# Environmental Health and Safety
# Managing and Preventing Heat Stress

## Introduction

This guide on Heat Stress and Related Emergencies outlines the essential principles and addresses frequently asked questions to help you maintain safety while working in hot conditions. We recommend reviewing these guidelines quarterly to reinforce safe practices. Please note that this guide is intended to complement the annual training provided by EHS, not to replace it. Idaho standards and OSHA regulations require employers to provide a safe workplace; your safety is our priority, and staying informed is key to preventing heat-related incidents.

Working in high temperatures can put a lot of stress on your body, leading to heat-related illnesses or, in extreme cases, even fatalities. Plus, heat can increase the likelihood of other injuries—think sweaty palms, foggy safety glasses, dizziness, and burns from hot surfaces. Each year, thousands of workers face heat-related health issues, but the good news is that most of these problems can be prevented with the right precautions.

## Risk Factors

- **Weather/Working Conditions.** The risk of heat stress is relative to temperature, humidity, sunlight, and wind speed. High temperature, high humidity, direct sunlight and low wind speed make the worst combination. Working indoors in areas where heat is generated and/or is not easily dissipated can be a risk factor. Try to provide ventilation/enhance air movement, and if possible, schedule heavy work for the cooler parts of the day.

- **Personal Factors and Physical Demands.** The risk of heat stress increases with physical demands. For example, a worker who is walking is at higher risk than a worker who is riding in a vehicle. A worker who is lifting and carrying heavy items is at the greatest risk. Age, physical health, and persons taking certain types of medication, such as antihistamines, are factors that should be considered.

## Mitigation Strategies

It may not always be possible to work only in cooler parts of the day or in cool environments. The risk of heat-related illness can be reduced by:

- **Acclimation.** Tolerance to the heat can be increased through a process of acclimation that involves gradually increasing exposure time and workload. New employees and workers returning from an absence of a week or more should take care to re-acclimate to the conditions.

- **Appropriate Clothing.** Wear light, loose clothing and a hat. In some cases, personal cooling devices (such as water circulating cooling vests) may be advisable.

- **Hydration.** Pre-hydrate the body by drinking 8-16 ounces of water before working in the heat. Keep water or an electrolyte drink within easy reach and consume about 8 ounces of fluid every 15-20 minutes, not just during rest breaks. Avoid alcohol, coffee, tea, or

soda, which act as diuretics and further dehydrate the body. Monitor your urine output. Large volumes of relatively clear or light-colored liquid indicate proper hydration. Small volumes and/or dark urine may be indicators of dehydration.

- **Adequate Rest Periods.** Avoid overexertion and work at a steady pace. Heed the body's signals. Take plenty of breaks in shaded or cooler areas.
- **Job Rotation.** When possible, rotate difficult work tasks in hot conditions between two or more employees.
- **Education.** Heat stress can manifest as a number of conditions, all to be taken seriously and some requiring medical assistance to avoid permanent after effects. Workers should recognize the signs and symptoms of heat stress and the proper actions to take, whether experienced personally or observed in co-workers.

The Occupational Safety and Health Administration (OSHA) developed a Heat Safety smartphone app in both English and Spanish. The app provides reminders about protective measures that should be taken at the indicated risk level to protect workers from heat-related illness, for example, reminders about drinking enough water, recognizing signs and symptoms of heat-related illness, planning for and knowing what to do in an emergency. (Heat Safety Tool | Occupational Safety and Health Administration (osha.gov)

## Heat-Related Illnesses/Emergencies

The table outlines various heat-related illnesses and their treatments. It's important to be vigilant for symptoms in yourself and your coworkers, such as dizziness, muscle cramps, or confusion. Knowing how to respond to these conditions can make a significant difference in ensuring everyone's safety. Be sure to familiarize yourself with the appropriate treatments for each illness.

