



OSHA REGIONAL NOTICE

U.S. DEPARTMENT OF LABOR

OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

DIRECTIVE NUMBER: CPL 2 02-00-027

EFFECTIVE DATE: October 1, 2015

SUBJECT: Regional Emphasis Program for Heat Illnesses

REGIONAL IDENTIFIER: Region VI

ABSTRACT

- Purpose:** This Notice establishes a Regional Emphasis Program (REP) for outdoor heat-related health hazards.
- Scope:** This Notice applies to all worksites in Arkansas, Louisiana, Oklahoma, and Texas, and those worksites in New Mexico that are under Federal OSHA jurisdiction.
- References:** OSHA Instruction CPL 04-00-001 (CPL 2-0.102A)
OSHA Instruction CPL 02-00-150 (CPL 2.148)
OSHA Instruction CPL 02-00-025 (CPL 2.25I)
OSHA Instruction CPL 02-00-051 (CPL 2-0.51J)
OSHA Instruction TED 01-00-015 (TED 1-0.15A)
- Cancellations:** Region VI Regional Notice CPL 2 02-00-027 dated October 1, 2014, Regional Emphasis Program for Heat Illnesses.
- State Impact:** Region VI 21(d) Consultation Project Offices in Arkansas, Louisiana, Oklahoma, New Mexico and Texas will provide outreach, consultation services, and training to affected employers as requested.
- Action Offices:** Region VI Area and District Offices
Region VI Consultation Project Offices
Dallas Regional Office
- Information Office:** New Mexico Occupational Health and Safety Bureau
- Originating Office:** Dallas Regional Office

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By and Under the Authority of


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- I. **Purpose.** This Notice establishes and implements a regional emphasis program (REP) for the purpose of conducting heat illness inspections of outdoor work activities on days when the National Weather Service (NWS) issues a “Heat Advisory”. The majority of NWS offices in Region 6 issue advisories when the predicted daily maximum temperature is 105°F (Fahrenheit) or greater for two consecutive days and the night time minimum temperature is at least 75°F. This Notice supports OSHA’s Campaign to Prevent Heat Illness in Outdoor Workers.
- II. **Scope.** This Notice applies to all Area Offices in Region VI and those worksites in New Mexico that are under Federal Jurisdiction.
- III. **References.**
- A. OSHA Instruction CPL 04-00-001 (CPL 2-0.102A), November 10, 1999, Procedures for Approval of Local Emphasis Programs (“LEPs”) or current update.
 - B. OSHA Instruction CPL 02-00-150 (CPL 2.150), April 22, 2011, Field Operations Manual (FOM) or current update.
 - C. OSHA Instruction CPL 02-00-025 (CPL 2.25I), January 4, 1995, Scheduling System for Programmed Inspections or current update.
 - D. OSHA Instruction CPL 02-00-051 (CPL 02-0.51J), May 28, 2005, Enforcement Exemptions and Limitations under the Appropriations Act or current update.
 - E. OSHA Standards in Subparts J and K of 29 CFR 1910 and Subpart C of 29 CFR 1926 as appropriate.
 - F. NIOSH – Occupational Exposure To Hot Environments, Revised Criteria 1986.
 - G. OSHA Instruction TED 01-00-015, (TED 1-0.15A), January 20, 1999, OSHA Technical Manual.
 - H. Memo for Regional Administrators, Heat-Related Illness Inspections, August 19, 2011.
- IV. **Expiration.** This Notice expires on September 30, 2016, but may be renewed as necessary.
- V. **Background.** The Statistical Abstracts of the United States, 105th edition, estimates that 5 to 10 million workers are exposed to heat illness annually. Heat illnesses (heat stroke, heat exhaustion, and heat cramps) are caused by hot environments and are preventable occupational health hazards.

According to the Centers for Disease Control and Prevention, approximately 400 Americans die each year due to summer’s sweltering heat. The National Weather Service asserts (1) that heat is the number one weather-related killer in the United States,

resulting in hundreds of fatalities each year and (2) on average, excessive heat claims more lives each year than floods, lightning, tornadoes and hurricanes combined.

