

**North Carolina Department of Labor
Occupational Safety and Health Division**

Raleigh, NC

Field Information System

Operational Procedure Notice 141

Subject: Enforcement Guidance for Conducting Heat-Related Illness Inspections and Issuing Citations

A. **Purpose.**

This Operational Procedure Notice (OPN) provides NCDOL OSH Division guidance for conducting inspections and issuing citations associated with heat-related illness and potential heat-related illness in the workplace.

B. **Scope.**

This OPN applies to all inspections where there is the potential for employee exposure to conditions which could cause serious physical harm or death due to heat-related illness in employees.

C. **References.**

1. OSHA Technical Manual, Section III Chapter 4
2. National Institute for Occupational Safety and Health (NIOSH) Criteria Document 1986
3. North Carolina Department of Labor Industry Guide #35, A Guide to Preventing Heat Stress and Cold Stress
4. North Carolina OSH Field Operations Manual
5. American Red Cross – Heat Wave Preparedness
6. American Conference of Governmental Industrial Hygienists – Thermal Stress Guidance
7. OSHA Memo on Heat-Related Illness Inspections, August 19, 2011
8. Rhea, Sarah et.al. Journal of Community Health, Using Near Real-Time Morbidity Data to Identify Heat-Related Illness Prevention Strategies in North Carolina
9. OSHA, Using the Heat Index: A Guide for Employers
www.osha.gov/SLTC/heatillness/heat_index/pdfs/all_in_one.pdf

D. **Background.**

The U.S. Centers for Disease Control and Prevention (CDC) reported 423 heat-related deaths among workers in agricultural and non-agricultural worksites over a period from 1992-2006¹. In 2011 alone, four employees in North Carolina died from extreme heat exposure and two other employees suffered severe physical harm as a result of heat-related illness.

Heat-related illness generally occurs when body heat generated by physical work is exacerbated by ambient heat and humidity. Heat-related illnesses range from a mild form of heat cramps to heat stroke, which can lead to death. In NC, heat above 80 degrees Fahrenheit has caused serious injury or death, and could be likely to cause serious injury or death dependent on someone's level of exertion, hydration, and ability to maintain homeostasis and environmental conditions. Researchers in North Carolina have found that above 97 degrees, emergency department visits for heat-related illness increase rapidly in comparison to rates of visits for other conditions. The majority of work-related emergency department visits for heat-related illness in NC are among 19-45 year old males, on occasion the temperature was below 85 degrees Fahrenheit.⁽⁸⁾

Heat-related Illnesses: During the course of any heat-related investigation, Compliance Safety and Health Officers (CSHOs) may encounter a variety of heat-related illnesses such as the following:

- Heat Stroke
- Heat Collapse
- Heat Exhaustion
- Heat Rashes
- Heat Cramps
- Heat Fatigue

Typical indoor worksites where heat-related illnesses may occur include foundries, brick-firing and ceramic plants, glass production facilities, rubber products factories, electrical utilities (particularly boiler rooms), bakeries, confectioneries, commercial kitchens, laundries, food canneries, chemical plants, mining sites, and smelters. Outdoor operations conducted in hot weather, such as agriculture, landscaping, construction operations, asbestos removal, and hazardous waste site activities, especially those that require wearing protective clothing, also may cause heat-related illnesses among exposed workers.

E. Inspection Guidance.

During inspection activity, CSHOs should address heat-related illnesses at both indoor and outdoor worksites where potential heat-related hazards may exist, and inspections should include a review of the employers' plans to prevent heat-related illness.

1. Opening Conference.

During the opening conference, the CSHO will review OSHA 300 logs for the most recent three years including the current year for indications of heat stress conditions or heat-related illness such as heat stroke, fainting, and heat rash. If necessary, the CSHO will review the corresponding OSHA 301 or Workers Compensation Form 19. Additionally, the CSHO will request copies of first-aid logs and/or ask the employer about employee reported heat-related conditions such as cramps, headache, nausea, dizziness, weakness, irritability, confusion, thirst, heavy sweating or an increased body temperature.

