

Environmental Health and Safety Office



HEAT STRESS MANAGEMENT PROGRAM

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1.0 Introduction

Employee exposure to Heat Stress can result in several illnesses, as well as decreased productivity and increased likelihood of injuries. The Elizabeth City State University Heat Stress Management Program is designed to protect employees against the risk of heat induced illnesses and injuries.

Heat stress results from a combination of internal (body) heat production from doing work and external heat exposure from the environment. Both aspects need to be addressed to properly control heat stress.

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

Climatic and environmental conditions that affect the risk of heat-related disorders are air temperature and humidity, air movement, and the temperature of surrounding surfaces which affects radiant heat exchange.

Demands of the work influence the stress on the temperature regulation system. Individual responses to a given work load vary but, as an employee expends more energy, the body's internal metabolic heat production rises. This increases stress on the cardiovascular system to regulate body temperature (i.e., by increasing blood flow to skin). Work-related factors that influence heat stress include work rate, level of physical effort, and duration of activity

Clothing characteristics such as insulation, permeability, weight, fit and ventilation affect the body's ability to regulate internal temperatures. Other factors that may increase the risk of heat-related disorders include additional equipment, the use of a respirator, or other personal protective equipment (PPE).

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

Working in an environment with heat stress not only increases the risk for specific heat related conditions such as heat exhaustion and heat stroke, but also increases the risk for workplace accidents.

This program/guideline describes common heat disorders (health hazard of heat exposure), prevention strategies, methods for evaluating heat stress risk, and methods of control.

1.1 Application

Elizabeth City State University is committed to the health and safety of our students, faculty, staff and visitors. This guideline applies to all ECSU employees that may be required to work in elevated temperature work environments.

1.2 Purpose

The goal of this program is to minimize potential detrimental health effects for Elizabeth City State University employees resulting from excessive heat that may result from working outdoors or within indoor environments with elevated temperatures. This document establishes guidelines to assess and minimize employee health risks resulting from heat stress exposure.

1.3 Standards and Regulatory Guidelines

There is currently no specific Occupational Safety and Health Administration (OSHA) Standard for heat stress. However, OSHA recognizes that jobs involving operations in hot environments have the potential to induce heat stress in employees. These operations include those which involve radiant heat sources, high humidity, direct contact with hot objects, or strenuous activities. The National Institute of Occupational Safety and Health (NIOSH) the American Conference of Governmental Industrial Hygienists (ACGIH) and the Environmental Protection Agency (EPA) have promulgated recommended safety guidelines for working in hot environments. As guidance for employers of those individuals involved in these operations, OSHA has included a section on heat stress in the OSHA Technical Manual which references many of the guidelines put forth by NIOSH and ACGIH.

2.0 Responsibilities

Management Responsibilities

It is management's responsibility to provide a safe workplace for the employees of the University with the realization that employees are ultimately responsible for their own personal safety. Supervisors shall assess the workplace or contact the EHS Office to determine if heat stress hazards are present or likely to be present that would necessitate the use of engineering controls, administrative controls, or PPE.

Deans, Department Heads, and Directors

- Ensure heat stress management within their units meets the requirements of this guideline
- Provide fiscal and administrative resources for the implementation of their unit specific heat stress management guidelines.
- Ensure that all personnel within their unit affected by heat stress receive proper training.

Supervisors

- Attend training on the requirements of the unit specific heat stress program.
- Identify personnel who require heat stress training and ensure that they have received the proper training before allowing work to commence in a heat stress environment.
- Understand and follow the protocols of this heat stress guideline, unit specific heat stress guidelines, and specific SOPs.
- Complete an Elizabeth City State University Supervisor Incident Investigation Report for any employee heat related injury or illness.

Affected Employees

- Attend training on the requirements of the Heat Stress Management Program
- Know and understand the hazards and warning signs of Heat Stress
- Understand and follow the protocols of this heat stress guideline, and any unit specific heat stress management procedures (SOPs).
- Complete an Employee Incident Report for any heat related injury or illness.
- Comply with applicable safety and regulatory requirements.
- Wear or use prescribed protective equipment
- Report hazardous conditions and dangers to their supervisor.
- Report any job related injury or illness to the University and seek treatment promptly.
- Promptly notify supervisor of any medical condition, or if they are taking over-the-counter medications that might put them at special risk for heat related injury. Alternate means of protection from heat stress may be devised that accommodate the employee's situation. The EHS Office will review these situations on a case-by-case basis.