The National Oceanic and Atmospheric Administration's (NOAA) National Weather Service (NWS) is the U.S. Government Agency responsible for weather, water and climate forecasts and warnings. One activity of the NWS is to issue alerts for excessive heat. These heat advisories are broadcast on NOAA Weather Radio and on local radio and television stations. These alerts are issued by most National Weather Service offices when the predicted daily maximum temperature will be 105°F or greater for two consecutive days and the night time minimum temperature will be at least 75°F. (See Appendix C.)

The National Institute of Occupational Safety and Health (NIOSH) criteria document "Occupational Exposure to Hot Environments" recommends environmental limits for physical work at which engineering controls, preventative work and hygienic practices, and administrative or other control procedures should be implemented in order to reduce the risk of heat illnesses.

NIOSH recommends that a Heat-Alert Program be developed and implemented by employers whenever a heat wave is likely to occur. The goal of a Heat-Alert Program is to prevent heat illness emergencies. This program includes training employees on first aid, sanitation (hydration) and avoiding the hazards of working in hot environments.

VI. Objectives.

- A. The purpose of this REP is to prevent hot environmental temperatures from adversely affecting employees working outdoors. This REP is targeted to keep employees from developing heat cramps, heat exhaustion, and heat stroke. Evidence from the Centers for Disease Control, American Red Cross and the National Institute of Occupational Safety and Health (NIOSH) show that hot environmental temperatures cause hundreds of employees working outdoors to experience heat related illnesses and deaths annually.

Most NWS offices in Region 6 issue "heat advisories" on days when they determine that the predicted daily maximum temperature will be 105°F or greater for two consecutive days and the night time minimum temperature will be at least 75°F.

Excessive Heat Watch

Issued by the National Weather Service when heat indices in excess of 105°F (41°C) during the day combined with nighttime low temperatures of 80°F (27°C) or higher are forecast to occur for two consecutive days.

Excessive Heat Warning

Issued within 12 hours of the onset of the following criteria: heat index of at least 105°F for more than 3 hours per day for 2 consecutive days, or heat index more than 115°F for any period of time.

To prevent these heat related illnesses, OSHA will utilize heat advisories from the NWS to identify dangerous outdoor conditions and make sure employers take appropriate precautions to address the associated hazards.

These heat illness precautions include: (1) training employees on the hazards of hot environmental temperatures, (2) making appropriate first aid available, (3) having drinking water available, and (4) having made provisions for prompt medical attention if a heat related illness occurs.

This notice is provided to address the unsafe working conditions created by hot environmental temperatures and inappropriate safety precautions.

VII. Action. The Area Director will ensure that all compliance staff are familiar with the contents of this notice and that the inspection guidelines and procedures are followed.

VIII. Inspection Process.

A. Procedures: Each NWS office establishes the specific criteria it will use for issuing heat advisories. Since the temperature criteria can differ from one NWS office to another, OSHA must utilize the NWS website www.weather.gov to determine if weather advisories have been issued within an area office's jurisdiction. (See Appendices B and C.)

On days where the National Weather Service issues a heat advisory in an area office's jurisdiction, Area Directors will instruct CSHOs to be alert during their travels throughout the Area Office's jurisdiction for job sites where employees are working outdoors for extended periods of time. Upon finding such a work place the CSHO will communicate with the Area Director or Supervisor to determine: (1) whether the identified job site or contractor has been inspected within the last 30 days and (2) whether the employer has been inspected three (3) or more times under this REP within the last 90 days. If the jobsite or contractor has been inspected within the above time frames, the Area Director or Supervisor will direct the CSHO not to conduct an inspection.

Otherwise, the CSHO will conduct a limited scope inspection of the outdoor activity and ensure: (1) employees have been trained on the hazards of a hot environment, (2) drinking water and first aid supplies are available and (3) there are provisions for receiving prompt medical attention. If other "plain view" hazards are observed on the job site, the CSHO will include them in the limited scope inspection.

Note: The CSHO will document in the case file that on the day of the inspection, the NWS issued a heat advisory for the geographical area of the inspection site. Appendix B has instructions for obtaining NWS heat advisories and temperature data.

