

Chapter Seven

Safety

*Safety is everyone's responsibility
on volunteer work projects.*



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Safety of volunteers is a serious concern of the Ohio Chapter of The Nature Conservancy. Your safety on volunteer projects will be enhanced if you are informed of potential hazards, know proper precautions to protect yourself, and receive adequate training in the use of any tools or equipment. Crew chiefs, who are well aware of potential hazards in the field, will do everything they can to minimize the chances of injury or illness resulting from a field experience. It is the responsibility of the volunteers themselves, however, to help minimize risks that are beyond the crew chief's control by knowing the hazards and behaving accordingly.

WHAT VOLUNTEERS NEED TO KNOW OR DO FIRST

The next two sections of this chapter will give you some ideas of specific potential hazards in the field and what you will be expected to do in order to avoid them. Below there are just a few general considerations concerning safety at a field site.

—General Points —

- ◆ If you are new to outdoor volunteer work and you have not had a physical exam in awhile, get one. You and we need to know your physical limitations. Even if you have some health problems, we frequently have light-duty work that you can safely do outdoors.
- ◆ Be careful where you park when you arrive at the site. Avoid parking in tall grass, because the heat from a catalytic converter or diesel engine can start a grass fire.
- ◆ Listen carefully for safety-related information when the chief briefs the crew at the beginning of a work session.
- ◆ Know where to find the first aid kit, the nearest telephone, and the emergency numbers for the area (usually 911).
- ◆ Speak up if you have a concern. If you do not know enough about a particular area or procedure to feel safe, ask for additional explanation. If you are apprehensive about your capabilities to do your work assignment adequately and safely, be honest and let the crew chief know.
- ◆ Be aware of your physical limitations, the weather forecast, and your surroundings. Temperature, site conditions, and the work activities may affect

your physical and mental state in unexpected ways.

- ◆ If you have a medical condition which could affect you on a work trip, tell your crew chief. Severe allergies to bee stings, diabetes, or seizures can be promptly and safely handled if you advise us about what you need in an emergency.

— *Waivers* —

The Ohio Chapter protects itself legally from accidents and emergencies by requiring all outdoor volunteers to sign waiver of liability claims before they begin a project day.

— *Liability Insurance* —

The Ohio Chapter carries a liability insurance policy that can compensate volunteers injured in the line of volunteer duty. This is a supplemental package that may provide additional benefits for medical expenses that the volunteer's personal insurance may not cover. If you are injured on a work project, contact the Volunteer Coordinator as soon as possible after the incident.

— *Accidents and Emergencies* —

In the event of an accident or other emergency at the field site, your crew chief or a TNC staff member will be responsible for obtaining help, administering first aid, and otherwise taking charge. Your only worry as a volunteer will be if the crew chief becomes ill or is seriously injured. When your chief briefs you at the beginning of the work day, make sure that you are told

- ◆ where the nearest telephone is,
- ◆ where the nearest hospital is,
- ◆ whether ambulance service is available within a reasonable distance, and where the first aid kit and manual are.

— *Training/Certification* —

The Ohio Chapter periodically arranges for first-aid/CPR training for its crew chiefs. If you are currently certified in first aid and CPR, please let the crew chief,

land steward, or volunteer coordinator know.

—*Communication*—

A special caution needs to be offered regarding cellular telephones. Remarkable as they are, they have their limits in rural areas. They tend to be unreliable in hilly terrain, especially if severe storms cause regional power outages. Know how to use the cellular telephone if one is on site, but have a backup communication strategy in mind should the cellular telephone fail. “Keep a quarter in your pocket for an emergency phone call” is still good advice.

COMMON FIELD HAZARDS

We who work outdoors in Ohio are fortunate in that the most common hazards that we encounter are generally the most manageable. With requisite knowledge and carefulness, we can usually avoid common hazards.

—*Poisonous Plants*—

Ohio’s native poisonous plants—poison ivy and poison sumac—contain an irritant known as urushiol in their sap. This irritant is pervasive and persistent: it can be transferred from the plant to a human by way of animals or articles of clothing that have touched a poisonous plant, it can be carried in smoke from burning plants, and it often remains on the surface of dead and decaying plants, even in winter. The first line of defense against the allergic reactions that many persons experience from contact with poisonous plants is to avoid the plants in the first place. A simple step to minimize your exposure is to wear long pants, long sleeves, and gloves while working.