Environmental Health and Safety Office (EHS)

- Develop a written Heat Stress Guideline and review it on an annual basis.
- Conduct hazard evaluations of heat stress environments upon request and make recommendations for risk management.

- Provide campus departments with assistance in creating specific heat stress guidance and site specific SOPs.
- Assist campus departments in the selection of appropriate equipment to control high heat stress environments.
- Provide training on heat stress management annually and upon request.

3.0 Definitions

Acclimatization (or acclimation) is adaptation to a new climate, such as a new temperature, altitude or environment.

Conduction is the transfer of heat between materials that contact each other. Heat passes from the warmer material to the cooler material. For example, a worker's skin can transfer heat to a contacting surface if that surface is cooler, and vice versa.

Convection is the transfer of heat in a moving fluid. Air flowing past the body can cool the body if the air temperature is cool. On the other hand, air that exceeds 35°C (95°F) can increase the heat load on the body.

Dry bulb (DB) temperature is measured by a thermal sensor, such as an ordinary mercury-in-glass thermometer, that is shielded from direct radiant energy sources.

Electrolytes are various ions, such as sodium, potassium, or chloride, required by cells to regulate the electric charge and flow of water molecules across the cell membrane. Muscle contraction is dependent upon the presence of calcium, sodium, and potassium. Without sufficient levels of these key electrolytes, muscle weakness or severe muscle contractions may occur.

Evaporative cooling takes place when sweat evaporates from the skin. High humidity reduces the rate of evaporation and thus reduces the effectiveness of the body's primary cooling mechanism.

Metabolic heat is a by-product of the body's activity.

Radiation is the transfer of heat energy through space. A worker whose body temperature is greater than the temperature of the surrounding surfaces radiates heat to these surfaces. Hot surfaces and infrared light sources radiate heat that can increase the body's heat load.

Wet bulb (NWB) temperature is measured by exposing a wet sensor, such as a wet cotton wick fitted over the bulb of a thermometer, to the effects of evaporation and convection.

Heat Index

The heat index (HI) or humidity or humidex is an index that combines air temperature and relative humidity in an attempt to determine the human-perceived equivalent temperature — how hot it feels. The result is also known as the "felt air temperature" or "apparent temperature". For example, when the temperature is 90 °F (32 °C) with very high humidity, the heat index can be about 105 °F (41 °C).

4.0 Heat Stress Injuries/Illnesses (symptoms, treatment, cause, prevention)

HEAT STROKE	
Symptoms:	Usually hot, dry skin; red, mottled or bluish. Sweating may still be present. Confusion, loss of consciousness, convulsions. Rapid pulse. Rectal temperature greater than 104°F. When in doubt, treat as heat stroke. Can be fatal.
Treatment:	Medical emergency. Call paramedics and start cooling the victim immediately. Remove the victim to a cool area. Soak clothing and skin with cool water and use a fan to create air movement. Shock may occur. Medical treatment is imperative.
Cause:	Partial or complete failure of sweating mechanism. The body cannot get rid of excess heat

HEAT STROKE cont.	
Prevention:	Acclimatization, close monitoring for signs of heat illness, medical screening and drinking plenty of water.

HEAT EXHAUSTION	
Symptoms:	Fatigue, weakness, dizziness, faintness. Nausea, headache. Moist, clammy skin; pale or flushed. Rapid pulse. Normal or slightly elevated temperature.
Treatment:	Have the victim rest in a cool area and drink fluids.
Cause:	Dehydration causes blood volume to decrease.
Prevention:	Acclimatization and drinking plenty of water.

HEAT SYNCOPE	
Symptoms:	Fainting while standing erect and immobile. A variant of heat exhaustion. Symptoms of heat exhaustion may precede fainting.
Treatment:	

Move the victim to a cool area, have the victim rest and drink fluids.
Cause: Dehydration causes blood volume to decrease. Blood pools in dilated blood vessels of the skin and lower body, making less blood available to the brain.
Prevention: Acclimatization, drinking plenty of water, avoiding standing in one place and intermittent activity to avoid blood pooling.