B. Exemptions and Limitations: Before initiating enforcement activities, the CSHO will determine if an inspection is prohibited through OSHA Instruction CPL 02-

00-051, "Enforcement Exemptions and Limitations under the Appropriations Act".

- C. Interface with other inspection activity: Follow-ups, referrals, complaints, fatalities and catastrophes will still be inspected under procedures outlined in the FOM.
- D. Basis of Inspection: Whenever an inspection is begun under this REP, the CSHO will include in the case file narrative a description of the circumstances which resulted in discovery of the work activity that was the basis of the inspection.
- E. Size of Employer: Establishments with ten or fewer employees will be included in this program because of the insidious nature of high environmental temperatures. Safety violations discovered under this program will be addressed in accordance with CPL 02-00-051 (CPL 2-0.51J) "Enforcement Exemptions and Limitations under the Appropriations Act."
- F. VPP and Partnership Sites: If an employer and/or contractor are a Voluntary Protection Program (VPP) employer or have passed an annual OSHA verification inspection, the terms of the VPP and/or partnership agreement will be followed. A list of current partnership sites within the area office jurisdiction will be maintained and made available for CSHO review.
- G. Scope of REP Inspections: Inspections under this emphasis program will focus on all outdoor job activities that occur on days where the NWS issues a heat advisory for the geographical area. Other apparent health and safety hazards observed by the CSHO will be evaluated; if necessary, a referral will be made. The CSHO will evaluate all on-site employers through inspection, observation, photographs, video footage, measurements, and interviews of management and employees.
- H. Citations: Citations for violations will be issued in accordance with the FOM, Chapters V, VI, and VII.
- I. Inspection Resources: All OSHA personnel participating in this REP must be familiar with the policies and procedures described in this notice.
- J. CSHO Personal Protective Equipment (PPE): CSHOs shall use personal protective equipment suitable for general industry or construction inspections.

IX. Recording in OIS and IMIS.

- A. Enforcement Inspections: Enforcement inspections completed under this initiative will be coded:

In OIS in the Inspection Type sub tab:

- 1. Initiating Type will be coded "Programmed Planned" with the following exception. Any inspections conducted as a result of a complaint, referral,

or fatality/catastrophe will be coded as the appropriate “unprogrammed” activity.

2. Local Emphasis Program will be coded **HOTDAYS** for all programmed and unprogrammed inspections.
3. Strategic Plan Activity will be coded with any strategic plan codes applicable to the current inspection.
4. Additional Codes, will be coded to indicate the industry type as follows:

<u>Type</u>	<u>ID</u>	<u>Value</u>	
N	02	HEATCON	(construction)
N	02	HEATGI	(general industry)
N	02	HEATMI	(maritime)
N	02	HEATAG	(agriculture)

- B. Enforcement Interventions: Enforcement Interventions completed under this initiative, including partnerships, alliances, Voluntary Protection Programs, and other interventions, will be coded:

In OIS in the Task sub tab, Task Details, Emphasis Areas as follows:

1. Local Emphasis Programs will be coded **HOTDAYS**.
2. Strategic Emphasis Areas will be coded with any strategic plan codes applicable to the current inspection.
3. Other Emphasis Areas will include any applicable additional codes and the codes specific to the construction activity covered by the inspection per IX.A.4.

- C. Consultation Visits: Consultation Visits completed under this initiative will be coded:

1. In IMIS on the Request Form CONS-20:
 - a. Local Emphasis will be coded **HOTDAYS**.
 - b. Field 18 will include any applicable additional codes and the codes specific to the construction activity covered by the inspection per IX.A.4.
2. In IMIS on the Visit Form CONS-30:
 - a. Local Emphasis will be coded **HOTDAYS**.

- b. Field 22 will include any applicable additional codes and the codes specific to the construction activity covered by the inspection per IX.A.4.

D. Consultation Interventions: Consultation Interventions completed under this initiative will be coded:

In IMIS on the Consultation Intervention Form CONS-66:

1. Local Emphasis will be coded **HOTDAYS**.
2. Field 15 will include any applicable additional codes and the codes specific to the construction activity covered by the inspection per IX.A.4.

E. Area Offices, Consultation Projects, and the Regional Office shall periodically check their OIS and/or IMIS databases to verify accuracy of the data for the initiative.