2. Walk-through.

The CSHO must consider many factors to determine whether the employer has provided the employees with a place of employment and working conditions that is free of recognized hazards capable of causing death, serious illness or serious physical harm. Because there is no specific NCDOL OSH or OSHA standard which requires employers to establish a heat stress program, the CSHO must carefully document and describe the work environment and conditions to determine whether a General Duty Clause citation for heat stress should be issued. Factors the CSHO will evaluate and document in the case file include:

- Whether a heat stress prevention program has been established;
- Whether a heat acclimatization program has been implemented;
- Whether employees have access to an adequate supply of potable water;
- Whether employees have access to and use shaded areas, air conditioned rooms or vehicles, fans, or other means to cool themselves and/or the work environment;
- Whether employees are allowed to take an adequate number of rest periods;
- Whether the employer provides appropriate protective clothing such as cooling vests;
- Whether the employer provides training for employees and supervisory staff regarding heat stress conditions and symptoms of heat-related illness;
- Whether the employer and employees have an adequate first-aid training program and employees exhibiting signs and symptoms of heat-related illness are provided prompt medical treatment.

The following additional information will be documented in the case file:

a. Site Description.

CSHOs will document: the presence of heat producing equipment and processes, the presence and adequacy of ventilation systems such as air conditioning and the presence and use of mechanical fans; the availability of and access to potable water or other liquids; the availability of and access to shade; whether employees work outside in direct sun or inside without air conditioning and/or near heat producing equipment or processes.

b. Process Description.

The process description is a primary source of information related to a specific job that is being performed. The CSHO will document the process description to determine the tasks the employee performs and the work rate. The CSHO will also document whether the employer has established a work/rest strategy.

c. Environmental Factors.

The CSHO will document environmental risk factors and conditions that could affect working conditions and the worker's ability to perform work when heat is a factor.

The CSHO will evaluate the work environment for heat stress using the guidance provided in Section III, Chapter 4 of the OSHA Technical Manual.

If the investigation is related to an accident, fatality or other heat stress conditions that existed prior to the opening conference, the CSHO should obtain data regarding time, ambient temperature and relative humidity from weather experts such as the National Weather Service. If weather websites are used to obtain this information, the CSHO will gather and document data from at least two sources.

d. Physiological (Metabolic) Factors.

The impact of heat stress and the resulting heat strain is influenced by individual physiological factors. These factors include: type of clothing; age; weight; gender; body fat; physical conditioning; cardiopulmonary function; and drugs. The CSHO will document any personal protective equipment (PPE) and the personal clothing worn by employees in addition to noting other physiological conditions/items above that may add to the heat burden.

e. Employee Interviews.

The CSHO will conduct employee interviews and document any incidents of employees experiencing heat-related illness, information regarding heat stress training provided by the employer; access to water, shade and/or cooler areas, the ability to rest when needed or on a pre-determined work/rest schedule, and actions already taken by the employer to correct heat stress problems.

3. Recommended Heat Stress Prevention Program Elements.

For work environments in which either a heat-related illness or the potential for a heat-related illness can be documented and for which a General Duty Clause citation may be recommended, the CSHO will discuss the results of the inspection and recommend that the employer develop a heat stress prevention program. OSHA's heat stress guide for employers

may be a helpful tool and employers should be directed to it. The CSHO should also review the following examples of acceptable heat stress prevention program elements with the employer:

- a. Responsibilities of the employer and employees regarding working in hot, humid environments;
- b. Environmental factors and personal health factors that contribute to heat-related illnesses;
- c. Procedures for measuring air temperature and documenting effects of other environmental factors (humidity, wind strength, work location) by determining the Wet Bulb Globe Temperature (WBGT) Index or heat index using any tool or resource available including OSHA's heat safety tool smart phone app.;
- d. Guidelines for implementing a heat acclimatization process;
- e. Daily water/fluid requirements and management of the water/fluid allocation process;
- f. Training on the recognition of the signs and symptoms of heat-related illnesses;
- g. Reporting process when employees with heat-related illness symptoms are observed;
- h. Establishment of first-aid procedures;
- i. Establishment of emergency response procedures;
- j. Training for supervisors and employees on the requirements established in the heat stress prevention program.