Poison ivy (*Toxicodendron radicans*) is virtually everywhere in Ohio, and it can be found in a wide variety of environmental settings. Most people can recognize the “leaves of three,” glossy green in spring and summer and various reddish hues in the autumn. Flowers and berries, when present, are greenish white. Although usually a vine, poison ivy may grow as a trailing or erect shrub. Poison ivy is present in most TNC preserves.

Poison sumac (*Toxicodendron vernix*) is found mainly in uninhabited areas, particularly calcareous wetlands, so it can be a considerable threat to volunteers working in wetland preserves. Poison sumac, which generally takes the form of a small tree, can be distinguished from other sumacs by its drooping greenish white berries. This small tree is very common at Brown’s Lake Bog and Herrick Fen.

Several over-the-counter products are helpful in preventing exposure to urushiol or cleaning the skin after known or suspected contact. Some of these products seem to work better than others for individuals; follow the package directions carefully to ensure best results. Remember, too, that sensitivity and reaction to poisonous plants usually increase with exposure. It is a good idea to avoid these plants even if you are currently not allergic to them.

The next and only additional line of defense if contact with a poisonous plant is suspected is thorough washing of skin and clothes. Scrubbing the skin with an alkali soap (such as yellow laundry soap) or washing with 70 percent alcohol should eliminate any residual urushiol.

—*Power Tools*—

Power tools are necessary and beneficial for certain phases of preserve work, but they are used with considerable caution. The chain saw, for example, is probably the most widely used and yet the most hazardous power tool in the field. Ohio Chapter policy is that only those persons having training and experience with a given power tool are given the responsibility for using that tool at a preserve site. Detailed information on power-tool safety is beyond the scope of this volunteer manual, although such information is available in the Ohio Chapter's files. If you are an experienced power-tool user and wish to offer your skills at an Ohio site, make sure that the Volunteer Coordinator has this information in the volunteer data base so that crew chiefs know of your capabilities and can possibly make use of them.

Even if you will not be dealing directly with power tools on a work day, you can help protect the power-tool operators and yourself by

- ◆ keeping a safe distance (staying a minimum of 50 to 100 feet away),
- ◆ being on the lookout in case the operator gets injured (know where the crew chief will be so you can go for help if necessary), and
- ◆ understanding that you must stay alert to the locations and actions of the other crew members.

The power tool operators are busy with their work and cannot always watch the rest of the crew. This is especially true when we are dropping trees during a work trip!

—*Herbicides*—

We routinely use herbicides in the selective control of certain invasive plant species. Although we would prefer not to use herbicides at all in our nature preserves, we have learned through experience that it is better to use chemical

controls in those places where other control methods are damaging to the habitat and ineffective at controlling the pest. The staff and volunteers applying the herbicides have been trained in safe handling techniques. We also choose products that are the least toxic and the most effective for the situation. The way we apply herbicides is highly selective and designed to minimize exposure to other plants or workers.

When working around herbicides on a work trip, pay attention to where the herbicide has been applied (frequently cut stumps, or on some herbaceous plants). Be careful around the person applying the herbicide, and coordinate your work pace with him or her. (For example, cut shrubs in a small area, and wait for the applicator to arrive before moving to another area to work. Follow instructions about how to cut and do not let too much time elapse between cutting and treating.) Know where to find soap, water, and absorbent materials in case of spills, in addition to normal field safety considerations. Avoid getting any herbicide mix on yourself. If you come in contact with the herbicide, be sure to wash promptly.

—*Seasonal Hazards*—

If you have an interest in working as an outdoor volunteer at an Ohio Chapter preserve, you probably already know a good bit about spending time outdoors in less than ideal weather conditions. Although we will cancel work days if the weather poses clear dangers, we generally proceed even if cold or heat is moderately stressful or if a chance of showers is in the forecast. The following is a brief overview of weather-related hazards as we see them and how you as a volunteer will be expected to contend with difficulties.

Cold Weather

Working at a field site in cold weather can be physically demanding. The primary safety consideration is to maintain normal body temperature and avoid hypothermia. This requires some forethought and preparation, given that field work can involve periods of heavy exertion followed by periods of relative inactivity. Hypothermia and cold-related bodily damage are best prevented by knowing the basics of how the human body responds to the stresses of cold and by dressing in an appropriate way for varying activity levels and unexpected changes in environmental conditions.