X. Outreach.

All REPS must contain an outreach component that must be executed prior to the initiation of the enforcement program. The method of outreach is at the Area Director's discretion and can consist of one or more of the following components.

1. Broadcast mail-outs or program information.
2. Stakeholder meetings.
3. Targeted training sessions.
4. Presentations to the affected group(s).

The outreach component selected should be conducted prior to the start of the inspection portion of the REP. The timing of this should be sufficient to insure that employers have been provided fair notice of the program and opportunities to achieve voluntary compliance. These outreach efforts should be coordinated with or include the OSHCON program for that area.

XI. Partnerships and Alliances.

In the event outreach efforts result in interest for developing an alliance or partnership, the Area Director will insure that these efforts conform to current National and Regional Policy.

XII. Evaluation.

An evaluation of this program will be submitted by the Area Directors to the Regional Office no later than October 15, 2016. Elements to be considered in the evaluation are contained in OSHA Instruction CPL 04-00-001.

Appendix A – Regulations

The following is a list of existing *construction* and *general industry* standards that may be applicable to hot environmental conditions in the workplace.

- 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 (shipyard), 29 CFR 1917.95 (maritime) and 29 CFR 1926.28 (construction).
- The Recordkeeping regulation 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 1918.95, 29 CFR 1926.51 and 29 CFR 1928.110 require employers to provide potable water.
- The Medical Services and First Aid standards at 29 CFR 1910.151, 29 CFR 1915.87, 29 CFR 1917.26, 29 CFR 1918.97, 29 CFR 1918 Appendix V to Part 1918 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.

Appendix B – Weather Alerts and Temperature Data

For National Weather Service (NWS) advisories, alerts and temperature data go to:
<http://www.weather.gov>.

The NWS homepage will display a map of the U.S. with color-coded advisories, warnings, watches, etc.

Click on the down arrow located next to the “Warnings by State” selection box located below the map.

As appropriate, select the state in which the inspection site or area office is located, then click on [Go].

The “Warnings, Watches or Advisories” by will appear for the state selected.

Click on the particular warning, watch or advisory of interest. A copy of the warning, watch or advisory should be printed and placed in the case file.

For **temperature data** move your cursor to the left side of the NWS homepage and under *Climate*, click on Past Weather.

On the NWS temperature map, click on the numerical temperatures for the city of interest.

On the NWS Forecast Office screen, under *Observed Weather*, address items 1– 4 below:

1. **Product-** *Daily Climate Report* should be selected.
2. **Location** – Select the City of interest.
3. **Timeframe** – As appropriate, select Most Recent or Archived Data.
If *Archived Data* is selected, then click on the date of interest.
4. **View** – Click on [GO]

Print the temperature data document and place it in the case file.

Appendix C – National Weather Service Heat Advisory Criteria

The National Weather Service (NWS) issues heat **advisories** so decision makers can take special safety procedures for residents, visitors, workers, and others who may be exposed to the sweltering conditions for any length of time.

The term **advisory**, as used here, means that without precautions, heat stroke is likely, and death is possible.

The NWS lets each of their Weather Forecast Offices (WFOs) establish the criteria for which that office will issue a heat advisory. Therefore, it is imperative that OSHA utilizes the NWS website www.weather.gov to track the issuance of heat advisories. (See Appendix B.)

Below are the heat advisory criteria used by various WFOs in Region 6.

Rio Grande Valley WFO

The temperature is forecast to reach **111°F** or more for at least two hours on consecutive days and the overnight temperature between the hot days must not fall below 75°F.

Corpus Christi WFO

The temperature (heat index values) is forecast to reach **110°F** or higher for 2 or more hours, regardless of the next day's heat index or night time low temperature.

WFO for Southeast Texas and Southwest Louisiana

The temperature is forecast to reach **108°F** or more for at least one hour.

Amarillo WFO

The temperature is forecast to reach **105°F** or more on consecutive days and the overnight temperature between the hot days must not fall below 75°F.

Little Rock WFO

The temperature is forecast to reach **105°F** or more for at least three hours on consecutive days and the overnight temperature between the hot days must not fall below the mid seventies.