HEAT CRAMPS
Symptoms: Painful muscle spasms in the arms, legs or abdomen during or after hard physical work.
Treatment: Resting, drinking water and eating more salty foods.
Cause: Not well understood. May be due to a loss of salt from sweating. Dehydration is a factor.
Prevention: Adequate water intake and adequate salt intake at meals; do not use salt tablets.

HEAT RASH
Symptoms: "Prickly heat"; tiny, raised, blister-like rash.
Treatment: Keeping skin clean and dry.
Cause: Skin is constantly wet from sweat. Sweat gland ducts become plugged, leading to inflammation.
Prevention: Showering after working in hot environment. Keeping skin dry.

TRANSIENT HEAT FATIGUE
Symptoms: Decline in performance, particularly in skilled physical work, mental tasks and those requiring concentration.
Treatment: No treatment necessary unless other signs of heat illness are present.
Cause: Discomfort. Stress from the heat less than what would result in other heat illnesses.
Prevention: Acclimatization and training.

(See Appendix C for Solar Energy Exposure health effects and risk reduction)

5.0 Heat Stress Prevention / Risk Management

The Elizabeth City State University heat stress prevention program involves four elements, which are:

1. Employee Training
2. Assessing Job Heat Stress Risks
3. Assessing Employee Heat Stress Risks
4. Heat Stress Controls

5.1 Employee Training

The most important component of the Elizabeth City State University heat stress prevention program is employee training. In addition to reading this program document, employees shall be trained regarding the risks of heat stress and how it is reduced, as well as how to recognize heat illnesses and treat them. Specific components of the training include:

- The hazards of heat stress,
- Personal precautions that can be taken to reduce heat stress (see Section 5.4),
- Predisposing factors for, danger signs of, and symptoms of heat stress conditions and illnesses (see Section 5.3),
- Dangers of using drugs, including therapeutic ones, and alcohol in hot work environments,
- Awareness of first-aid procedures for, and the potential health effects of, heat stroke in themselves and others,
- Employee responsibilities in avoiding heat stress,
- Typical engineering and administrative controls implemented to reduce heat stress,
- Use of personal protective equipment, and
- Purpose and coverage of environmental and medical surveillance programs and the advantages of worker participation in such programs.

5.2 Assessing Job Heat Stress Risks

Supervisors are responsible for assessing every job/project to determine if it is likely to pose heat stress risks. Operations involving high air temperatures, radiant heat sources, high humidity, direct physical contact with hot objects, or strenuous physical activities have a high potential for inducing heat stress in employees. Indoor operations such as electrical utilities (particularly boiler or mechanical rooms) are examples of Elizabeth City State University work locations where heat stress risks can exist. Outdoor operations conducted in hot weather, such as trenching, construction, and grounds maintenance/landscaping, and tasks requiring workers to wear semi-permeable or impermeable protective clothing, are also likely to cause heat stress among exposed workers.

Supervisors are responsible for ensuring that appropriate heat stress reduction controls are instituted (see section 5.4) whenever significant heat stress is possible. Employees are empowered to request such controls if heat stress is expected or encountered.

5.2.1 Assessing Environmental Heat Stress Risks

Ambient temperature, humidity levels, radiant heat sources, and air movement must be taken into consideration when assessing the potential for heat stress hazards. There are several different ways to evaluate environmental heat stress risks for employees. The most common method used is the National Weather Service Heat Index.

5.2.1.1 National Weather Service Heat Index

A second method of evaluating environmental heat stress risk for workers working outdoors is using the National Weather Service **Heat Index**. This index can be used to determine danger levels based on temperature and humidity. One advantage of using this tool is the availability of the data. Temperature and relative humidity are the measurements used for this calculated index and these are available 24/7 from the national weather service. See Appendix B for detailed information

5.3 Assessing Worker Heat Stress Risks

Supervisors are responsible for assessing their employee's ability to perform jobs which might involve heat stress. Age, weight, degree of physical fitness, degree of acclimatization, metabolism, dehydration, use of alcohol or drugs, and a variety of medical conditions such as hypertension all affect a person's sensitivity to heat. However, even the type of clothing worn must be considered. Prior heat injury predisposes an individual to additional injury. Individual susceptibility varies. In addition, environmental factors include more than the ambient air temperature. Radiant heat, air movement, conduction, and relative humidity all affect an individual's response to heat.

