



Safety in the Outdoor Environment

Lesson Plan: NRES D2-5



Anticipated Problems

1. What are some safety practices when working in an outdoor environment?
2. What are appropriate responses to accidents and injuries that occur in an outdoor environment?
3. What are biohazards associated with natural resources?



Terms

- biohazards
- bushwhacking
- giardiasis
- hypothermia
- shock
- urushoil

Safety

- Safety in the outdoors requires respecting nature.
- Some safety guidelines apply to those who work in the outdoors as well as to those who use the outdoors for recreation.



Preparing in Advance

- Before traveling in the wilderness, it is important to be adequately prepared by planning a trip in advance.
 - Learn about the area, weather, terrain
 - Know limitations
 - Use common sense





Tips for Traveling in the Wilderness

1. Plan the trip in advance.
2. Travel with one or more companions.
3. Leave your itinerary with friends/family.
4. Develop an emergency plan before the trip.
5. Stay on marked trails in wilderness areas – unless bushwacking is allowed.

Tips for Traveling in the Wilderness



FIGURE 1. Travel with companions.

Tips for Traveling in the Wilderness

- If bushwhacking is allowed, excellent navigation skills are needed.
- ***Bushwhacking*** is creating a new trail and usually applies to hikers and cross-country skiers. If an area is closed, avoid it.



Tips for Traveling in the Wilderness

6. Be in good physical condition.
7. Have the skills necessary for the trip.
8. Think about your footing near cliffs.
9. Bring appropriate clothing for the trail conditions and the weather; dress in layers.
10. Wear sunglasses, a hat and sunscreen.





Tips for Traveling in the Wilderness

11. Check your equipment to see that it is in good working order.
12. Monitor current/predicted weather conditions
13. Be able to administer basic first aid.
14. Travel only during daylight.

Tips for Traveling in the Wilderness

- 15. Stay hydrated by drinking plenty of water; bring filtered or purified water.
- 16. Pack snacks that provide an energy boost.
- 17. Follow local regulations, particularly concerning campfires.
- 16. Know how to respond to hornets, bees, and wasps.



Tips for Traveling in the Wilderness



Treat or filter all water from streams, lakes, or ponds



Tips for Traveling in the Wilderness

- 17. Beware when encountering wildlife.
- 18. Learn to identify dangerous plants that are common to the area.
- 19. Know what to do in a lightning storm.
- 20. Know the steps to follow should you get lost.

Tips for Traveling in the Wilderness



Do not leave food, garbage, coolers, cooking equipment, or utensils in the open because they may attract bears.

Lightning



- Lightning is a cause of injury and death to those who participate in outdoor activities
 - If caught outdoors, people are at the mercy of the storm
 - Lightning is a large-scale phenomenon
 - Most injuries and deaths are due to ground current and side flash effects, not direct hits

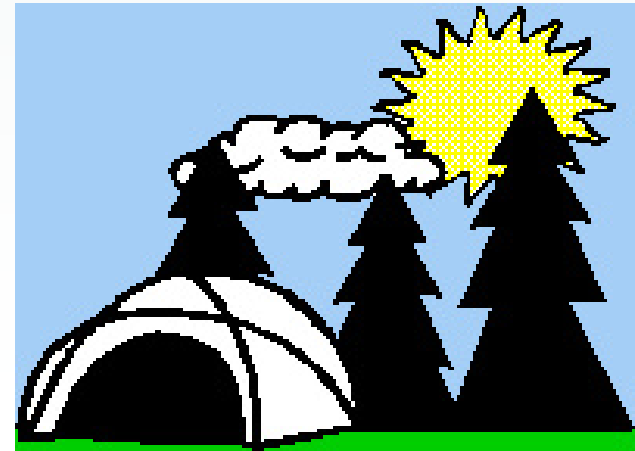
Lightning

- Lightning is not influenced by backpack frames, tents, umbrellas, and other objects on the ground
 - These items will attract a lightning channel if the lightning bolt is already within a few feet.