Albuquerque WFO

The temperature is forecast to reach **105°F** or more on consecutive days and the overnight temperature between the hot days must not fall below 75°F.

WFO for the 12 Northeastern Counties of Arkansas

The temperature is forecast to reach **105°F** or more for one to two days and the overnight temperature between the hot days must not fall below 75°F.

Lubbock WFO

The temperature is forecast to reach **105°F** or more on consecutive days and the overnight temperature between the hot days must not fall below 75°F.

North Texas WFO

The temperature is forecast to reach **105°F** or more on consecutive days and the overnight temperature between the hot days must not fall below 78°F.

WFO for Northeast Texas, Southeast Oklahoma, Southwest Arkansas, and Northwest Louisiana

The temperature is forecast to reach **105°F** or more on consecutive days and the overnight temperature between the hot days must not fall below 75°F.

NOTE: Maps showing the area of coverage, and listing the contact point, for each WFO in Region 6 by State may be found on the following NWS webpages:

Arkansas	http://www.stormready.noaa.gov/stormmaps/ar-cwa.htm
Louisiana	http://www.stormready.noaa.gov/stormmaps/la-cwa.htm
New Mexico	http://www.stormready.noaa.gov/stormmaps/nm-cwa.htm
Oklahoma	http://www.stormready.noaa.gov/stormmaps/ok-cwa.htm
Texas	http://www.stormready.noaa.gov/stormmaps/tx-cwa.htm

Appendix D - First Aid for Heat Stress

The NIOSH website: <http://198.246.98.21/niosh/topics/heatstress/> provided the reference information below.

Heat rash is a skin irritation caused by excessive sweating during hot, humid weather.

Symptoms of heat rash include:

- Heat rash looks like a red cluster of pimples or small blisters.
- It is more likely to occur on the neck and upper chest, in the groin, under the breasts, and in elbow creases.

Workers experiencing heat rash should:

- Try to work in a cooler, less humid environment when possible.
- Keep the affected area dry.
- Dusting powder may be used to increase comfort.

Heat cramps usually affect workers who sweat a lot during strenuous activity. This sweating depletes the body's salt and moisture levels. Low salt levels in muscles causes painful cramps. Heat cramps may also be a symptom of heat exhaustion.

Symptoms of heat cramps include:

Muscle pain or spasms usually in the abdomen, arms, or legs.

Workers with heat cramps should:

- Stop all activity, and sit in a cool place.
- Drink clear juice or a sports beverage.
- Do not return to strenuous work for a few hours after the cramps subside because further exertion may lead to heat exhaustion or heat stroke.
- Seek medical attention if any of the following apply:
 - The worker has heart problems.
 - The worker is on a low-sodium diet.
 - The cramps do not subside within one hour.

Heat Syncope is a fainting (syncope) episode or dizziness that usually occurs with prolonged standing or sudden rising from a sitting or lying position. Factors that may contribute to heat syncope include dehydration and lack of acclimatization.

Symptoms of heat syncope include:

- Light-headedness
- Dizziness
- Fainting

Workers with heat syncope should:

- Sit or lie down in a cool place when they begin to feel symptoms. Slowly drink water, clear juice, or a sports beverage.

Heat Exhaustion is the body's response to an excessive loss of the water and salt, usually through excessive sweating. Workers most prone to heat exhaustion are those that are elderly, have high blood pressure, and those working in a hot environment.

Symptoms of heat exhaustion include:

- Heavy sweating
- Extreme weakness or fatigue
- Dizziness, confusion
- Nausea
- Clammy, moist skin
- Pale or flushed complexion
- Muscle cramps
- Slightly elevated body temperature
- Fast and shallow breathing

Treat a worker suffering from heat exhaustion with the following:

- Have them rest in a cool, shaded or air-conditioned area.
- Have them drink plenty of water or other cool, nonalcoholic beverages.
- Have them take a cool shower, bath, or sponge bath.

Heat Stroke is the most serious heat-related disorder. It occurs when the body becomes unable to control its temperature: the body's temperature rises rapidly, the sweating mechanism fails, and the body is unable to cool down. When heat stroke occurs, the body temperature can rise to 106°F or higher within 10 to 15 minutes. Heat stroke can cause death or permanent disability if emergency treatment is not given.

