

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

**Raleigh, NC**

Field Information System

Operational Procedure Notice 141A

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

**A. Purpose.**

This Operational Procedure Notice (OPN) provides the North Carolina Department of Labor (NCDOL) Occupational Safety and Health (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 workplaces 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. Background.**

Heat-related illnesses occur when the core body temperature rises beyond normal core temperature (typically 98.6°F). As core temperatures rise, the individual may experience the following heat-related symptoms and illnesses: heat stroke, heat collapse (fainting), heat exhaustion, heat rashes, heat cramps and heat fatigue.

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 1992-2006. 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 an individual's level of exertion, hydration, and ability to maintain homeostasis. 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 North Carolina Department of Health and Human Services reported a total of 850 emergency department visits and 63 hospitalizations for occupational heat-related illnesses in North Carolina from 2007 to 2011. The majority of work-related emergency department visits for heat-related illness in NC are among 19-45 year old males, with 75% of overall heat-related illnesses among males between 25-64 years of age. On occasion, the temperature was below 85 degrees Fahrenheit.

Typical indoor worksites where heat-related illnesses may occur include foundries, brick-firing and ceramic plants, glass production facilities, rubber products factories, paper mills, 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.

D. **Complaint Evaluation.**

CSHOs will follow procedures in the NC Field Operations Manual (FOM) Chapter IX – Complaints, Referrals and Accidents, Appendix IX-A: Questions for Complaint Evaluation, in particular section D. regarding heat-related complaints. For complaints classified as non-formal, CSHOs will refer to the FOM Chapter IX, A.8 and Appendix IX-E – Heat Complaints for instruction on responding to the complainant and the employer.

E. **Inspection Guidance.**

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 (GDC) citation for heat stress should be issued. The CSHO must consider many factors to determine whether the employer has provided the employees with a place of employment and working conditions that are free of recognized hazards capable of causing death, serious illness or serious physical harm.

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. The following information has been consolidated into an inspection worksheet and employee questionnaire in Appendices A and B of this OPN.

Factors the CSHO will evaluate and document in the case file include:

1. **Opening Conference.**

During the opening conference, the CSHO will review OSHA 300 logs for the most recent three years plus 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 – Employer's Report of Employee's Injury or Occupational Disease to the Industrial Commission. 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 Around Inspection.**

During the walk around, the CSHO will cover all the affected areas and document the following:

- a. Building and operation characteristics;
- b. All potential sources of heat stress (i.e., furnaces, ovens);
- c. All engineering controls (i.e., fans, air conditioning), administrative controls (i.e., work-rest schedules, acclimatization programs) and/or personal protective equipment (PPE) (i.e., cooling vests);
- d. Measurements (wet-bulb globe temperature (WBGT), air flow, and humidity); and
- e. Information obtained from the employer and employee interviews.

3. Case File Documentation.

The following additional information will be evaluated during the walk around and 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 an acclimatization program and/or a work/rest program. Refer to the guidance in Section III, Chapter 4 – Heat Stress of the OSHA Technical Manual for information on work-load assessments, acclimatization programs, work/rest regimens and metabolic work rate.

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 document the heat index and any National Weather Service heat advisory or alert for the day of the inspection and/or the days employees became ill.

The CSHO will perform temperature measurements, including WBGT, air flow and humidity. The CSHO will document any PPE and the personal clothing worn by employees. When appropriate, such as under conditions of high temperature and heavy workload, the CSHO should determine the metabolic work rate. Consult Section III, Chapter 4 of the OSHA Technical Manual for information on conducting WBGT sampling and determining the metabolic work rate.

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; drugs (to include alcohol and caffeine); acclimatization; and habituation to air conditioning. The CSHO will document any 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, first aid training program, access to prompt medical treatment, access to water, shade and/or cooler areas, the ability to rest when needed or on a pre-determined work/rest schedule, work during cooler times of day, type of clothing allowed, personal controls such as cooling vests, acclimatization program (e.g., less intense work, fewer hours, until employees get used to working in the heat), and actions already taken by the employer to correct heat stress problems when employees exhibit signs of heat stress.

f. Fatality/Incident.

The CSHO will describe the events leading up to the heat illness episode or fatality. Interviews will be conducted with other employees at the scene to determine how long the affected employee was working at the site prior to the episode. The CSHO will document the medical history of the affected employee along with the engineering controls in use, the work practices and PPE used by the affected employee.