| SIGNS AND SYMPTOMS | TREATMENT |
|---|---|
| **Early Heat Illness**<br>Mild dizziness, fatigue, or irritability; decreased concentration; impaired judgment. | • Loosen or remove clothing.<br>• Rest in shade 30 minutes or more.<br>• Drink water. |
| **Heat Rash**<br>Tiny blister-like red spots on the skin; prickling sensations. Commonly found on clothed areas of the body. | • Clean the skin and allow it to dry.<br>• Wear loose clothing.<br>• Rest in a cool place. |

| SIGNS AND SYMPTOMS | TREATMENT |
|---|---|
| **Heat Syncope**<br><br>Fainting of an un-acclimated worker when standing still in the heat. | • Lie down until recovered.<br><br>• Moving around, instead of standing still, in the heat will reduce recurrence.<br><br>• Acclimate to heat. |
| **Heat Cramps**<br><br>Painful spasms of the muscles; occurs when workers drink large amounts of water without replacing salts. May occur during or after work hours. | • Drink electrolyte liquids (sports drinks such as Gatorade, All Sport, etc.).<br><br>• Rest.<br><br>• Massage affected areas.<br><br>• May require intravenous salt solutions if determined by a doctor. |
| **Heat Exhaustion**<br><br>Extreme weakness or fatigue, giddiness, nausea, or headache. Moist, clammy skin. Pale or flushed complexion. Normal or slightly elevated body temperature. | • Rest lying down in a cool place.<br><br>• Loosen or remove clothing.<br><br>• Splash water on body.<br><br>• Massage legs and arms.<br><br>• If conscious, drink water or an electrolyte solution, but not salt or salt water.<br><br>• If unconscious, treat for Heat Stroke (below) until proven otherwise.<br><br>• Severe cases involving workers who vomit or lose consciousness may require longer treatment under medical supervision.<br><br>• Medical personnel should evaluate workers who collapse. |

| SIGNS AND SYMPTOMS | TREATMENT |
|---|---|
| **Heat Stroke**<br><br>Often occurs suddenly. Sweating stops. Mental confusion, very aggressive behavior, delirium, loss of consciousness, convulsions, or coma. Fast pulse. Rapid breathing. Body temperature of 106°F or higher. Hot, red skin that may be red, mottled, or bluish. Worker may resist treatment. | • Call 911<br><br>• While awaiting medical help, remove victim to cool area, soak clothing with cool water, fan vigorously to increase cooling, and elevate legs. Treat for shock, if required, after temperature drops.<br><br>• If conscious, have victim drink as much water as possible.<br><br>• Prompt first aid and medical attention can prevent permanent injury to the brain and other vital organs. |

* Sources: A Guide to Heat Stress in Agriculture (EPA); Heat-related Illness and First Aid (OSHA) 2011

## FAQs

**Q1. Why might the university shut down a building cooling system?**

A1. According to the university's Facilities Management standard operating procedure for a Load Shedding event, the cooling system for selected buildings might be shut down to reduce the load on the chilled water system as part of their efforts to maintain critical systems and prevent extensive damage from overheating. Contact Facilities Management at 208-885-6246 for more information.

**Q2. What should I do if the indoor temperature in my office space rises after a cooling system shutdown?**

A2. Consider the following steps to reduce your discomfort:

1- Stay hydrated. Drink plenty of water.
2- If possible, wear comfortable clothing that is loose fitting. Personal protective clothing should still be worn if work requirements dictate.
3- Use curtains and shades on your windows to reduce radiant heat.
4- Promote air movement with the use of fans.
5- Open your windows in the morning to cool off your office and then close them mid-morning through the afternoon when temperatures are heating up.

**Q3. It is very hot at my workplace; can I use a fan?**

A3. Yes, you can.

**Q4. Is there an indoor temperature above which it is hazardous to occupy my office?**
A4. The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) set a standard recommendation for indoor comfort zone for human occupancy between 67 and 82°F. This range is related to humidity as well. Idaho General Health and Safety Standards set the summer comfort zone recommendation between 73 and 79°F. These are recommendations; there is no limit or action level.

**Q5. Whom should I contact to evaluate my office space for temperature and humidity?**
A5. Please contact EHS at 885-6524 or safety@uidaho.edu to request indoor temperature and humidity measurements. EHS can also review recommended practices to reduce your level of discomfort.

**Q6. I will be working outdoors; are there safety recommendations I must follow to prevent heat stress?**
A6. Yes, please check the EHS quick guide on heat stress. This guide outlines the risk factors and simple mitigation strategies to reduce the risk of outdoor related heat stress. Appendix A.

**Q7: Can I still exercise/work out at the SRC if the cooling system is shut down?**
A7: Users must follow SRC protocols and recommendations.