Symptoms of heat stroke include:

- Hot, dry skin (no sweating)
- Hallucinations
- Chills
- Throbbing headache
- High body temperature
- Confusion/dizziness
- Slurred speech

Take the following steps to treat a worker with heat stroke:

- Call 911 and notify their supervisor.
- Move the sick worker to a cool shaded area.
- Cool the worker using methods such as:
 - Soaking their clothes with water.
 - Spraying, sponging, or showering them with water.
 - Fanning their body.

Appendix E – Heat-Related Illness Inspection Guidance

Background: During the 10-year period from calendar years 2001 through 2011, OSHA Region VI investigated at least 35 heat-related fatalities. Of these, at least 25 (or 71%) were associated with work outdoors. According to the Bureau of Labor Statistics (BLS) Census of Fatal Occupational Injuries (CFOI) data, 230 heat-related deaths have occurred from 2003 – 2009 with 81 (40%) of these fatalities in the construction industry. Over that same time period, 15,370 heat-related injuries/illnesses requiring days away from work have occurred with 4,110 (27%) of these injuries/illnesses in the construction industry.

Prevention of heat related illnesses is relatively inexpensive. NIOSH studies show that heat stress can be prevented with simple measures such as drinking adequate fluids, having access to shade, taking adequate break time to cool and maintain body temperature, employee training to recognize and treat symptoms, and surveillance of potential heat illness developing in workers.

Implementation: When CSHOs conduct inspections of outdoor activities when the NWS has issued a heat advisory or alert, they shall perform brief job site heat stress evaluations. CSHOs shall check for the availability of cool drinking water and shade. They should ask employees and supervisors about first aid and heat stress training, and access to emergency medical care. If training, potable water and/or first aid deficiencies are determined, 1910.141, 1910.151 or 1926.21, 1926.50 and 1926.51 should be cited as appropriate. The OSHA 1B should detail the heat stress conditions and include interview statements and temperature data for the area.

CSHOs can also discuss with their supervisor if the case should be referred to an IH for potential 5(a)(1) violation development, or can the unsafe heat related conditions be addressed through existing regulations.

If conditions warrant a heat stress evaluation for a potential 5(a)(1) citation, full shift sampling should be conducted with the wet bulb globe thermometer (WBGT) documenting worker tasks, measuring durations of tasks and breaks by the minute, assessing calories burned, and providing “light, medium or heavy” rankings to the work. Depending on the investigation results, a 5(a)(1) citation on heat stress could be issued. In making this determination, documentation would need to establish that heat overexposure would occur even if the “heavy” work was re-classified as “light”. (See Appendix D-2* and OSHA Instruction TED 01-00-015, Section III, Chapter 4 (Heat Stress), January 20, 1999, OSHA Technical Manual.)

In heat stress fatality cases, there is a priority on *documenting workplace conditions* through employee interview statements and other sources [i.e., on-site monitoring, medical reports, etc.]. In these cases there may also be violations of existing standards, as well as Section 5(a)(1) of the OSH Act.

Prior to issuing a 5(a)(1) violation, the area office shall consult with Enforcement Programs.

Suggested Text for 5(a)(1) Citation: The employer did not furnish to each of his employees a place of employment which was free from recognized hazards that were causing or likely to cause death or serious physical harm to employees in that employees were exposed to excessive heat:

On or about _____ (date) and at times prior thereto, _____ (employees' job title, i.e., laborers) performing the task of _____ (work activity, i.e., pouring concrete) at the _____ (site name) were subjected to the recognized hazard of excessive heat. Exposure to excessive levels of heat may result in serious heat induced illnesses which include: transient heat fatigue, heat rash, fainting, heat cramps, heat exhaustion and heat stroke. Heat stroke is the most serious of these illnesses and can result in death. [Discuss any actions the employer took or failed to take that contributed to the risk of heat-related illness].