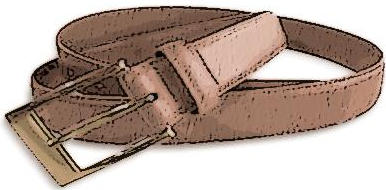
Safety Tips: Lightening

1. When a storm approaches, get into a fully enclosed shelter (home or building); next best thing is a hard-top vehicle
2. Know the current weather conditions.
3. When camping, set up by a low grove of trees, avoid open areas.
4. Stay away from water when storms are near.



Safety Tips: Lightning

- If stuck outside during lightning:
 - Get under a canopy of many trees.
 - Stay away from tall, isolated objects (power poles, antennas, flagpoles, metal fencing)
 - Get into and hold a crouching position
 - Stay 50 feet apart from other people
 - Remove metal items: jewelry, belt buckles, etc



Safety Tips: Lightening

- If boating during lightening:
 - Get off the water
 - Go below deck in a boat with a cabin
 - Avoid all metal fixtures and objects
 - Once on land, stay 100 yards away from shore





A Lightning Strike

- In case of a lightning strike, people should help the injured as soon as possible with the help of a first-aid kit.
 - If the victim has no pulse, CPR should be administered.
 - A stopped heart due to lightning is one of the higher success scenarios for CPR.



Lost in the Wilderness

- Follow these steps to improve chances of reaching safety:
 - Stay calm, panic is the enemy
 - Observe surroundings and relate them to a map
 - Trust a map and compass; don't walk aimlessly
 - If on a trail, stay on it
 - Stay put if injured, exhausted, or it is night
 - As a last resort, follow a stream downhill

Lost in the Wilderness



Responses to Accidents & Injuries

- Knowing some basic principles of wilderness first aid and how to apply them can make a difference in an emergency situation.
 - Basic principles of first aid can be applied to almost any situation.
 - Take a first-aid class or a wilderness first responder course before venturing into the outdoors.





Responses to Accidents & Injuries

- Injuries: first determine priorities of treatment
 - Determine if the casualty is in danger
 - Determine if it will put the responder in a dangerous position if he or she helps
 - A person must place his or her own safety first.



Responses to Accidents & Injuries

- The first responder should avoid moving the casualty if the injuries are unknown, unless there is a greater danger in leaving the casualty where he or she is currently located.
 - A person with a suspected neck or spinal injury should never be moved, unless difficulties in breathing make it absolutely necessary.



Responses to Accidents & Injuries

- The breathing of the casualty should be checked. Determine if the airway is open.
 - An unconscious person lacks muscle control.
 - In these cases, the tongue is the most common cause of an airway obstruction.
 - Clear the airway by tilting the head and lifting the chin.
 - This action pulls the tongue away from the air passage in the throat.

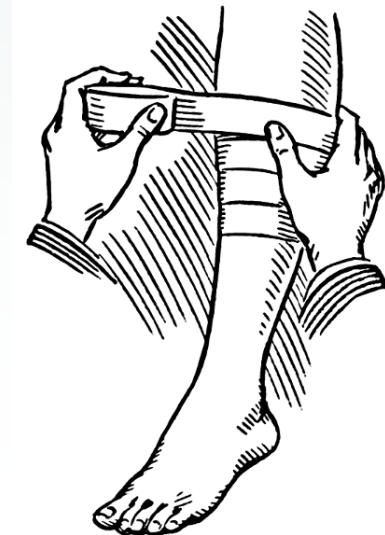


Responses to Accidents & Injuries

- An unconscious but breathing person should be placed in the recovery position.
 - Place person on his or her side, with the uppermost leg at a right angle to the body.
 - Support the head by the hand of the uppermost arm.
 - Tilt the head back to ensure a clear airway.

Responses to Accidents & Injuries

- If the casualty is bleeding, stopping the bleeding is a priority. All types of external bleeding are treated in the same way.
 - The casualty should be lying down.
 - Position the wounded part above the level of the heart to slow the bleeding.
 - Squeeze the sides of the wound together; apply direct pressure
 - Bandage the wound firmly





Responses to Accidents & Injuries

- ***Shock*** is a condition of general body weakness. To a varying degree, it is present in all accidents.
 - A casualty experiencing shock may feel weak, faint, giddy, anxious, or restless.
 - Keep the casualty warm and still while providing reassurance.

