Measures to Prevent Heat Stress*.

II. Causes

Heat Stress is influenced by several risk factors: climatic conditions, the work environment, demands of the work, clothing and personal characteristics.

- **Climatic and environmental conditions** that affect the risk of heat-related disorders are air temperature and humidity, air movement, and the temperature of surrounding surfaces which affects radiant heat exchange.
- **Demands of the work** influence the stress on the temperature regulation system. Individual responses to a given work load vary but, as an employee expends 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 type of work and duration of activity.
- **Clothing** characteristics such as insulation, permeability, weight, fit, color and ventilation affect the body's ability to regulate internal temperatures. 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** 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. Employee's personal decisions such as what you drink, eat, and if you smoke or not can greatly affect your risk of a heat related illness.

Working in an environment with heat stress not only increases the risk for specific heat related conditions such as heat exhaustion and heat stroke, but also increases the risk for other adverse events. A study conducted by NIOSH (National Institute for Occupational Safety and Health) links the signs of heat stress (e.g., lower mental alertness and physical performance) to an increase in workplace accidents.

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III. Signs and Symptoms of Heat-Related Disorders

Heat related disorders may occur when there is an exposure to heat risk factors. The chart below illustrates some of the signs and symptoms associated with heat stress. If the employee is experiencing any of these symptoms (excluding heat rash), the employee should seek medical treatment immediately.

Disorder	Signs	Symptoms
Dehydration	Loss of work capacity Delayed response to stimuli	Fatigue Weakness Dry mouth
Heat Exhaustion	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	Fatigue, malaise Weakness Blurred vision Dizziness Headache Nausea Loss of appetite
Heat rash	Skin eruptions	Itching skin, prickly sensation, redness
Heat Stroke	Red face Mental status changes such as Disorientation, Confusion or Irritability Hot, dry skin Erratic behavior Collapse Shivering Body temperature >104 F	May be same as those for heat exhaustion (see above)
Heat Cramps	Incapacitating pain in muscle	Muscle cramps (abdominal and lower extremities) Fatigued muscles
Heat Syncope	Brief fainting or near fainting behavior	Blurred vision

ANY QUESTIONS REGARDING HEAT-RELATED HEALTH DISORDERS (SIGNS, SYMPTOMS, PREVENTION, OR TREATMENT) SHOULD BE DIRECTED TO YOUR SUPERVISOR OR THE SAFETY ADMINISTRATOR.

IV. Preventive Controls

A control is a mechanism used to minimize or eliminate an exposure to a hazard, such as heat. There are three types of controls (e.g. engineering, administrative and personal protective equipment) that can be implemented to reduce exposure to excessive heat. Each person and situation is unique, so controls and their application will vary. Suggested controls are given in Appendix A (*Suggested Measures to Prevent Heat Stress*). Contact

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your supervisor for help in selecting the most appropriate preventive measures for your work.

V. Administrative Controls

Administrative controls, also known as work strategy controls, are strategies used by supervisors to limit exposure to a hazard. For example, changes to the work schedule (i.e., when and how the job is performed) can limit the amount of time an employee is exposed to elevated temperatures. For additional information regarding Responder Rehabilitation for the Fire Department personnel, see Appendix A.

Engineering Controls

Engineering controls are physical changes made to the work environment, such as adding fans or air conditioning to an indoor environment.

Work Practices and Person Protective Equipment

Other than hats, cooling towels and loose-fitting clothing, there is a limited selection of personal protective equipment to reduce the risk of heat stress. Contact your supervisor for help in evaluating the effectiveness of available personal protective equipment.

In some cases, personal protective equipment such as impermeable protective clothing and respirators may increase the risk of developing a heat-related disorder. If such PPE is truly necessary, administrative and engineering controls may be necessary to allow work in heat risk environments. Contact your supervisor for help with these decisions.

VI. Responsibilities for Monitoring for Signs and Symptoms

All Employees

Supervisors, coworkers and employees themselves are responsible for monitoring for the signs and symptoms of heat-related disorders. See the above table for information on recognizing the signs and symptoms of impending heat stress. A supervisor or coworker is often in the best position to observe the onset of a heat-related disorder.