Heat stress controls should be modified or the employee reassigned to a job without heat stress for employees identified as at risk for heat conditions or illness.

The potential for an employee who works in a hot environment to be affected by heat stress depends on heat combined with physical labor, loss of fluids and fatigue, in addition to the factors listed below. An assessment of each job with these factors can assist in developing a strategy to prevent heat related problems.

Employee Risk Factors

Factors increasing an employee's susceptibility to heat stress include:

- Being dehydrated
- Having recently consumed alcohol
- Having diarrhea or taking antidiarrheal medications,
- Being exposed to high temperatures at night,
- Fatigue,
- Improper work procedures,
- Lack of acclimatization,
- Loss of sleep,
- Being obese,
- Being over age 40,
- Taking medications that inhibit sweating, such as antihistamines, cold medicines, diuretics and some tranquilizers,
- Previous occurrence of heat stroke
- Poor physical conditioning,
- Recent immunizations (as they can cause a fever),
- Recent drug or alcohol use,
- Skin trauma, such as heat rash or sunburn),
- Use of respirators, and
- Wearing impermeable equipment, such as rubber gloves, rubber boots or Tyvek® suits.

5.4 Heat Stress Controls

Heat stress controls can take the form of engineering controls, personal protective equipment (PPE) and administrative controls. The following sections provide examples of controls that might be appropriate in certain situations.

5.4.1 Engineering Controls

General ventilation dilutes hot air with cooler air. A permanently installed ventilation system usually can handle large areas or entire buildings. Portable or local exhaust systems may be more effective or practical in smaller areas.

Air treatment differs from ventilation because it reduces the temperature of the air by removing the heat, and sometimes humidity, from the air. Air conditioning is a method of air cooling which uses a compressed refrigerant under pressure to remove the heat from the air. This method is expensive to install and operate. An alternative to air conditioning is the use of chillers to circulate unpressurized cool water through heat exchangers over which air from the ventilation system is then passed. Chillers are more efficient in cooler climates or in dry climates where evaporative cooling can be used.

Another way to reduce heat stress is to cool the employee by increasing the air flow or convection using fans, etc. in the work area. Changes in air speed can help workers stay cooler by increasing both the convective heat exchange (the exchange between the skin surface and the surrounding air) and the rate of evaporation. This does not actually cool the air so moving air must impact the worker directly to be effective. Convective cooling is generally only effective as long as the air temperature is less than the worker's skin temperature. Increases in air speed have no effect on the body temperature of workers wearing vapor-barrier clothing.

Heat conduction blocking methods include insulating the hot surface that generates the heat and changing the surface itself. Simple devices, such as shields, can be used to reduce radiant heat, i.e. heat coming from hot surfaces within the worker's line of sight. Polished surfaces make the best barriers, although special glass or metal mesh surfaces can be used if visibility is a problem. With some sources of radiation, such as heating pipes, it is possible to use both insulation and surface modifications to achieve a substantial reduction in radiant heat.

Shields should be located so that they do not interfere with air flow, unless they are also being used to reduce convective heating. The reflective surface of the shield should be kept clean to maintain its effectiveness.

5.4.2 Personal Protective Equipment (PPE)

Reflective clothing, which can vary from aprons and jackets to suits that completely enclose the worker from neck to feet, can reduce the radiant heat reaching the worker. However, since most reflective clothing does not allow air exchange through the garment, the reduction of radiant heat must more than offset the corresponding loss in evaporative cooling. For this reason, reflective clothing should be worn as loosely as possible. In situations where radiant heat is high, auxiliary cooling systems can be used under the reflective clothing.

Auxiliary body cooling ice vests, though heavy, may accommodate as many as 72 ice packets, which are usually filled with water. Carbon dioxide (dry ice) can also be used as a coolant. The cooling offered by ice packets lasts only 2 to 4 hours at moderate to heavy heat loads, and frequent replacement is necessary. However, ice vests do not tether the worker and thus permit maximum mobility. Cooling with ice is also relatively inexpensive.

5.4.3 Administrative Controls

The two most important methods of preventing heat disorders are hydration and acclimatization because they increase the ability of the body to tolerate heat stress. Engineering and administrative controls are also important in reducing heat exposure.

