



National Optical Astronomy Observatory

Kitt Peak National Observatory • Cerro Tololo Inter-American Observatory • NOAO Gemini Science Center

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HEAT/COLD STRESS AWARENESS POLICY

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REVISION HISTORY

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Date

1.0 INTRODUCTION

1.1 Working in extreme temperatures (hot or cold) can overwhelm the body's internal temperature control system. When the body is unable to warm or cool itself, heat or cold related stress can result. Heat and cold stress can contribute to adverse health effects which range in severity from discomfort to death.

1.2 The Occupational Safety and Health Administration (OSHA) does not currently have specific standards for heat or cold stress. However, the Occupational Safety and Health Act of 1970 General Duty Clause (Section 5(a)(1)) states that *"Each employer shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees."* In addition, 29 CFR Subpart I relating to personal protective equipment requires employers to provide protection to employees exposed to hazards in the workplace. The OSHA website contains Fact Sheets and Guidance Documents that relate to heat and cold stress that have been incorporated into this program.

2.0 PROGRAM FOCUS

2.1 The Program Focus is to ensure that NOAO-North employees, contractors and visitors that are carrying out work in extreme heat or cold are able to carry out that work without risk to their health and safety, so far as is reasonably practicable;

2.2 And to provide information to managers, supervisors, employees, visitors and contractors of the risks associated with working in extreme hot and/or cold conditions and of strategies to minimize the risk of injury.

3.0 HAZARDS ASSOCIATED WITH HEAT AND COLD EXTREMES

3.1 Heat Related Illnesses; Signs, Treatments and Prevention - While working in hot weather conditions, the human body may not be able to maintain a normal temperature just by sweating. If this happens, heat-related illnesses may occur. The most common health problems caused by hot work environments include:

3.1.1 Heat stroke – This is the most serious heat related effect. Heat stroke occurs when the body temperature increases above 104°F. Signs and symptoms of heat stroke are confusion, loss of consciousness and lack of perspiration. This condition must be treated as a medical emergency and the employee must receive immediate medical attention.

3.1.2 Heat exhaustion – Signs and symptoms of heat exhaustion include headache, nausea, dizziness, weakness, irritability, confusion, thirst, heavy perspiration and a

body temperature greater than 100.4°F. Employees experiencing heat exhaustion should be moved to a cool area, given fluids to drink and given cold compresses for their head, face and neck.

3.1.3 Dehydration – Dehydration is a major factor in most heat disorders. Signs and symptoms of dehydration include increasing thirst, dry mouth, weakness or light-headedness (particularly if worse upon standing), and a darkening of the urine or a decrease in urination. Dehydration can be reversed or put back in balance by drinking fluids that contain electrolytes (i.e. Gatorade) that are lost during work related activities. Avoid caffeinated drinks.

3.2 Cold Related Illnesses; Signs, Treatments and Prevention - During cold weather, an employee's body will use energy to maintain a normal internal body temperature. This will result in a shift of blood flow from employee's extremities (hands, feet and legs) and outer skin to the employee's core (chest and abdomen). If this happens, cold-related illnesses and injuries may occur if exposed to cold conditions for an extended period of time. The most common health problems caused by cold work environments include:

3.2.1 Hypothermia – Hypothermia is a potentially serious health condition. Hypothermia occurs when body heat is lost faster than it can be replaced. When the core body temperature drops to approximately 95°F, the onset of symptoms normally begins. The employee may begin to shiver, lose coordination, have slurred speech, and fumble with items in the hand. The employee's skin will likely be pale and cold. As the body temperature continues to fall these symptoms will worsen and shivering will stop. Once the body temperature falls to around 85°F severe hypothermia will develop and the person may become unconscious, and at 78°F, vital organs may begin to fail.

Treatment depends on the severity of the hypothermia. For cases of mild hypothermia move to warm area and stay active. Remove wet clothes and replace with dry clothes or blankets, cover the head. To promote metabolism and assist in raising internal core temperature drink a warm (not hot) sugary drink. Avoid drinks with caffeine. For more severe cases do all the above, plus contact emergency medical personnel.

3.2.2 Frostbite – Frostbite occurs when the skin actually freezes and loses water. In severe cases, amputation of the frostbitten area may be required. While frostbite usually occurs when the temperatures are 30° F or lower, wind chill factors can allow frostbite to occur in above freezing temperatures. Frostbite typically affects the extremities, particularly the feet and hands. The affected body part will be cold, tingling, stinging or aching followed by numbness. Skin color turns red, then purple, then white, and is cold to the touch. There may be blisters in severe cases.

Do not rub the area to warm it. Wrap the area in a soft cloth, move the employee to a warm area, and contact medical personnel. Do not leave the employee alone. If help is

delayed, immerse in warm (maximum 105 °F), not hot, water. Do not pour water directly on affected part. If there is a chance that the affected part will get cold again do not warm. Repeated heating and cooling of the skin may cause severe tissue damage.

3.2.3 Dehydration – It is easy to become dehydrated during cold weather. Signs of dehydration include increasing thirst, dry mouth, weakness or light-headedness (particularly if worse upon standing), and a darkening of the urine or a decrease in urination. Dehydration can be reversed or put back in balance by drinking fluids that contain electrolytes (i.e. Gatorade) that are lost during work related activities. Avoid caffeinated drinks

4.0 CONTROL OF HAZARDS

4.1 Prevention methods include:

4.1.1 Acclimation – Acclimation is a process by which the physical processes of an employee's body adjusts to the environment over a period of time for both heat and cold.

4.1.2 Ensure that employees are equipped with the proper PPE for temperature extremes. Dress appropriately for either heat or cold extremes.

4.1.3 Allow individuals to work at their own pace and to take extra breaks when needed.

5.0 RESPONSIBILITIES

5.1 Safety shall:

5.1.1 Maintain, review and update the Heat and Cold Stress Program as needed.

5.1.2 Provide monitoring (upon request) and assist employees with the development of procedures to minimize the adverse effects of heat and cold stress in the workplace.

5.1.3 Provide training to employees affected by heat and cold.

5.2 Supervisors shall:

5.2.1 Review and comply with the provisions outlined in this program.

5.2.2 Ensure all employees are properly trained before working in extreme temperature conditions.

5.2.3 Assess the day-to-day heat or cold stresses on employees.

5.2.4 Assess employees work load and assigning work and rest schedules as needed.

5.2.5 Ensure all employees have the appropriate personal protective equipment (PPE) prior to working in extreme temperature conditions.

5.2.6 Ensure employees are familiar with this safety program.

5.3 Employees shall:

5.3.1 Review and comply with the provisions outlined in this program.

5.3.2 Complete training before working in extreme temperature conditions.

5.3.3 Wear the appropriate PPE.

5.3.4 Report heat and cold stress concerns to their supervisor.

6.0 TRAINING

6.1 Training will be provided to employees that will be impacted by working in extreme temperatures by either Safety or the Area Supervisor.

6.2 The policy must be reviewed with the employees under the following terms:

6.2.1 Initially

6.2.2 When there is a change in policy

6.2.3 When there is a change in the worker's status

7.0 REFERENCES

OSHA Quick Card Reference #3154 – Heat Stress

OSHA Quick Card Reference #3156 – Cold Stress