UTSA LAB SAFETY GUIDELINES FOR WORKING OUTDOORS IN EXTREME HEAT

Field researchers working outdoors can often face adverse conditions such as extreme temperatures. In Texas and across the southern United States, extreme heat is a hazard that is often encountered and can be life-threatening. There are many things that we can do to offset the risks of heat-related injuries. The following guidelines are designed to mitigate hazards associated with outdoor sun exposure and help prevent heat-related illness.

Excessive Heat Warning (City of San Antonio Heat Plan definition)

An Excessive Heat Warning is issued within 12 hours of the onset of extremely dangerous heat conditions. The general rule of thumb for this Warning is when the maximum heat index temperature is expected to be 105° or higher for at least 2 days and nighttime air temperatures will not drop below 75°; however, these criteria vary across the country, especially for areas not used to extreme heat conditions. If you don't take precautions immediately when conditions are extreme, you may become seriously ill or even die.

Heat Advisory (City of San Antonio Heat Plan definition)

A Heat Advisory is issued within 12 hours of the onset of extremely dangerous heat conditions. The general rule of thumb for this Advisory is when the maximum heat index temperature is expected to be 100° or higher for at least 2 days, and nighttime air temperatures will not drop below 75°; however, these criteria vary across the country, especially for areas that are not used to dangerous heat conditions. Take precautions to avoid heat illness. If you don't take precautions, you may become seriously ill or even die.

Monitor Local Weather Conditions and Forecasts

Before heading out to work in the field, monitor local weather conditions and forecasts. If heat warnings or heat advisories are in the forecast, additional precautions should be taken. National Weather Service (www.weather.gov) as well as various proprietary weather reporting organizations can provide local forecast information. Additionally, the Occupational Safety and Health Administration Heat Index App (Heat Safety Tool for Android and iPhone) should be referenced for work-risk levels. The app allows workers to calculate the Heat Index for the location and based on the heat index, displays a risk level for outdoor workers.

Training and Acclimatizing

Lab Safety strongly encourages the training of all field researchers on heat illness prevention as well as emergency measures to mitigate heat-related injuries. Fieldwork safety training is available through UTSA BioRaft. A Field Work Safety Plan should be developed with emergency contact information, including the nearest emergency room location. At least one member of the field research team should have First Aid training and an appropriately stocked First Aid Kit should be available on site.

During periods when excessive heat warnings or heat advisories are anticipated, Field workers should be scheduled to work in a manner that allows them to acclimatize whenever possible.

Allowing workers to slowly build up tolerance to the heat is achieved by having a worker work a quarter day, followed by a half day, followed by a three-quarter day, and culminating in a full day.

Schedule around Hazardous Weather

When a heat advisory is in effect, or other severe watches are in effect, try to schedule work to protect personnel from weather impacts. Early starts/early finishes to the field day can help avoid higher temperatures. If possible, rotate out workers in several shorter shifts, 3 workers each with a 2-hour shift would be better than one worker working a 6-hour shift. In situations of Excessive Heat Warnings where no schedule adjustments can be made, consider postponing the field work until weather conditions improve.

In situations where field schedules cannot be adjusted during a heat advisory or excessive heat warning is in effect, rotate the staff daily, break up the workday into shorter shifts, send out an individual with supplies such as ice, water, cooling towels in an air-conditioned vehicle to assess personnel and encourage prolonged cooling breaks to limit heat exposure.

Preparing for Field Activities

Field workers' field projects in south Texas have excessive heat as a primary concern throughout most of the year. Even on days when the temperature is not over 100° working in direct sun can still cause heat-related illness. Precautions should always be taken when working outdoors to prevent heat-related illness.

Hydration: Drink plenty of water and electrolyte solutions before starting out to work in the field. Take plenty of water to the field to allow for each worker to drink 8 oz per hour or in the case of extreme conditions, 8 oz every 15 minutes. Coolers with supplies such as ice, water, electrolyte beverages, and cooling towels should be taken to the field site.

Clothing: Wear loose-fitting, lightweight, light-colored clothing, a hat, and sunglasses to protect against the rays of the sun.

Sun Exposure: Canopies, umbrellas, large brim hats, can all be used to reduce sun and heat exposure. Sunscreen with a high SPF factor should be used to prevent sunburn. Cooling bandanas, sun hats, and cooling vests can be worn to protect the skin from the sun and also to help cool off workers.

Parking: Park as close as possible to your fieldwork. Minimize the distance from the vehicle and access to the ice cooler and air conditioning. If possible, request parking permits.

Breaks: Take a 10 to 15-minute break in the shade or air conditioning every hour. Drink water, put cooling towels on your neck, and assess your physical condition. Use a cooling or misting fan, if available.

First Aid: At least one member of the field team should be trained in first aid. This person should be tasked with maintaining that the first aid kit is stocked with appropriate items including cold

packs. Emergency contact information and cell phone or satellite phone should be available to call for help if needed.

Monitor: While in the field, it is critical to monitor your condition for signs of heat-related illness. Check-in with management throughout the field day, especially if working alone. If you have a persistent headache, feel unwell, or feel as though your health or safety is in danger, return to your vehicle or other safe place with air conditioning. Call for help immediately. If you already have signs of heat illness, do not attempt to drive back to campus. A call to 911 is a viable option if your safety is in danger.

Risk Factors for heat-related illness/injury:

- High temperature and humidity
- Direct sun exposure
- Radiant heat sources
- Limited air movement
- Not drinking enough fluids
- Physical exertion
- Personal protective equipment and clothing
- Physical condition and underlying health
- Medications
- Pregnancy
- Lack of recent exposure
- Advanced age
- Previous heat-related illness

Symptoms to watch for:

Heat Stroke	***Heat Exhaustion***
Confusion, slurred speech	Cool, moist skin
Loss of consciousness	Heavy sweating
Red, hot, dry skin or profuse sweating	Headache
Very high body temperature	Nausea/vomiting
Seizures	Dizziness
	Light-headedness
	Weakness
	Thirst
	Irritability
	Elevated body temperature
	Decreased urine output

Resources:

City of San Antonio Heat Response Level Plan v10

National Weather Service

OSHA-NIOSH Heat Safety Tool App

UTSA Campus Recreation Adult First Aid-CPR-AED

Outdoor Equipment from Northern Safety