Shock:

Keep the casualty warm, provide reassurance



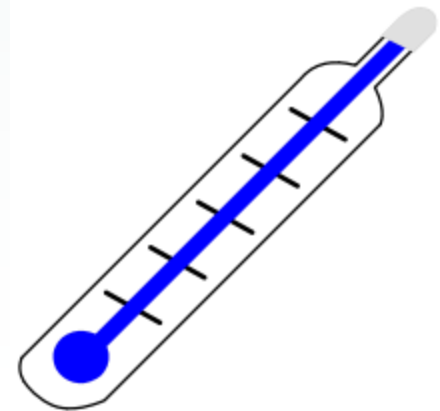


Responses to Accidents & Injuries

- ***Hypothermia*** is lowering of the body core temperature.
 - Causes: fatigue, cold, wetness, exposure to wind.
 - Early symptoms are intense shivering, fumbling hands, and poor coordination.
 - Prevent further heat loss: move out of the elements
 - Create body heat through warm fluids

Responses to Accidents & Injuries

- Frostbite is the actual freezing of body tissue and the blood vessels. Exposed skin (e.g., the ears, nose, and cheeks) is subject to frostbite.
 - Also commonly occurs on fingers, toes, feet, and hands.
 - Symptoms: stinging pains that turn into insensitivity



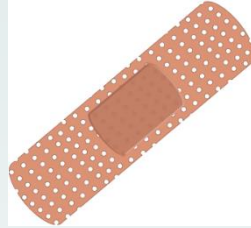
Survival First Aid Kit

- A survival first-aid kit that matches the planned trip should be assembled. Consider:
 - Number of people participating
 - Location
 - Duration and distance from medical assistance
 - Planned activities



Basic First Aid Kit

- A basic wilderness first-aid kit should include the following:
 - Basic bandages for blisters; thin blister pads or moleskin for sprains
 - Assorted elastic bandages; athletic tape wound; sterile bandages; Band-Aids; tape
 - Medications: painkiller, antiseptic, etc
 - First aid tools: tweezers, razor blade, scissors
 - Easy to read first aid instruction book



Biohazards & Natural Resources

- ***Biohazards*** are microorganisms, including recombinant DNA molecules, that have the potential to be dangerous to human and/or animal health or the environment.





Biohazards & Natural Resources

- Biohazards may be pathogenic bacteria, fungi, parasites, protozoans, viruses, oncogenic viruses, rDNA, and plant and animal toxins.
 - Two common biohazards found in the outdoors of North America are *giardia* and urushoil.



Giardiasis

- ***Giardiasis*** is an infection of the small intestine caused by a microscopic organism: *Giardia lamblia*. *Giardia* is a protozoon.



Giardiasis

- Giardiasis is contracted by drinking water from lakes or streams where animals (beavers and muskrats) dwell or domestic animals (sheep) have caused contamination.
 - Spread by direct person-to-person contact
 - Some infections will go away without medical treatment

Giardiasis

- The time between being infected and developing symptoms is 7 -14 days.
 - The acute phase lasts between 2-4 weeks.
 - Symptoms include abdominal pain, diarrhea, gas or bloating, headache, loss of appetite, a low-grade fever, nausea, a swollen or distended abdomen, and vomiting.





Urushoil

- ***Urushoil*** is an oily organic allergen found in poison oak, poison ivy, and poison sumac.
 - These plants share the genus *Toxicodendron* spp.
 - Urushoil causes an allergic skin rash on contact, known as urushiol-induced contact dermatitis.



Urushoil

- Urushiol-induced contact dermatitis is contracted by contact with a plant or any object containing urushiol oil.
 - Stays active on any surface, including dead plants, for one to five years.
 - The oil adheres to gloves, boots, and clothing.
 - Wash the affected items to remove the urushoil.

Urushoil

- Urushiol oil is potent, with only 1 nanogram (billionth of a gram) needed to cause a rash.
 - The most common allergy; roughly half the population is allergic to urushoil.