4. Closing Conference.

For work environments where a heat-related illness or the potential for a heat-related illness can be documented and for which a GDC (GDC) citation is recommended, the CSHO will discuss the results of the inspection and recommend that the employer develop a heat stress prevention program or what improvements are needed within their heat stress prevention program. In cases where heat-related illness or the potential for a heat-related illness can be documented but a GDC citation is not recommended, the CSHO will document the reasons why within the narrative. The CSHO should also review the following examples of acceptable heat stress prevention program elements with the employer:

Recommended Heat Stress Prevention Program Elements.

- a. The development of a heat stress training program to inform the employer and employees about the effects of heat stress including how to recognize heat-related signs and symptoms in themselves and others and how to prevent heat-related illnesses;
- b. The utilization of an acclimatization program for new employees when they begin working or return to work in hot environments;
- c. The monitoring of weather conditions and establishment of work schedules and break periods to minimize heat exposure;
- d. Providing shaded areas and/or other cool areas for breaks;
- e. Implementation of a screening program to determine any causal factors that may affect the employee's heat illness susceptibility;

- f. Ensuring an adequate supply of drinking water is available and train employees on the importance of adequate fluid intake and hydration;
- g. Establishing and implementing a reporting process when employees are exhibiting signs and symptoms of heat-related illness or are observed;
- h. Establishing and implementing first-aid procedures for employees exhibiting signs and symptoms of heat-related illnesses; and
- i. Establishing and implementing emergency response procedures for employees exhibiting signs and symptoms of heat-related illnesses.

F. **Citation Guidance.**

Any proposed citations for heat-related illnesses will be addressed by the GDC, North Carolina General Statute (NCGS) 95-129(1). GDC 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 GDC violation (FOM Chapter 4 – Violations, B. – General Duty Requirements) are documented **and** CSHOs can establish a link between the workplace exposure and the potential for heat-related illness.

For inspections where heat stressors are present, but all the GDC elements cannot be established, the CSHO will send Form OS0005 – Heat Stress Letter to the employer. The letter can be found in OSHA Express and must be adapted to the specific circumstances noted in each inspection. 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. The CSHO should tailor the recommended controls found within the letter to the specific needs of the employer.

When evaluating an employer's existing heat stress prevention program, the CSHO will use the program elements in paragraph E.4. 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 GDC violation can be established, the CSHO will recommend issuing a citation and list the specific program elements from E.4. above that assist the employer in creating 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.4. that apply to the conditions will be listed on the GDC citation as potential abatements.

A GDC 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.4.). Following this evaluation, the CSHO must determine if the working conditions noted, taking into account the implemented elements of the employer's 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:

1. The 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 13 NCAC 7F .0202 (construction).
2. The Recordkeeping Standard 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.
3. The Recordkeeping Standard at 29 CFR 1904.39 requires employers to report all work-related fatalities within eight (8) hours and to report all in-patient hospitalization of one or more employees within twenty-four (24) hours.
4. 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 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.
5. 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 adequately trained to render first aid be available onsite in the absence of medical facilities within close proximity.
6. 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. Recording and Tracking.**

To facilitate tracking heat-related illness inspections and citations, the following codes 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 inspection report, the complaint form, the accident/event form, the intervention form and the referral form. In the choice lists, the optional information codes will appear as follows:

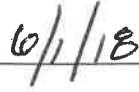
Information Code	Industry Group
N-02-HEATAG	Agriculture
N-02-HEATCON	Construction
N-02-HEATGI	General Industry
N-02-HEATMI	Maritime

H. **Effective Date.**

OPN 141 is canceled. This OPN is effective on the date of signature. It will remain in effect until revised or canceled by the director.

  
John Jaskolka  
Health Standards Officer

  
Kevin Beauregard  
Director

  
Date

**Appendix A – Inspection Worksheet** (additional questions appear in the OSHA Technical Manual)

Establishment Name: \_\_\_\_\_ Inspection Number#: \_\_\_\_\_

Related Activity: \_\_\_\_\_ Indoor: ☐ Outdoor: ☐

Date: \_\_\_\_\_ Time: \_\_\_\_\_

Weather Conditions – Heat Index, National Oceanic and Atmospheric Administration Advisory, National Weather Service:  
\_\_\_\_\_

**Opening Conference / Employer Questionnaire:**

1. Are there any recorded heat-related incidents on the OSHA 300 log? \_\_\_\_\_
  - If yes, please list. \_\_\_\_\_
2. Have employees complained of the heat? \_\_\_\_\_
3. Is there a heat stress prevention program in place? If yes, describe.  
\_\_\_\_\_
4. Is there a heat acclimatization program? If yes, describe.  
\_\_\_\_\_
  - Are the employees acclimatized to the work environment? If so, how?  
\_\_\_\_\_
5. Have your employees received training for working in hot environments?  
\_\_\_\_\_
  - If yes, what instruction or information was provided?  
\_\_\_\_\_  
–
  - Are OSHA publications or other materials on heat-related illness posted in the workplace?  
\_\_\_\_\_
6. Do you inform employees that certain health condition(s) and medication(s) may increase their risk of heat-related illness and/or inquire if they have any health condition(s) or take any medication(s) that may increase their risk of heat-related illness before they are exposed to potentially hot workplace conditions?  
\_\_\_\_\_
7. Are work areas monitored routinely for work conditions related to heat stress? \_\_\_\_\_
  - Describe any measures of hazard recognition (e.g., buddy system, thermometers, etc.)  
\_\_\_\_\_
8. What actions are implemented to prevent heat-related illnesses?