Hydration

- The most important factor in preventing heat illnesses is adequate water intake.
- Water must be available to employees who are working under heat stress risk conditions.
- Workers should drink at least five to seven ounces of cool water every 15 to 20 minutes.
- Under conditions of profuse sweating, a commercial electrolyte replacement drink may be appropriate. Some drinks are too concentrated and need to be diluted or consumed along with water.

Acclimatization

A physiological adaptation will occur with repeated exposure to hot environments. The heart rate will decrease, sweating will increase, sweat will become more dilute and body temperature will be lower. The ability to acclimatize varies among workers. Generally, individuals in good physical condition acclimatize more rapidly than those in poor condition.

Approximately one week of gradually increasing the workload and time spent in the hot environment will usually lead to full acclimatization. On the first day the individual performs 50 percent of the normal workload and spends 50 percent of the time in the hot environment. Each day an additional 10 percent of the normal workload and time is added, so that by day six, the worker is performing the full workload for an entire day. The exposure time should be at least two hours a day for acclimatization to occur.

Acclimatization is lost when exposure to hot environments does not occur for several days. After a one week absence, a worker needs to reacclimatize by following a schedule similar to that for initial acclimatization. The acclimatization will occur more rapidly, so increases in workload and time can increase by approximately 20 percent each day after the first day, reaching normal work conditions by day four.

Work Practices to Reduce Risk

Use the buddy system. Ensure that co-workers watch one another for signs of heat stress. Reduce physical demands by reducing physical exertion such as excessive lifting, climbing, or digging with heavy objects. Spread the work over more individuals, use relief workers or assign extra workers. Provide external pacing to minimize overexertion.

Provide recovery areas, such as air-conditioned enclosures and rooms, and provide intermittent rest periods with water breaks. Establish provisions for a work/rest regimen so that exposure time to high temperatures and/or the work rate is decreased.

Reschedule hot jobs for the cooler part of the day. Routine maintenance and repair work in hot areas should be scheduled for the cooler seasons of the year. When possible, outdoor work areas should be provided with coverings, such as a tarp, to provide shade.

Monitor workers who are at risk of heat stress, such as those wearing semi-permeable or impermeable clothing when the temperature exceeds 70°F, while performing strenuous tasks. Personal monitoring can be done by checking the heart rate, recovery heart rate, oral temperature, or extent of body water loss.

Personal precautions that ECSU employees should be aware of and institute precautions when exposed to heat stress include:

- Fluid intake: Drink 5 to 7 ounces of cool water for every 15 to 20 minutes,
- Salt Supplements: Not recommended since too much salt can cause higher body temperature, increased thirst and nausea
- Dress to Increase Reflection and Convection: Wear light-colored, loose-fitting, breathable clothing,
- Reduce Ultraviolet Radiation: Work in the shade,
- Stop the Heat Build-up: Take frequent short breaks in cool shade.
- Reduce Metabolic Heat: Eat smaller meals before work activity.
- Avoid Dehydrating Liquids: Don't drink caffeine and alcohol or large amounts of sugary drinks,

Appendices

APPENDIX A

ACGIH THRESHOLD LIMIT VALUE (TLV) FOR HEAT STRESS

Heat Stress for an employee is a result of the net heat load which includes combined contributions from metabolic heat (work load), environmental factors (air temperature, humidity, air movement, and radiant heat), and clothing requirements. The TLV is a guideline for a work rest schedule based on body heat load including:

- Type of work activity
- Work Clothing (adjustment to index)

This calculated temperature is used to select a work-rest regimen to minimize risk for most average healthy workers.

ACGIH THRESHOLD LIMIT VALUES FOR HOT ENVIRONMENTS (WBGT Index)

Work-Rest Regimen	Work Load		
	Light	Moderate	Heavy
Continuous Work (75-100% work)	86 °F (31 C)	80 °F (28 C)	77 °F
75% Work (50 -75% work) 25% Rest, each hour	87°F (31 C)	82°F (29 C)	78°F (27.5 C)
50% Work (25-50% work) 50% Rest, each hour	89°F (32 C)	85°F (30 C)	82°F (29 C)
25% Work (0-25% work) 75% Rest, each hour	90°F (32.5 C)	88°F (31.5 C)	86°F (30.5 C)