- When heat stress risks are present, supervisors should regularly check workers (by observation and questions) for signs and symptoms of heat stress.
- Take extra care to monitor those at high risk, such as employees who are older or overweight, employees who overexert themselves, and employees with chronic medical conditions including diabetes, heart or lung disease, thyroid disease or high blood pressure. Employees who take certain medications may also be at increased risk and need to check with their physician.
- If you need to work outdoors or within indoor environments with elevated temperatures, monitor yourself for the signs and symptoms of heat-related illness, such as taking your own pulse.

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- Use a buddy system. When working in the heat, monitor the condition of your coworkers and have someone do the same for you.
- Supervisors should check to ensure that employees are self-monitoring, and ask for their determinations.

Department Head and Supervisor

Departments with employees who must work outdoors or in environments with extreme heat are required to address heat stress by providing detailed information to their employees on:

- Recognition of heat stress and risk factors.
- Preventive measures that will be used during periods of exposure to excessive heat. The choice of effective preventive measures will depend on the work being done, the work environment, and the people doing the work.
- Fluid replacement.
- How an employee can determine if they are experiencing the signs and symptoms of heat stress (i.e., self monitor).

Supervisors are required to provide initial heat stress training for each employee who must work outdoors or in environments with extreme heat. Documentation of this initial training shall be submitted to Safety Administrator. During the warm season, supervisors should closely monitor their staff to ensure compliance with this policy and evaluate if any additional measures are needed.

Cool water should be immediately available to any employee who is required to work outdoors or within indoor environments with excessively hot temperatures.

Employee Responsibilities

Employees who work outdoors or within indoor environments with elevated temperatures have the following responsibilities.

- Participate in your department's heat stress training. Learn the signs and symptoms of heat stress, as well as risk factors.
- Take extra care if you are at high risk. You may be at increased risk if you are older or overweight, you overexert, you have a chronic medical condition 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 you are at increased risk because of the effects of these medications.
- Take time to acclimate to heat and humidity. A heat wave is stressful to your body. You will have a greater tolerance for heat if you limit physical activity until you become accustomed to it.
- Stay hydrated by drinking small amounts of cool water frequently, to relieve thirst and maintain adequate urine output.
- Wear appropriate clothing. Choose lightweight, light-colored, loose-fitting clothing.
- Pace yourself. Start slowly and pick up the pace gradually.

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- Monitor yourself for the signs and symptoms of heat-related illness, described above.
- When working in the heat, monitor the condition of your co-workers. Ask your coworker to do the same for you.
- Promptly report to your supervisor any known or suspected unsafe conditions, or unsafe procedures.

Safety Administrators Responsibilities

Periodically, the Safety Administrator will evaluate the workplace for heat stress risk and recommend ways to manage exposure to heat. Temperature exposure, the demands of the work, and protective equipment will be evaluated. Recommendations will address controls and safe exposure times and for a given level of heat stress.

Employee training will also be coordinated with departments during warm seasons.

VII. Train Employees Who Are At Risk of Heat Stress

Heat stress training should include:

- A review of heat-related disorders and their risk factors.
- Recognition of the signs and symptoms of heat-related disorders, and the importance of monitoring for them.
- Preventive measures that will be used.
- Fluid replacement options and expectations.

VIII. Issue Heat Alerts

When conditions are present that contribute to heat stress, departments and work units are to alert at risk employees and implement their preventive measures for working in heat. The alert should include a reminder of signs and symptoms, how to control exposure, and a re-emphasis of the preventive work strategies to be followed.

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Appendix A

SUGGESTED MEASURES TO PREVENT HEAT STRESS

The Town of Kernersville is committed to the health and safety of our employees. The guidance below compliments the Town's *Heat Stress Policy*. Together, these documents will help to minimize the detrimental effects of excessive heat on Town employees who are required to work outdoors or within indoor environments with elevated temperatures.

There are many steps that can be taken to prevent heat stress. Some of these steps can be taken by the employee, while other preventive measures can be implemented by supervisors and departments. Work environments can be changed to reduce the risk of heat stress. Every situation is different. The best combination of ways to prevent heat stress depends on the particular work being done, the environment in which it must be done, and the employees doing the work. Consider the following suggestions below to find the best combination of ways to prevent heat stress for your situation.