F. Citation Guidance.

Any proposed citations for heat-related illnesses will be addressed by NCGS 95-129(1) commonly referred to as the General Duty Clause. General Duty Clause violations are limited to hazards that could cause death or serious physical harm or serious illness when there is no specific standard that applies, such as heat exposure. Heat-related illness violations can be issued for both indoor and outdoor work activities, but may only be issued when all of the required elements of a General Duty Clause violation (FOM Chapter 4 B.2) are documented **and** CSHOs can establish a link between the workplace exposure and the potential for heat-related illness.

For inspections where all the General Duty Clause elements cannot be established, the CSHO will send a Hazard Alert Letter to the employer. (See example in Appendix D.)

When evaluating an employer's existing heat stress prevention program, the CSHO will use the program elements in paragraph E.3. above. Because these elements are not mandated by a specific NCDOL OSH or OSHA standard, the CSHO may determine that an employer's program is adequate even when some of the elements above are absent. If the employer's existing heat stress program is found to be ineffective at preventing heat-related illness and the elements for a General Duty Clause violation can be established, the CSHO will issue a citation and list the specific program elements from E.3. above that assist the employer to create an adequate heat stress prevention program for the conditions in the work environment. When an employer has no existing heat stress prevention program, all the program elements in E.3. that apply to the conditions will be listed on the General Duty Clause citation as potential abatements.

A general duty citation requires employee exposure to a serious hazard. The CSHO must evaluate the employee(s) working conditions and the employer's implemented heat stress prevention program (elements are described in paragraph E.3). Following this evaluation, the CSHO must make a determination on whether or not the working conditions noted, taking into account the implemented elements of the employers heat stress prevention program, pose a hazard to employees that is causing or likely to cause death, serious physical injury or serious physical harm. Evaluation of the working conditions should include, but are not limited to, the following elements: ambient temperature in working areas, relative humidity, heat index, work duration, break periods, availability and quantity of potable drinking water (or other acceptable fluids), acclimatization, rest periods, and shade. The CSHO

should also note if the National Weather Service has issued excessive heat outlooks, watches, warnings or advisories. The evaluation described above shall be documented in the inspection report.

Other OSH Division standards that may be applicable to work in hot environments include, but are not limited to:

- The Personal Protective Equipment (PPE) Standard at 29 CFR 1910.132(d) requires every employer in general industry to conduct a hazard assessment to determine the appropriate PPE to be used to protect employees from the hazards identified in the assessment. See also 29 CFR 1915.152 (shipyards), 29 CFR 1917.95 (maritime) and 29 CFR 1926.28 (construction).
- The Recordkeeping Standards at 29 CFR 1904.7(b)(5) requires that employers record certain work-related injuries and illnesses. If a worker requires medical treatment beyond first aid, the worker's illness or injury must be recorded. However, if a worker merely requires first aid for the worker's condition, the employer is not required to record the condition. For example, if a worker requires intravenous fluids, the worker's condition must be recorded. But if a worker is only instructed to drink fluids for relief of heat stress, the worker's condition is not recordable. Refer to 29 CFR 1904.7(b)(5) for an explanation of the difference between medical treatment and first aid.
- The Sanitation Standards at 29 CFR 1910.141, 29 CFR 1915.88, 29 CFR 1917.127, 29 CFR 1926.51 and 29 CFR 1928.110 require employers to provide potable water. 1928.110(c)(1)(ii) specifically requires that water provided by the employer shall be suitably cool and in sufficient amounts, taking into account the air temperature, humidity and nature of work performed, to meet the needs of all employees.
- The Medical Services and First Aid Standards at 29 CFR 1910.151, 29 CFR 1915.87, 29 CFR 1917.26 and 29 CFR 1926.50 require that persons onsite be adequately trained to render first aid, in the absence of medical facilities within close proximity.
- The Safety Training and Education standard for construction at 29 CFR 1926.21 requires the employer to instruct each employee in the recognition and avoidance of unsafe conditions and the regulations applicable to the work environment to control or eliminate hazards or other exposure to illness and injury.