To maintain internal body temperature within about 1 degree above or below 98.6°F, the body alters the basal metabolic rate and, to cope with cold over short periods, can use the heat from digestion for warmth. To prepare for cold-weather fieldwork, volunteers can take advantage of these physiological responses by (1) getting short, daily doses of cold temperatures a few weeks before the first extended winter field activities, (2) eating a high-protein breakfast as a prelude to a cold day in the field, and (3) packing high-protein snacks if intervals between meals are expected

to be long. When in the field, volunteers should be aware that the heat increase produced by exercise, particularly of the large leg muscles, is dramatic. Even small-muscle movement (wiggling fingers and toes) is greatly beneficial and highly recommended if discomfort begins to occur. Shivering is an involuntary form of exercise, but it is one that indicates the onset of hypothermia and is hence an important danger signal. Volunteers should also be aware that nicotine, caffeine, and alcohol interfere with the body's responses to cold and should be avoided in the field.

Dressing properly is the principal means of dealing with cold-weather fieldwork. Although some systems of single-layer cold-weather attire have been designed by the military and have performed successfully in field tests, the layered approach is undoubtedly the most reasonable—in terms of cost, versatility, and effectiveness—for the TNC volunteer. One common-layered system consists of (1) a contact layer, worn directly against the skin, (2) an insulating layer or layers, and (3) an outer layer or layers. The composition, thickness, and construction of the materials selected for all three layers depend on the expected temperature range, wetness or dryness, level(s) of exertion, length of time in the field, distance to shelter, and your own personal history of cold tolerance. As a general guideline, choose clothes so that layers can be easily added or removed as field activities and weather conditions change throughout the day. Buttons, zippers, and other devices that can provide ventilation during periods of exertion are particularly handy.

Keep in mind that the shell (outer) layer may need to protect against external moisture as well as wind. In particularly cold situations, the shell garments should also be insulated. Gloves, footwear, and hats should be of the appropriate weight for the temperature range, and water resistance should be taken into account if cold rain is a possibility. Bring a change of clothing just in case yours become wet and you need to change immediately.

Hot Weather

The opposite of hypothermia is hyperthermia, a condition in which excessive body heat becomes life threatening. Much TNC field work occurs in the middle of the growing season, when temperatures, relative humidity, and tempers can soar. Temperature, humidity, and physical exertion all contribute to hyperthermia, but body hydration is the most important factor. You can prepare yourself for hot days in the field by

- ◆ wearing lightweight, light-colored clothing,
- ◆ wearing a brimmed hat or cap,
- ◆ pacing yourself by alternating moderate exercise in the sun with frequent breaks in the shade,

- ◆ drinking a moderate amount of water (2 to 3 quarts a day) on a regular schedule (be sure to arrive at the project well-hydrated),
- ◆ doing the most strenuous work early or late in the work session to avoid midday sun (your crew chief may arrange for this), and
- ◆ being aware of symptoms of heat stress (and lying down in the shade as soon as you notice them).

Remember that when you drink water in the field, you should drink regularly and in small sips, not in large gulps.

In addition, one can “train” for an upcoming hot-weather field trip by engaging in moderately strenuous activities (such as walking, gardening, sports) in moderate heat, keeping the above guidelines in mind.

Thunderstorms

Thunderstorms can come up rapidly and can pose a serious danger if shelter or vehicles are out of range. Lightning is the greatest danger, but flash flooding, large hail, and high winds also are potential hazards. If caught in a storm and unable to get to shelter even in a vehicle, we would expect you to take the following precautions:

- ◆ Leave open areas immediately.
- ◆ If you are on a ridge, get down to a lower elevation; but be careful not to get too close to a stream that may suddenly rise.
- ◆ Avoid isolated trees; seek shelter in dense stands or clumps of young trees.
- ◆ Sit on your feet in a crouched position or sit on some insulating material, such as wood, rubberized material, or a wool shirt.
- ◆ If you sight a funnel cloud or if a sudden, violent wind arises, lie down in a depression or ditch or crawl into a culvert (but maintain awareness of the possibility of flash flooding).