Preventive Measures Employees Can Take

Employees should take special precautions to avoid heat-related illness in unusually hot weather when working outdoors or in unconditioned indoor environments. People suffer heat-related illness when their bodies are unable to regulate internal body temperature. In hot weather, the body normally cools itself by sweating. Under some conditions, however, sweating isn't enough. Such conditions include high humidity, where air movement is limited, working in the direct sun, heavy physical exertion and poor physical condition. Some medical conditions and medications can also reduce the body's ability to tolerate heat. Still, heat-related illness is preventable by following these guidelines when working outdoors in hot weather:

- Drink small amounts of cool water frequently (every 15 minutes) to prevent dehydration. Drink throughout the day to relieve thirst and maintain an adequate urine output.
- Plain water is usually adequate without need to take additional salt or minerals beyond those in your diet. A sports beverage can replace the salt and minerals you lose in sweat. These types of drinks should be limited.
- Wear appropriate clothing. During periods of elevated temperature, employees should wear light-colored, lightweight, loose-fitting cotton clothing that allows ventilation of air to the body.
- Protect yourself from the sun by wearing a wide-brimmed hat. (Sunglasses and sunscreen—SPF 15 or higher—are also recommended.)
- Pace yourself. Start slowly and pick up the pace gradually.
- Stand or sit up slowly. Flex leg muscles before moving.

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- Take time to cool down with frequent breaks in excessive heat. Rest often in shady areas.
- Take time to acclimate to heat and humidity. A heat wave is stressful to your body. You will have a greater tolerance for heat if you limit physical activity until you become accustomed to it. Acclimation to a stressful environment may take days or weeks. Gradual adaptation improves the employees' ability to tolerate heat by sweating more efficiently, thus cooling the body and making it easier to maintain a normal temperature.

Signs and symptoms of heat-related illness include headache, dizziness, lightheadedness, fainting, weakness, malaise, mood change, mental confusion or irritability, nausea or vomiting, rapid pulse and excessive sweating or lack of sweating with hot dry skin. An employee experiencing any of these signs or symptoms should seek medical attention as soon as possible.

Preventive Measures Supervisors Can Take

As explained in the Town's *Heat Stress Policy*, departments and supervisors with employees who normally work outdoors or in unconditioned indoor environments need to address heat stress in their area and review preventive measures to lessen the effects of heat stress.

Preventive measures that can be implemented by a supervisor are also called *administrative controls* or work strategy controls. Administrative controls are strategies using managerial involvement to limit exposure to a particular hazard. In the case of heat stress, administrative controls limit the amount of time an employee is actually exposed to elevated temperatures. Administrative controls can be changes to how the job is performed, or work schedule changes to when the job is performed.

Rest and Cool Down Breaks

Consider changes to your break practices to lower the risk of heat stress. Possible changes during heat-stressed conditions include:

- Encourage employees to take breaks and hydrate any time they feel necessary.
- Pace the job to allow more frequent breaks for fluid intake and sufficient recovery time.
- Take a break in a shaded area, air conditioned building or vehicle.

Work Schedule Changes

Consider changes to your work to lower the risk of heat stress. Possible changes include:

- When feasible, departments can schedule routine maintenance and repair work, which exposes employees to heat-stressed conditions, until cooler periods of the day or cooler seasons. Limit sun exposure during mid-day hours.

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- If a job is essential for continuing operations, consider implementing a worker rotation schedule every hour or sooner. Allow sufficient recovery time for each worker.
- Implement summer work schedules (e.g., 6:00 a.m. to 2:00 p.m.).
- Permit heavy work only from 7:00 a.m. to 9:00 a.m. or earlier.
- Complete all other moderate to light work before 12:00 Noon.
- If extensive PPE is required, then those jobs should be scheduled for the cooler part of the day (i.e., early mornings).
- Supply additional PPE such as cooling towels or vests.

Other Preventive Measures in the Work Environment

Engineering controls are physical changes made to the environment. To minimize the risk of heat-related disorders, consider these steps:

- Open windows and add fans to increase air movement in order to provide air cooling and ventilation of heat.
- Shield radiant heat sources or local exhaust at the point of heat generation.
- Provide shaded areas during remote outdoor work (e.g., constructing temporary shelters using tarps)
- Equip tractors, lawnmowers, and other outdoor equipment with cabs or canopies.