G. IMIS Coding.

To facilitate tracking heat-related illness inspections and citations, the NCR codes on the attached executive summary will be used for any inspection or intervention where heat stress situations are addressed.

The optional information codes for heat-related inspections will appear in the forms (OSHA-1, OSHA-7, OSHA-31, OSHA-36, OSHA-55, OSHA-90, and OSHA-167I). In the choice lists, the optional information codes will appear as follows:

Information Code	Industry Group
N-02-HEATAG	Agriculture
N-02-HEATCON	Construction
N-02-HEATGI	General Industry
N-02-HEATMI	Maritime

H. **Effective Date.**

This OPN is effective on the date of signature. It will remain in effect until revised or canceled by the director.

Signed on Original
Kevin O'Barr
Standards Supervisor

Signed on Original
Allen McNeely
Director

3/15/2012
Date

Appendix A – Inspection Information

The parts below contain sample questions and questionnaires that the CSHO may wish to use when investigating heat stress in the workplace.

Part 1 - Heat stress questions to ask and information to gather

Workplace description.

- A. Type of business
- B. Heat-producing equipment or processes used
- C. Previous history (if any) of heat-related problems
- D. At "hot" spots:
 - Is the heat steady or intermittent?
 - Number of employees exposed?
 - For how many hours per day?
 - Is potable water available?
 - Are supervisors trained to detect/evaluate heat stress symptoms?

Are exposures typical for a workplace in this industry?

- A. Weather at time of review
- B. Temperature
- C. Humidity
- D. Air velocity
- E. Is day typical of recent weather conditions? (Get information from the Weather Bureau)
- F. Heat-reducing engineering controls
- G. Ventilation in place?
- H. Ventilation operating?
- I. Air conditioning in place?
- J. Air conditioning operating?
- K. Fans in place?
- L. Fans operating?
- M. Shields or insulation between sources and employees?
- N. Are reflective faces of shields clean?

Work practices to detect, evaluate, and prevent or reduce heat stress.

- A. Training program?
- B. Content?
- C. Where given?
- D. For whom?
- E. Liquid replacement program?
- F. Acclimatization program?
- G. Work/rest schedule?
- H. Scheduling of work (during cooler parts of shift, cleaning and maintenance during shut-downs, etc.).
- I. Cool rest areas (including shelter at outdoor work sites)?
- J. Heat monitoring program?
- K. Personal Protective Equipment.
- L. Reflective clothing in use?
- M. Ice and/or water-cooled garments in use?

- N. Wetted undergarments (used with reflective or impermeable clothing) in use?
- O. Circulating air systems in use?
- P. First-aid Program.
- Q. Trained personnel?
- R. Provision for rapid cool-down?
- S. Procedures for getting medical attention?
- T. Transportation to medical facilities readily available for heat stroke victims?
- U. Medical Screening and Surveillance Program.
- V. Content?
- W. Who manages program?
- X. Additional Comments.

Heat Stress-Related Illness Or Accident Follow-Up.

- A. Describe events leading up to the episode.
- B. Evaluation/comments by other workers at the scene.
- C. Work at time of episode (heavy, medium, light)?
- D. How long was affected employee working at site prior to episode?
- E. Medical history of affected worker, if known.
- F. Appropriate engineering controls in place?
- G. Appropriate engineering controls in operation?
- H. Appropriate work practices used by affected employee(s)?
- I. Appropriate personal protective equipment available?
- J. Appropriate personal protective equipment in use?
- K. Medical screening for heat stress and continued surveillance for signs of heat stress given other employees?
- L. Additional comments regarding specific episode(s): (Use additional pages as needed.)

Part 2 - Employer Questionnaire (additional questions may be found in the OSHA Technical Manual.)

Date: _____ Inspection Number#: _____

Company Name: _____ Indoor: Outdoor:

Time: _____ Direct Sun: Yes No

Weather Conditions – Heat Index, NOAA Advisory:

_____ WBGT reading: _____

Temperature (dry bulb) _____ Relative Humidity: _____

Temperature (wet bulb) _____ Instrument Mfr: _____ Instrument Serial #: _____

Wind Conditions: _____ Wind Speed: _____

Wind Direction: _____

What are the potential sources of heat? _____

What actions were implemented to prevent heat-related illnesses?