- 
- Were these actions regularly conducted or enforced? \_\_\_\_\_
9. Are any of the employees temporary workers, new hires, newly transferred employees, or employees just returning from prolonged leave? \_\_\_\_\_
- Are these employees acclimated to the work environment? \_\_\_\_\_
  - Do these employees receive training on heat stress? \_\_\_\_\_
10. What is the protocol should employees suffer heat-related illnesses? \_\_\_\_\_
- Who is notified in an emergency? \_\_\_\_\_
  - Who provides first aid? \_\_\_\_\_
  - Are there procedures for rapid cool down? \_\_\_\_\_

**Site and Process Description:**

11. Describe the building and operation characteristics.
- 

12. What are the potential sources of heat? \_\_\_\_\_
- Heat reducing engineering controls? \_\_\_\_\_ If yes, please list. \_\_\_\_\_
  - Are the engineering controls functioning properly? \_\_\_\_\_
13. Air conditioning? \_\_\_\_\_ Operating? \_\_\_\_\_
14. Other ventilation sources? \_\_\_\_\_ Operating? \_\_\_\_\_
15. Outdoor work: Direct sun? \_\_\_\_\_
16. How long have employees worked at this task or work assignment? \_\_\_\_\_
- How long have employees performed this task or work assignment during elevated ambient temperatures? \_\_\_\_\_
17. What are the employees' work rate? \_\_\_\_\_
18. What is the workload classification from American Conference of Governmental Industrial Hygienists (ACGIH) (very heavy, heavy, moderate, light)? \_\_\_\_\_
19. Describe availability and access to potable water. \_\_\_\_\_
- Are workers required to drink water or any other beverages when working under hot conditions? If yes, is it enforced? Describe. \_\_\_\_\_
- 
20. Describe availability and access to shade. \_\_\_\_\_
21. Has the employer bought equipment with air conditioned cabs? \_\_\_\_\_
22. Is there an established work/rest strategy? Describe. \_\_\_\_\_

23. Are steps taken to reschedule strenuous tasks for cooler parts of the day or days with reduced temperatures?

\_\_\_\_\_

—

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

- \_\_\_\_\_
- Are there additional requirements for employees working in PPE (e.g., impervious clothing) such as ice/water cooled garments, reflective clothing, etc.?

\_\_\_\_\_

**Temperature Measurements:**

Temperature (dry bulb)\_\_\_\_\_

WBGT Reading:

\_\_\_\_\_

Temperature (wet bulb)\_\_\_\_\_

Relative Humidity:\_\_\_\_\_

Instrument Manufacturer:\_\_\_\_\_

Instrument Serial #: \_\_\_\_\_

Wind Conditions:\_\_\_\_\_

Wind Speed:\_\_\_\_\_

Wind Direction:\_\_\_\_\_

**Appendix B – Employee Questionnaire** (additional questions appear in the OSHA Technical Manual)

Employee Name: \_\_\_\_\_ Age: \_\_\_\_\_

Job Description: \_\_\_\_\_

**General:**

1. What are the potential sources of heat? \_\_\_\_\_
2. Describe the type of work you are performing? \_\_\_\_\_
  - How long have you worked at this task or work assignment? \_\_\_\_\_
  - How long have you worked at this task or work assignment in elevated temperatures? \_\_\_\_\_
  - Is your work being done in the direct sun? \_\_\_\_\_
3. What types of PPE are you required to wear? \_\_\_\_\_
4. Are you informed about heat advisories by your employer? \_\_\_\_\_
5. Have you experienced any health effects (e.g., dizziness, nausea, not sweating) related to working in elevated temperatures? If yes, describe:  
\_\_\_\_\_
6. Are other workers experiencing similar symptoms? \_\_\_\_\_
7. Does the employer have a heat stress prevention program in place? \_\_\_\_\_
8. Are you taking any medication(s) or have any health condition(s) that put you at increased risk of heat-related illness? \_\_\_\_\_