Among other methods, one feasible and acceptable abatement method to correct this hazard is to establish a Heat Stress Management Program which incorporates guidelines from the ACGIH's Threshold Limit Values and Biological Exposure Indices and/or the National Institute for Occupational Safety and Health (NIOSH) document," Protecting Workers from Heat Illness". Such a program may include, but is not limited to:

1. Acclimatizing employees beginning work in hot environment or those returning from absent periods of three or more days,
2. Developing a work/rest regiment,
3. Providing cool water and encouraging employees to drink 5 to 7 ounces of fluid every 15 to 20 minutes---rather than relying on thirst,
4. Providing for a cool rest area,
5. Providing training for employees regarding the health effects associated with heat stress, symptoms of heat induced illnesses and the methods of preventing such illnesses, and
6. Establishing a screening program to identify health conditions aggravated by exposure to heat stress.

Appendix F: Issues for Heat Stress Inspections

1. Temperature(s) at time of inspection. (The inspection may last for several hours, so at least note the high and low temperatures for that day.)
2. Relative humidity: _____
3. Wind speed (mph): _____
4. Cloud cover conditions: _____
5. Ages of workers _____
6. Is shade available? _____ Guideline: For working on days where the NWS has issued a heat advisory or alert, shade must be available throughout the shift to help prevent the development of heat related illness. The shaded area must be either open to the air or provided with ventilation. Other cooling measures (e.g., use of misting machines, access to locations with air conditioning, etc.) may be provided in lieu of shade if these measures are at least as effective in cooling employees.
7. Is cool drinking water provided? _____
8. How much liquid do employees drink? _____ For employees working outdoors and performing manual labor, drinking at least one quart per hour is recommended. On the 1B or sampling forms, note the amounts and frequency of liquids consumed by employees.
9. Have workers been trained on heat stress symptoms? _____
10. Do any workers on site have current first aid training? _____
11. Are there any heat related illnesses noted on the OSHA 300 logs during the last 3 years? _____
12. Is there a first aid kit? _____
13. If so, does the first aid kit have a thermometer? _____
14. How far away is a medical clinic or hospital? _____
15. Are there emergency plans in place for contacting help in case of a first aid emergency?

16. Are emergency plans in writing or are they verbally communicated? _____
17. Are 911 services available in the area where employees are working? _____

Appendix G: Additional Data to be Gathered by Industrial Hygienists on Cases Requiring Extensive Documentation

1. If possible, conduct full shift sampling with a WBGT. See: OSHA Instruction TED 01-00-015, Section III, Chapter 4, January 20, 1999, OSHA Technical Manual.
2. Carefully document the tasks of workers including their specific physical movements, minutes employees perform these tasks, and frequency/length of their rest breaks.
3. Using a standard consumer scale, measure the weight of each worker sampled, before and after the shift.
4. If possible, ask workers about any medical conditions that may pre-dispose them to heat related illnesses. (Let them know that they are not required to answer these questions.)
5. Ask workers if there have been any heat related illnesses at the job site. (Compare their answers with the OSHA 300 logs.)
6. On the sampling forms, document the types of clothing and PPE worn by the exposed employees.
7. Assign insulation value of clothing (Clo) factors to adjust the WBGT readings. (See OSHA Instruction TED 01-00-015, Section III, Chapter 4)
8. In addition to the sun, document any sources of heat to which employees are exposed.

*Use OSHA Instruction TED 01-00-015, Section III, Chapter 4, January 20, 1999, OSHA Technical Manual for evaluating heat exposures.

Contact the Dallas Regional Office for assistance on determining the workload or metabolic rates.

Appendix H: Biological Monitoring Techniques
Reference: NIOSH 1986 Criteria for a Recommended Standard:
Occupational Exposure to Hot Environments

Body Weight: Weight loss should not exceed 1.5% of total body weight in a work day. If it does, fluid and food intake should increase. (Alcohol and caffeinated beverages should always be avoided when working under heat stress conditions.) A typical bathroom digital scale can be used for this measurement. Body water loss can be measured by weighing the worker at the beginning and end of each work day and by using this equation:

Where:

$$\text{Weight Loss} = \text{Pre-Activity Weight} - \text{Post-Activity Weight}$$

Then:

$$\% \text{ Body Weight Loss} = (\text{Weight Loss} \div \text{Pre-Activity Weight}) \times 100$$