Is there an acclimatization program in place for new employees or employees having been away for extended time (e.g., vacation)? _____

Are the employees acclimatized to the work environment? _____

Are employees required to wear protective clothing or equipment? If so, please describe.

Have employees complained of the heat? _____

What is the protocol should employees suffer heat-related illnesses?

Have your employees received training for working in hot environments? _____
Are work areas monitored routinely for work conditions related to heat stress?

Part 3 - Employee Questionnaire (additional questions may be found in the OSHA Technical Manual.)

Employee name: _____

Job description: _____

How long have you worked at this task or work assignment? _____

What types of PPE are you required to wear? _____

What are the potential sources of heat? _____

Is there a work/rest cycle in place? _____

Is a shaded or climate-controlled area available for rest periods? _____

If applicable, describe the work/rest cycle (e.g., how many breaks do you take, when and/or where do you take breaks, how long is a typical break, etc.):

If a shaded or climate-controlled area is available for rest periods, describe:

Is drinking water available? _____

If yes, describe drinking water source and proximity to workers:

Are you required to drink water or any other beverages when working under hot conditions?

If so, is there a specific amount? _____

Is it enforced? _____

Have you experienced any health effects related to working in excessive heat? If yes, describe:

Are other workers experiencing similar symptoms? _____

Have you received any training on the effects of heat and heat-related illnesses? _____

If yes, what information was provided?

Appendix B – Example SAVEs and AVDs

Example 1

North Carolina General Statute 95-129(1) of the Occupational Safety and Health Act of North Carolina: The employer did not furnish each of his employees conditions of employment and a place of employment free from recognized hazards that were causing or likely to cause death or serious physical harm to employees in that employees were exposed to heat-related hazards associated with working in a hot environment:

a) facility - where the employer did not develop a heat stress prevention program for employees who were exposed to a heat index of xxx and a temperature of xxx degrees Fahrenheit, to help them recognize and avoid heat-related illnesses and hazards associated with working in a hot environment. One feasible and acceptable abatement method, among others, to correct this hazard is to develop a heat stress prevention program to include elements such as the following:

- 1) Responsibilities of the employer and employees regarding working in hot, humid environments;
- 2) Environmental factors and personal health factors that contribute to heat-related illnesses;
- 3) Procedures for measuring air temperature and documenting effects of other environmental factors (humidity, wind strength, work location) by determining the Wet Bulb Globe Temperature (WBGT) Index or heat index using any tool or resource available including OSHA's heat safety tool smart phone app.;
- 4) Guidelines for implementing a heat acclimatization process;
- 5) Daily water/fluid requirements and management of the water/fluid allocation process;
- 6) Training on the recognition of the signs and symptoms of heat-related illnesses;
- 7) Reporting process when employees with heat-related illness symptoms are observed;
- 8) Establishment of first-aid procedures;
- 9) Establishment of emergency response procedures;
- 10) Training for supervisors and employees on the requirements established in the heat stress prevention program.

Note: Some of the elements listed above in this example may not be applicable in all instances of exposures to heat stress observed by CSHOs. Include only the applicable items in the potential abatement list for the employer.

Example 2

North Carolina General Statute §95-129 (1) of the Occupational Safety and Health Act of North Carolina: The employer did not furnish each of his employees conditions of employment and a place of employment free from recognized hazards that were causing or likely to cause death or serious physical harm to employees in that employees were exposed to heat-related hazards associated with working in a hot environment:

- a) North tobacco field – On or about August 24, 2011, an employee died while harvesting tobacco in the fields. Employees were exposed to a heat index of xxx and a temperature of xxx degrees Fahrenheit. The deceased employee had a measured core body temperature of xxx°F. The employer had not developed an effective heat stress prevention program to recognize and avoid heat-related illnesses and hazards associated with working in a hot environment.