**Water:**

9. Is drinking water available? \_\_\_\_\_ If yes, describe drinking water source and proximity to workers: \_\_\_\_\_
10. 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? \_\_\_\_\_
11. Are water coolers refilled throughout the day? \_\_\_\_\_ Is the water cool and clean? \_\_\_\_\_

**Shade, Access to Air Conditioning, Rest:**

12. Is a shaded or climate-controlled area available for rest periods? Describe: \_\_\_\_\_
13. Are you allowed to work during cooler times of day? \_\_\_\_\_
14. Is there a work/rest cycle in place? \_\_\_\_\_ If yes, 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.): \_\_\_\_\_
15. Does the employer acclimate you to the heat (e.g., less intense work, fewer hours, until you get used to working in the heat)? \_\_\_\_\_

**Training:**

16. Have you received any training on the effects of heat and heat-related illnesses? \_\_\_\_\_

- If yes, what information was provided? \_\_\_\_\_

17. Do you know the:

- Common signs and symptoms of heat illness? \_\_\_\_\_
- Proper precautions to prevent heat illness? \_\_\_\_\_
- Importance of acclimatization? \_\_\_\_\_
- Risks with medications and health conditions? \_\_\_\_\_
- Importance of drinking water frequently (even when they are not thirsty)? \_\_\_\_\_
- Importance of taking breaks in shade or air conditioning? \_\_\_\_\_
- Steps to take if someone is having symptoms? \_\_\_\_\_

**First-Aid / Emergencies:**

18. What is done if you or a fellow employee suffer heat-related symptoms? \_\_\_\_\_

- Do you know who to notify if there is an emergency? \_\_\_\_\_
- Do you know who will provide first-aid? \_\_\_\_\_

## **Appendix C – 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) The development of 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 or return to work 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 reporting process when employees are exhibiting signs and symptoms of heat-related illness or are observed;
- 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.

### 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 or return to work 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 reporting process when employees are exhibiting signs and symptoms of heat-related illness or are observed;
- 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 D – Heat-related References and Resources**

### References.

1. United States Centers for Disease Control and Prevention Morbidity and Mortality Weekly Report – Heat-Related Deaths Among Crop Workers – United States, 1992-2006
2. North Carolina Department of Health and Human Services, Division of Public Health – Occupational Heat-Related Illness in North Carolina, 2007-2011 – published October 2015
3. North Carolina Disease Event Tracking and Epidemiologic Collection Tool, June 11-17, 2017
4. OSHA Technical Manual, Section III Chapter 4 – Heat Stress
5. National Institute for Occupational Safety and Health Criteria Document 1986
6. North Carolina Field Operations Manual
7. American Red Cross – Heat Wave Preparedness
8. American Conference of Governmental Industrial Hygienists – Thermal Stress Guidance
9. OSHA Memo on Heat-Related Illness Inspections, August 19, 2011
10. Rhea, Sarah et.al. Journal of Community Health, Using Near Real-Time Morbidity Data to Identify Heat-Related Illness Prevention Strategies in North Carolina

### Resources.

1. OSHA, Using the Heat Index: A Guide for Employers:  
[www.osha.gov/SLTC/heatillness/heat\\_index/pdfs/all\\_in\\_one.pdf](http://www.osha.gov/SLTC/heatillness/heat_index/pdfs/all_in_one.pdf)
2. NCDOL Occupational Safety and Health Topic Page on Heat Stress:  
<https://www.labor.nc.gov/safety-and-health/occupational-safety-and-health/occupational-safety-and-health-topic-pages/heat-stress>
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#iii:4\\_1](https://www.osha.gov/dts/osta/otm/otm_iii/otm_iii_4.html#iii:4_1)
4. The National Oceanic and Atmospheric Administration (NOAA), National Weather Service:  
<http://www.nws.noaa.gov/om/heat/index.shtml>.
5. Request past weather conditions from NOAA (including certified copies): <http://www.ncdc.noaa.gov/>
6. The NOAA current weather conditions, including the previous three day weather conditions:  
<http://www.weather.gov/>
7. NIOSH Heat Stress: <http://www.cdc.gov/niosh/topics/heatstress/>
8. California OSHA Heat Illness Prevention: <http://www.dir.ca.gov/DOSH/HeatIllnessInfo.html>
9. OSHA Memo on Heat-Related Inspections (Summer 2018), May 14, 2018:  
[http://10.35.133.11/etta\\_one\\_stop/userfiles/file/SI/heatrelatdinspectns14may2018.pdf](http://10.35.133.11/etta_one_stop/userfiles/file/SI/heatrelatdinspectns14may2018.pdf)  
**Note:** This memo includes an additional list of resources.