Work Load Definitions

APPROXIMATE WORKLOAD LEVELS	
Light	Sitting at ease, writing/typing, sorting light materials, inspecting crops, driving mobile equipment on paved roads, piloting spray aircraft
Moderate	Using a chain saw, off-road operation of mobile equipment, periodic handling of moderately heavy materials, weeding, hoeing, picking fruits or vegetables, air blast and boom spraying, knapsack spraying on level ground, pushing or pulling light-weight carts or wheelbarrows, washing vehicles, walking 2-3 mph
Heavy	Transferring heavy materials, shoveling, digging, hand mowing, loading sacks, stacking hay, planting seedlings, hand-sawing wood, pushing or pulling loaded hand carts or wheelbarrows, moving irrigation pipe, laying cinder blocks, knapsack spraying on rough ground or an incline, walking 4 mph
Very Heavy	Heavy shoveling or digging, ax work, climbing stairs, ramps, or ladders, lifting more than 44 pounds at 10 lifts per minute, walking faster than 4 mph, jogging, running

APPENDIX B

HEAT INDEX

The U.S. National Oceanographic and Atmospheric Administration (NOAA) developed the heat index system. The heat index combines both air temperature and relative humidity into a single value that indicates the apparent temperature in degrees Fahrenheit, or how hot the weather will feel. The higher the heat index, the hotter the weather will feel, and the greater the risk that outdoor workers will experience heat-related illness. NOAA issues heat advisories as the heat index rises. To learn more about the heat index, visit NOAA's website.

IMPORTANT NOTE: The heat index values were devised for shady, light wind conditions, and exposure to full sunshine can increase heat index values by up to 15° Fahrenheit. To account for solar load, added precautions are recommended. See Protective Measures to Take at Each Risk Level.

See the OSHA web site for more information: <http://www.osha.gov/SLTC/heatstress/>
 For the HEAT Safety Tool App see: http://www.osha.gov/SLTC/heatillness/heat_index/heat_app.html

NOAA's National Weather Service

Heat Index Temperature (°F)

	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	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	128	136					
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
- Extreme Danger

APPENDIX C

SOLAR ENERGY EXPOSURE (Sun Exposure)

Potential Health Effects of Sun Exposure

Sunlight contains ultraviolet (UV) radiation. UV Radiation has both positive and negative effects. Positive effects of UV radiation include warmth, light, photosynthesis in plants, and vitamin D synthesis in the body. UV radiation also increases moods in people and kills pathogens. However, overexposure to UV radiation has adverse health effects, including skin damage, eye damage, and skin cancer.

Skin Damage

UV-related skin disorders include actinic keratoses and premature aging of the skin. Chronic exposure to the sun also causes premature aging, which over time can make the skin become thick, wrinkled, and leathery. With proper protection from UV radiation, however, most premature aging of the skin can be avoided.

Eye Damage

Cataracts are a form of eye damage in which a loss of transparency in the lens of the eye clouds vision. If left untreated, cataracts can lead to blindness. Research has shown that UV radiation increases the likelihood of certain cataracts. All of these problems can be lessened with proper eye protection from UV radiation.

Skin Cancers

Long-term overexposure to the sun can cause skin cancer. The four types of skin cancer are: Melanoma, Nonmelanoma, Basal Cell Carcinomas, Squamous Cell Carcinomas.

Employee Sun Overexposure Risk Factors

The factors that may increase the risk of skin cancer are:

Fair skin	A history of sunburns.
Excessive sun exposure	Moles
Precancerous skin lesions	A family history of skin cancer.
A personal history of skin cancer	Fragile skin.
Exposure to environmental hazards	Age.

Sun Overexposure Risk Reduction

Employees can implement the following protections to block harmful sunrays:

- Work in the shade whenever possible.
- Cover limbs by wearing loose-fitting, long-sleeved shirts and long pants.
- Use sunscreen with a sun protection factor (SPF) of at least 30. Be sure to follow application directions on the bottle or tube.
- Wear a hat with a wide brim cap. Wide brims protect the neck, ears, eyes, forehead, nose, and scalp from sun exposure. Baseball caps do not provide equal protection.
- Wear UV-absorbent sunglasses (eye protection). Sunglasses should be labeled as blocking 99 to 100 percent of UVA and UVB radiation.
- Limit exposure during the time of day when UV rays are most intense, which is between 10 a.m. and 4 p.m.