—Hazardous Terrain —

A day in wild or nearly wild areas will provide many possibilities for slips, falls, and resulting injuries if care is not taken. You cannot avoid all potential dangers, but you can help minimize risk of hurting yourself and inconveniencing your crew by

~~considering the following guidelines for hazardous terrain.~~

In The Water

- ◆ If wading in a stream or pond is required for a particular scientific or maintenance objective, select the wading site carefully, taking into consideration not only the hydrologic conditions necessary for your objective but also the ease of getting into and out of the body of water and staying upright while in the water. A useful rule of thumb is that water depth (in feet) times water velocity (in feet per second) should not exceed 10 in any wading situation and should not exceed 5 for small, lightweight individuals.
- ◆ Go into the body of water carefully, probing the bottom ahead of you with a stout rod or stick. If you find deep holes, extreme irregularities, or exceptionally soft muck, then seek an alternative site.
- ◆ Take extreme care in stepping on underwater rocks and boulders, because they are usually algae covered and slippery. Consider wearing some type of sole gripper to give you additional traction.
- ◆ Wear a personal flotation device if there is any chance that you could fall into water over your head.

On Land

- ◆ Wear shoes or boots that provide good arch and ankle support.
- ◆ Inspect your work area for ground hog or muskrat holes, isolated rocks or boulders, fallen logs, or other obstacles.
- ◆ Avoid steep slopes with loose rocks.
- ◆ When in doubt about the safety of a path, take the time to seek an alternative route to your destination.

UNCOMMON FIELD HAZARDS

The “uncommon field hazards” that follow include those that are unusual in and of themselves and those that are unusual consequences of common hazards. For example, ticks and mosquitoes are quite common on the preserves, but the diseases they carry are currently uncommon in Ohio. Similarly, cold weather is a common work condition, but hypothermia and frostbite (which are easily preventable) are rarely, if ever, experienced by our volunteers.

—*Insects, Ticks, and Spiders*—

Bee Stings

During the summer months, yellow jackets, hornets, wasps, and bees are common in Ohio's outdoor areas. Encounters with stinging insects occasionally occur even to cautious workers or visitors. For most people, a sting is merely a painful annoyance. To treat a sting, first remove the stinger or venom sac at the entry site by scraping it away with the edge of a plastic card or tongue dispenser. Do not use tweezers, to avoid squeezing more venom into the skin. Wash the area with soap and water and cover with a clean dressing. Apply a cold pack to reduce swelling and watch for the onset of adverse reactions.

For highly sensitive individuals, a sting can be life threatening. Anaphylaxis, a form of shock, usually occurs within minutes of the sting (or other triggers). Signs and symptoms of anaphylaxis may include swelling and redness at the affected area, hives, itching, rash, weakness, nausea, vomiting, or breathing difficulties as the tongue and throat swell. In the event of anaphylaxis, the victim should be positioned comfortably for breathing and kept calm. Medical personnel should be summoned immediately. Persons who know they suffer from severe allergies should carry a prescribed anaphylaxis kit with them in the field, and instruct someone how to use it in an emergency. (These kits are usually a single dose injection of epinephrine with an antihistamine.)

Mosquitoes and Encephalitis

Culiseta melanura, the vector of Eastern Equine Encephalitis, breeds at some preserves and *Aedes triseriatus*, the vector of La Crosse Encephalitis, is found in Ohio.

Eastern Equine Encephalitis is caused by a virus carried by *Culiseta melanura*. It is an acute inflammatory disease that attacks the brain and central nervous system. This is a very rare disease in humans with fewer than 15 cases reported annually in the United States. The primary reservoir for the virus is birds. Mosquitoes act as vectors carrying the disease to horses or, occasionally, to humans. The time from the bite of the mosquito to the onset of symptoms is 5-15 days. The onset of the disease is marked by severe headache, stiff neck, high fever, chills, nausea and vomiting. Mental confusion and sleepiness follow in a few days and may progress to seizures and coma. There is a high fatality rate (50-70% of people who develop the disease will die) and survivors experience a high incidence of neurological complications. Prevention of the disease depends on control of vector mosquito populations. During documented outbreaks of the disease, people working

in areas of possible infestations should avoid exposure to mosquitoes as much as possible. People should use insect repellent, wear full-length trousers and long-sleeved shirts, and avoid outdoor activities when mosquitoes are most active (that is, one hour before and after sunrise and sunset).

