

SUBJECT: In-the-Field Safety

REGULATORY STANDARD: 29 CFR 1910

DATE: April 2000

Introduction

Many Montana Tech students, faculty, and staff perform research or work outdoors, or “in-the-field.” There are many potential hazards to be considered when working in the field. Listed below is a general outline that should be consulted before venturing into the great outdoors.

Animal and Insect Bites

Animals

Bites from domestic or wild animals can cause infection and soft tissue damage, but contracting rabies is the biggest concern. Rabies is fatal if not treated. If someone has been bitten by an animal, wash any minor wound with soap and water and control any bleeding. Apply an antibiotic cream and a dressing. Get medical attention if you suspect the animal might have rabies or if there is serious bleeding. Animals with rabies may act strangely such as a wild animal that doesn’t run from you. A rabid animal may drool, appear partially paralyzed or act irritable, mean or strangely quiet. Try to remember what the animal looked like and where you last saw it and report it to the proper authorities.

Spiders

Of all the species of spiders found in Montana, two pose serious health hazards:

1. Black Widow spiders: Females are the ones that bite. They are black with spherical abdomen, usually with a red hourglass mark.
2. Brown Recluse spiders: Light brown with dark violin pattern on top of its body.

If bitten by either of the above spiders, wash the wound, apply a cold pack to the site, and seek medical attention as soon as possible. Capture the spider if possible, or if you killed the spider, bring it with you to the health care provider for identification.

Bees and Wasps

If stung by either a bee or a wasp, scrape off the stinger with a fingernail, knife, credit card, or other flat object. Wash the site with soap and water and apply a cold pack to reduce pain and swelling. If you know you have bee sting allergies, make sure you carry a prescribed bee sting kit.

Ticks

Check for ticks during and after fieldwork. If a tick becomes imbedded, remove the tick with tweezers within 24 hours. If you use your fingers to remove it, wash immediately. Don’t leave the head of the tick imbedded in the skin. If you cannot remove the tick or if parts of the tick stay in your skin, obtain medical care. If a rash or flu-like symptoms

develop, seek medical help. Do not use a lighted match, petroleum jelly or other coating to try and remove the tick.

Lyme disease is spread by deer ticks. Deer ticks are very tiny and difficult to see. They can be as small as a poppy seed or the head of a pin. Adult deer ticks are only as large as a grape seed. The first sign of infection may appear a few days or a few weeks after a tick bite. Typically, a rash starts as a small red area at the site of the bite. It may spread up to 7 inches across and have bulls-eye appearance, but you can have Lyme disease without a rash. Other symptoms of Lyme disease include fever, headache, weakness, and joint and muscle pain similar to the “flu.” Lyme disease must be treated. In advanced stages, it may cause arthritis, numbness, memory loss, problems in seeing or hearing, high fever and stiff neck, indicating problems with the brain or nervous system.

Rattlesnakes

Rattlesnakes account for most snakebites and nearly all deaths from snakebites. Most deaths occur because the victim has an allergic reaction, is in poor health, or because too much time passes before he or she receives medical care.

To care for someone bitten by a snake, wash the wound and immobilize the injured area, keeping it lower than the heart, if possible. Do not apply ice to a snakebite. Do not cut the wound or apply a tourniquet. If necessary carry a victim who must be taken to a medical facility or have him walk slowly. If you know the victim can't get professional medical care within 30 minutes, consider suctioning the wound using a snakebite kit. Know the contents and how to use the snakebite kit before you have to use it.

General Guidelines for Preventing Bites and Stings

- Wear long-sleeved shirts, long pants and sturdy hiking boots.
- Tuck your pant legs into your socks or boots.
- Tuck your shirt into your pants.
- Use a rubber band or tape to hold pants against socks.
- When hiking, avoid underbrush and tall grass and stay in the middle of the trail.
- Check yourself several times during the day for ticks and other insects.
- Avoid walking in areas known to be populated with snakes.
- If an area is highly infested with insects and ticks, consider using an insect repellent. Use with caution and follow directions carefully.

Plants

Two common plants can present health hazards, poison ivy and poison oak. Know what to look for.

If individuals come in contact either of these two plants, wash the area immediately with soap and water and treat with a cool compress soaked with tap water or baking soda. Use an antihistamine to reduce the itching. If necessary, consult a doctor for prescription strength creams or ointments.

Climate and UV Protection

Montana's climate is very unpredictable. Listed below are items to wear, and precautions to take to avoid climate related injuries or illness.

- Dress in layers so as the temperature changes, you can remove or add clothing.
- Wear waterproof lace up boots
- Drink plenty of fluids (water or sport drinks) – remember that caffeine and alcohol actually dehydrate your body.
- Wear a hat when possible (wide-brimmed hats in the summer, and stocking caps in the winter).
- Have gloves readily available, and wear them when necessary.
- Have rain gear available.
- Wear sunglasses when necessary (polarized glasses preferable).
- Always have and wear plenty of sunscreen when in direct sunlight.
- Carry an extra change of dry clothes and shoes or boots.
- Have insect repellent readily available.