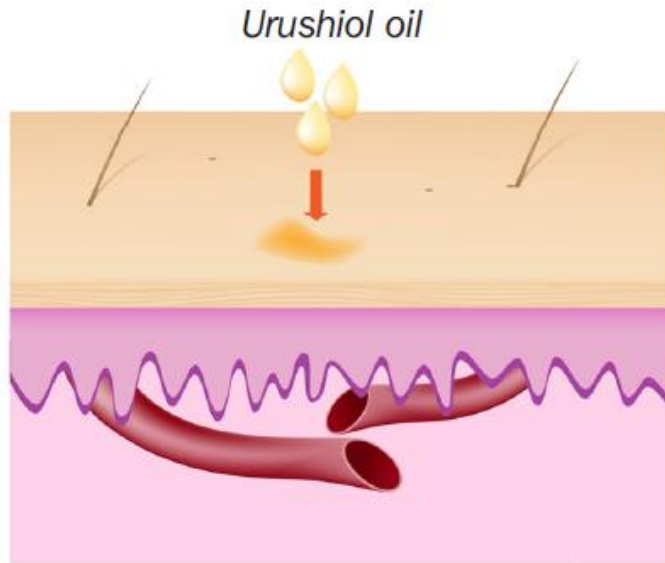




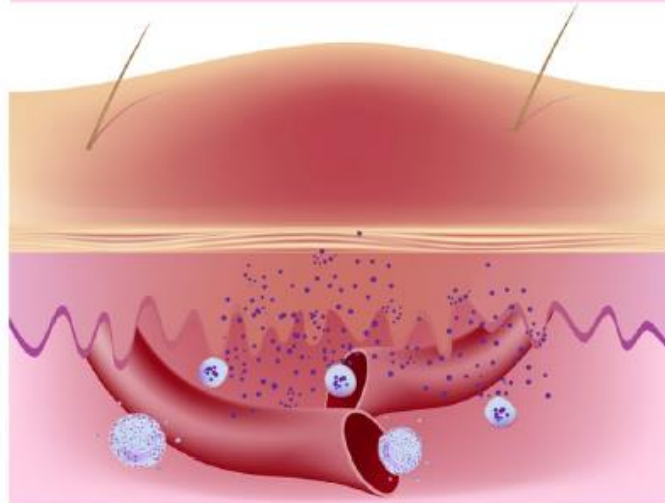
Urushoil Reactions

- People sensitive to urushoil break out in a rash and begin to swell in 24 to 48 hours.
- Highly sensitive people in 4 to 12 hours
- Eyes may swell shut, blisters may erupt.
- Severe reactions may be treated as an emergency
- Use Corticosteroids to bring down the swelling.

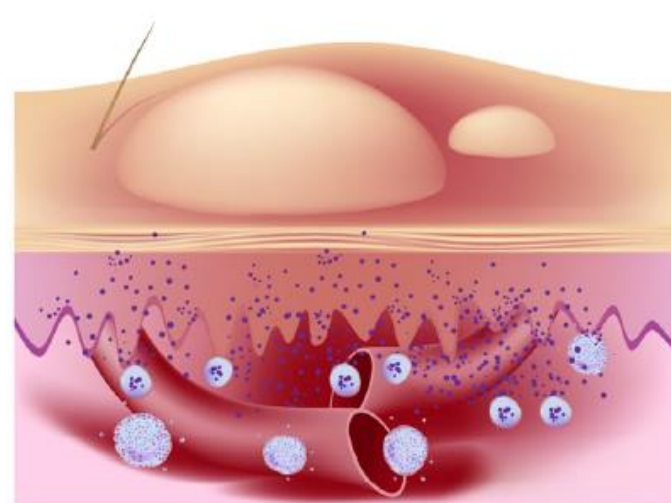
URUSHIOL OIL INDUCED CONTACT DERMATITIS



Rhus Dermatitis



Mild



Severe



Review

- Name five tips for traveling in the wilderness.
- In response to an accident or injury in the wilderness, what is the first thing that must be determined?
- What should a basic wilderness first aid kit include?
- What are the two common biohazards found outdoors in North America?