One feasible and acceptable abatement method, among others, to correct this hazard is to develop a heat stress prevention program to include elements such as the following:

- 1) The development a heat stress training program to inform employer and employees about the effects of heat stress and how to recognize heat-related symptoms and prevent heat-related illnesses;
- 2) The utilization of an acclimatization program for new employees when they begin working in hot environments;
- 3) The monitoring of weather conditions and establishment of work schedules and break periods to minimize heat exposure;
- 4) Providing shaded areas and/or other cool areas for breaks;
- 5) Implementation of a screening program to determine any causal factors that may affect the employee's heat illness susceptibility;
- 6) Ensuring an adequate supply of drinking water is available and train employees on the importance of adequate fluid intake and hydration;
- 7) Establishing and implementing a program and method for reporting employees exhibiting signs and symptoms of heat-related illness;
- 8) Establishing and implementing first-aid procedures for employees exhibiting signs and symptoms of heat-related illnesses; and
- 9) Establishing and implementing emergency response procedures for employees exhibiting signs and symptoms of heat-related illnesses.

Note: Some of the elements listed above in this example may not be applicable in all instances of exposures to heat stress observed by CSHOs. Include only the applicable items in the potential abatement list for the employer.

Appendix C - Heat Index Chart

To find the heat index, look at the Heat Index Chart. As an example, if the air temperature is 96°F (found on the top of the table) and the relative humidity is 65% (found on the left of the table), the heat index—how hot it feels—is 121°F. The National Weather Service will initiate alert procedures when the Heat Index is expected to exceed 105°- 110°F (depending on local climate) for at least 2 consecutive days.

NOAA's National Weather Service

Heat Index
Temperature (°F)

Relative Humidity (%)	80	82	84	86	88	90	92	94	96	98	100	102	104	106	118	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
55	81	84	86	89	93	97	101	106	112	117	124	130	137			
60	82	84	88	91	95	100	105	110	116	123	129	137				
65	82	85	89	93	98	103	108	114	121	126	130					
70	83	86	90	95	100	105	112	119	126	134						
75	84	88	92	97	103	109	116	124	132							
80	84	89	94	100	106	113	121	129								
85	85	90	96	102	110	117	126	135								
90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127										
100	87	95	103	112	121	132										

Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

- Caution
- Extreme Caution
- Danger
- External Danger

IMPORTANT: Since heat index values were devised for shady, light wind conditions, exposure to full sunshine can increase heat index values by up to 15°F. Also, strong winds, particularly with very hot, dry air, can be extremely hazardous.

² From the National Weather Service (NWS) of the National Oceanic Atmospheric Administration (NOAA), at <http://www.nws.noaa.gov/om/heat/index.shtml>

Appendix D: Example Hazard Alert Letter

Note: This letter must be adapted to the specific circumstances noted in each inspection. The letter below is an example of the type of letter that may be appropriate in some circumstances. If the employer has implemented, or is in the process of implementing efforts to address hazardous conditions, those efforts should be recognized and encouraged, if appropriate. CSHO should tailor the recommended controls outlined below to the specific needs of the employer. Italicized and bracketed text is for OSH Division compliance use only and should not be included in the letter.

Dear Employer:

An inspection of your workplace and evaluation of your OSHA recordkeeping logs at [location] on [date] disclosed the following workplace condition(s) which have been associated with the development of heat-related illnesses in workers:

[Describe the conditions observed for each task or job, including the type of PPE worn, the length of time spent on each task, the nature of the heat exposure, and any other information relevant to workers' exposure to the risk of heat-related illness].

In the interest of workplace safety and health, I recommend that you voluntarily take the necessary steps to materially reduce or eliminate your workers' exposure to the conditions listed above, including, but not limited to, the following:

General Controls.

General controls include training, personal protective equipment (PPE), administrative controls, health screening and heat alert programs.

1. **Training:** inform workers of the following (*Modify this list as appropriate for the specific situation*).
 - a. Hazards of heat stress.
 - b. How to avoid heat stress by recognizing and avoiding situations that can lead to heat-related illnesses.
 - c. Recognition of signs and symptoms of heat-related illnesses.
 - d. First-aid procedures.
 - e. Employer's program to address heat-related illnesses.