Climate Related Illness – Cold

Frostbite and hypothermia are the most common cold climate injuries that individuals are subject to while working outdoors in Montana. Frostbite is the freezing of body parts exposed to the cold. Severity depends on the air temperature, length of exposure, and the wind. Look for pale, waxy-white skin color and hardening of the skin. Hypothermia is where the entire body cools because its ability to keep warm fails. Symptoms include shivering, numbness, glassy stare, apathy and loss of consciousness.

To treat hypothermia:

- Move the victim to a warm place if you can and don't leave them alone.
- Give victim something warm to drink if they are conscious (no caffeine or alcohol).
- Remove wet or damp clothing and dry the victim.
- Use blankets, hot water bottles or chemical heat packs to warm the victim. If none of these are available, use your own body heat to warm the victim. Do not rub the person's body or place them in warm water. This may stop their heart.
- Have the person move their arms and legs to create muscle heat. If they are unable to do this, place warm bottles or hot packs in the armpits, groin, neck, and head areas.

If the person is in water, remember body heat is lost up to 25 times faster in water.

- Do not remove any clothing. Button, buckle, zip and tighten any collars, cuffs, shoes, and hoods because the layer of trapped water closest to the body provides a

layer of insulation that slows the loss of heat. Keep the head out of the water and put on a hat or hood.

- Get out of the water as quickly as possible or climb on anything floating. Do not attempt to swim unless a floating object or another person can be reached; swimming or other physical activity uses the body's heat and reduces survival time by about 50%.
- If getting out of the water is not possible, wait quietly and conserve body heat by folding arms across the chest, keeping thighs together, bending knees, and crossing ankles. If another person is in the water, huddle together with chests held closely.

To treat frost bite:

- Move the victim to a warm place if you can and don't leave them alone.
- Do not remove clothing if you are still outdoors. Remove wet clothing if in warm area.
- Do not rub the affected area; it causes damage to the tissue. Slowly warm the frost bitten area by placing in warm water (100-105°F) if possible, but do not let the frostbitten area touch the container. Do not pour warm water directly on the affected area because it will warm the tissue too fast causing tissue damage
- If there is a chance the affected area may get cold again, do not warm the skin. If the skin is warmed and then becomes cold again, it will cause severe tissue damage.

Snow Blindness:

- Use cold compresses, aspirin, and bandages over eyes for 16 to 20 hours.

Climate Related Illness - Heat

Listed below are some common heat related injuries that may occur during the spring and summer months:

Sunburn:

- Use a sunscreen with at least a 15 SPF to protect from sunburn. Use lotion to keep skin moist if a burn occurs.

Heat Exhaustion:

Heat exhaustion occurs when the body is unable to cool itself through sweating. If it is not treated, it can progress to heat stroke and possible death. Watch for headaches, dizziness, weakness, confusion, nausea, and pale clammy skin.

- Move the person to a cool shaded area and don't leave them alone.
- Loosen and remove any heavy clothing
- Give victim cool water if they are not feeling sick to their stomach.
- Try to cool by fanning them or spraying with a mist of water.
- Seek medical treatment if the person doesn't feel better within a few minutes.

Heat Stroke:

Watch for dry pale skin with no sweating, hot red skin, confusion, seizures and unconsciousness. **THIS IS LIFE THREATENING.** Seek medical attention immediately!

- Move the person to a cool shaded area and don't leave them alone.
- Remove any heavy or outer clothing.
- Give victim a cool drink if they are conscious and not feeling sick.
- Cool by fanning, spraying with water, placing a wet sheet over them. Use ice packs if they are available under the armpits and in the groin area.

Gear/Equipment for Field Activities

The gear you take depends on the nature of your field experience. Listed below are some safety kits that may be useful for your field travels.

- First-aid kit and manual (see page 3 of the Travel Safety module for suggested contents for a first aid kit)
- Snake bite kit
- Field cooking kit
- Chemical spill kit if you are carrying any kind of chemicals
- Eye wash kit if carrying or using chemicals
- Tool kit

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SAFETY MANUAL

The following is a list of miscellaneous safety items that one might consider for ventures into the wilderness.

- Ax or saw
- Bear Spray
- Fire Extinguisher
- Shovel
- Bucket
- Waterproof matches
- Orange reflective vest
- Cellular phone/ 2 way radio/ CB
- Compass
- Field folder (map, emergency numbers, family contacts, etc)
- Mask or respirator
- Flares
- Flagging
- Flashlight (extra batteries)
- Rope
- Knife
- Space blanket
- Whistle or mirror
- Tape
- Safety cones
- Water purification tablets or filter
- High energy food

The USGS (U.S. Geological Service) has a website with some very useful information on safety in the field. Check out <http://water.usgs.gov/owq/FieldManual/Chap9/content.html>.