La Crosse Encephalitis is caused by a virus carried by *Aedes triseriatus*, the treehole mosquito. This disease mainly affects children. About 25-30 cases are reported annually in Ohio, especially between July through September from wooded areas in both rural and suburban locations. Symptoms develop within 5-15 days after the bite of an infected mosquito and include headache, fever, stiff neck, drowsiness, lethargy, nausea and vomiting, disorientation, mental confusion, and occasionally, seizures. This disease is rarely fatal but treatment usually involves hospitalization. The disease can be prevented by controlling this mosquito, which breeds only in tree holes and manmade containers that collect water.

Ticks and Tick-Borne Diseases

Ticks are vectors of Rocky Mountain Spotted Fever and Lyme Disease in Ohio. Avoidance of ticks in areas with high rates of infestation is particularly difficult, although some protection is afforded by wearing long pants tucked into the sock tops and by wearing light colored clothing. The proper use of chemical repellents containing diethyl-m-toluamide (DEET), such as Cutter's, Deep Woods Off, Tick, Permanone, or other substances may be effective in reducing the risk of tick bite. Proper removal of ticks and disinfection of the wound may help prevent disease. The proper procedure for removal of a tick is to grasp the tick gently near its mouthparts with forceps, pulling gently and steadily until the tick is free of the skin. After removing the tick, immediately disinfect the site of the bite. Apply an antiseptic and antibiotic ointment to the entry site. Exercise care to avoid squeezing the body of the tick with the forceps, and do not break off the mouthparts. Avoid rubbing the site of the bite before disinfecting since this may spread infecting organisms.

Rocky Mountain Spotted Fever

Rocky Mountain Spotted Fever is a rickettsial disease predominantly affecting young adults. The median age of affected individuals in Ohio is 17 years, and the mortality rate ranges from 4 to 20%. Rocky Mountain Spotted Fever occurs throughout the state in urban and rural areas with the highest rates of infection occurring in Clermont, Franklin, and Lucas Counties. The causative agent is a bacterium, *Rickettsia rickettsii*, which is carried by the American dog tick, *Dermacentor variabilis*. The vector is found in tall grass and weeds in open, fallow fields, especially old farm fields. The vertebrate reservoir for the bacterium is rodents, especially white-footed and deer mice (*Peromyscus* mice) and meadow voles. Individuals engaged in outdoor activities in tall grass and weeds are at increased risk

of infection.

The onset of symptoms begins 3-13 days after the bite of an infectious tick. Symptoms of infection include flu-like headaches, fever, chills, and muscle aches. A rash appears a few days later on the hands and feet and spreads to the trunk and face. Treatment of Rocky Mountain Spotted Fever is generally effective and involves the use of specific antibiotics.

Lyme Disease

Lyme disease is an infectious disease affecting individuals in all age groups. The median age of affected individuals in Ohio is 37 years, and the mortality rate is essentially zero. Lyme disease occurs in suburban and rural areas, especially wooded areas. The causative agent is a bacterium, *Borrelia burgdorferi*, which is carried by the Black-legged tick, *Ixodes scapularis*. The vector is found in woodlands, and the vertebrate reservoir for the bacterium is wild rodents, especially white-footed and deer mice (*Peromyscus* mice). Since the bacterium is not believed to be endemic and the tick is rare, the risk of acquiring Lyme disease in Ohio is low. Individuals engaged in outdoor activities in wooded areas are at increased risk of infection. Symptoms of infection include a rash beginning at the site of the bite and spreading within a few days to other parts of the body. Other symptoms include fever, headache, neck stiffness, joint pain, and sometimes arthritis of large joints. Treatment of Lyme Disease is effective and involves the use of specific antibiotics and other medication.

Black Widow Spider and Brown Recluse Spider

The black widow spider (*Latrodectus mactans*) is a shiny black spider about 38 mm long and 6 mm in diameter. The female has a red spot or hourglass-shaped mark on its abdomen whereas the male usually has light streaks on its abdomen. These spiders are common in and around wood piles, eaves, stone fences, outdoor toilets, and other undisturbed places. The black widow spider is not aggressive but will bite when touched. The best prevention against the bite of this spider is care in working around areas where the spider may be established. Wear gloves and pay attention to where you are working. The bite is sharp and painful. If you are bitten by a black widow spider, you are advised to seek medical treatment immediately.