2. **Personal Protective Clothing and Equipment** (*CSHOs should recommend the appropriate PPE, which could include equipment in the list below*).
 - a. Hats for work outdoors in the sun.
 - b. For indoor work, loosely worn reflective clothing to deflect radiant heat, such as vests, aprons or jackets.
 - c. Cooling vests and water-cooled/dampened garments may be effective under high temperature and low humidity conditions. However, be aware that cooling vests can become an insulator when they reach the body's temperature.
 - d. In environments where respirator usage is necessary, consult with an industrial hygienist to determine the appropriate clothing to prevent heat stress while still protecting the workers.
 - e. Consider the use of dermal patches for monitoring core temperature to better identify when workers need to be removed from the work area.

3. **Administrative Controls:** (*CSHOs should consult the OSHA Technical Manual, Section III, Chapter 4 for additional information*)
 - a. Schedule hot jobs for cooler parts of the work day, and routine maintenance and repair work should be scheduled for the cooler seasons of the year when possible.
 - b. Provide adequate drinking water on the worksite and permit employees to take frequent rest and water breaks.
 - c. Use relief workers and reduce physical demands of the job.
 - d. Have air-conditioned or shaded areas available for water breaks and rest periods.

4. **Health Screening and Acclimatization:**
 - a. Workers should be allowed to get used to hot working environments by using a staggered approach over several days. The same should be done for workers returning from an absence of three or more days. For example, begin work with 50% of the normal workload and time spent in the hot environment, and then gradually increase the time over a 5-day period.

 - b. Workers should be made aware of the following:
 - i. Medications such as the following can increase risk of heat stress:
 - Diuretics - water pills
 - Antihypertensives - blood pressure medication
 - Anticholinergics - for treatment of chronic obstructive pulmonary disease (COPD)
 - Antihistamines - allergy medications

 - ii. Dangers of using drugs and alcohol in hot work environments.

 - iii. Some conditions, such as pregnancy, fever, gastrointestinal illness, heart disease, and obesity, may increase the risk of heat-related illness. Workers should be advised to check with their doctors if they have any questions. (**Please note:** the employer is NOT entitled to know whether workers have these conditions, but only whether workers have any health conditions that limits their ability to perform their job duties. In some instances, workers with chronic conditions may need extra time to become acclimatized or may need other accommodations, such as more frequent breaks or restricted work.)

 - iv. Workers should consult a doctor or pharmacist if they have questions about whether they are at increased risk for heat-related illness because of health conditions they have and/or medications they take.

You may voluntarily provide this district office with progress reports on your efforts to address these heat-related conditions in your workplace. The N.C. Department of Labor may return to your worksite to further examine the conditions noted above.

Sincerely,
Bureau Chief

Appendix E - Heat-related Information Links

1. OSHA's Campaign to Prevent Heat Illness:
<http://www.osha.gov/SLTC/heatillness/index.html>.
2. OSHA's Using the Heat Index: A Guide for Employers:
http://www.osha.gov/SLTC/heatillness/heat_index/pdfs/all_in_one.pdf
3. OSHA Technical Manual, Section III: Health Hazards, Chapter 4, Heat Stress:
https://www.osha.gov/dts/osta/otm/otm_iii/otm_iii_4.html.
4. OSHA's Field Operations Manual (FOM):
https://www.osha.gov/OshDoc/Directive_pdf/CPL_02-00-148.pdf
5. NIOSH Workplace Safety and Health Topics:
<http://www.cdc.gov/niosh/topics/heatstress/>.
6. The National Oceanic and Atmospheric Administration (NOAA), National Weather Service:
<http://www.nws.noaa.gov/om/heat/index.shtml>.
7. Current weather conditions, including the previous three day weather conditions at www.noaa.gov (information from older dates can also be requested).
8. NIOSH Publication 86-112: Working in Hot Environments:
<http://www.cdc.gov/NIOSH/docs/86-112/>.
9. California OSHA Heat Illness Prevention:
<http://www.dir.ca.gov/dosh/heatillnessinfo.html>.