The brown recluse spider (*Loxosceles reclusa*) belongs to a group of spiders known as violin spiders or fiddlebacks because of a characteristic fiddle-shaped pattern on their head. These are small, golden-brown spiders that commonly live in basements and garages in the Midwest. Bites often occur when the spiders hide in towels or old clothes left in those areas. The severity of the bite may vary. Symptoms may range from no reaction to severe reaction. The onset of systemic reaction occurs within 24-36 hours and includes restlessness, fever, chills, nausea, weakness, and joint pain. There is often tissue death and the skin is sloughed off at the site of the

bite. These spiders are seldom aggressive and usually bite only when injured or threatened. The best prevention against the bite of this spider is care in working around areas where the spider may be established. Wear gloves and pay attention to where you are working. If you are bitten by a brown recluse spider, you are advised to seek medical treatment immediately.

—*Venomous Snakes*—

Three venomous snakes reside in Ohio: the timber rattlesnake (*Crotalus horridus*), the Eastern massasauga (*Sistrurus catenatus catenatus*), and the copperhead (*Agkistrodon contortrix mokasen*). The timber rattlesnake has been reported in and around Vinton County, and the massasauga has been found throughout western and in northeastern Ohio, although neither snake is common within its Ohio range. The copperhead is found in southern Ohio, and it is common enough to pose a moderate threat. Defense against any of these snakes is fairly simple: Do not walk through or reach into potential snake habitat when you cannot see where you are going. In particular, consider the following:

- ◆ Avoid walking through tall grass during the warm months; but, if you must, wear high boots and leggings. Use a walking stick to probe the vegetation ahead of you.
- ◆ Try to use existing trails. If a log obstructs the trail, look on the other side before you step over it.
- ◆ Be careful when moving rocks or logs. If possible, move them with a stout stick or a shovel before picking them up with your hands.

In the event of snakebite, do the following:

- ◆ Allow the bite to bleed freely for 1 minute; attempt venom extraction with an appropriate snakebite kit for no more than 1 minute if bleeding is free and a proper seal can be maintained.
- ◆ Cleanse and disinfect the bite thoroughly, if possible, for 30 seconds.
- ◆ Apply hard direct pressure with gauze pad over the bite area.
- ◆ Strap a gauze pad tightly in place with adhesive tape.
- ◆ Soak the gauze pad with BETADINE (TM), if possible, before application.
- ◆ Wrap the affected extremity with an elastic bandage.
- ◆ Wrap as tightly as one would if wrapping a sprain.
- ◆ Get medical attention as soon as possible.
- ◆ Identify (or kill or bring) the snake, if possible.

Do *not* do the following:

- ◆ Eat or drink anything.
- ◆ Engage in strenuous physical activity.
- ◆ Cut or incise bite marks.
- ◆ Drink an alcoholic beverage or take any medication.
- ◆ Delay in seeking medical attention.
- ◆ Apply either cold or heat to the affected area.
- ◆ Apply electric shock of any kind.

— *Mammals* —

Wild mammals are rarely a danger in Ohio preserves. Occasional you may inadvertently anger a mammal parent by coming upon a den or nest, or you may be approached by a rabid animal. Retreat carefully in either case, but be prepared to defend yourself with a stick or any other weapon that's available. You can avoid surprising wild animals by making a moderate amount of noise as you traverse a trail or open country.

Domestic mammals are more of a danger than wild ones. In particular, stay clear of dogs and cattle at preserve margins. Anyone bitten by an animal should seek prompt medical attention, as rabies is a potential risk in Ohio.

— *Cold- or Heat-Related Emergencies* —

Hypothermia and Frostbite

Hypothermia, the condition in which bodily heat loss continues to exceed heat generation, can ensue if common sense and first-line physiological responses fail. If the body-core temperature begins to drop, then damage to internal organs and death are distinct possibilities. Progressive danger signals of hypothermia are a chilled feeling, shivering, fatigue, irritability, disorientation, and difficulty with motor control. Cessation of shivering is one of the last phases and is a signal of extreme danger.

Get a hypothermia victim to a warm place as quickly as possible and call for emergency assistance. Remove any wet clothing from the victim and replace it with warm, dry clothing or blankets. If the victim is alert, give warm, non-alcoholic, non-caffeinated liquids to drink. Do not immerse the victim in warm water, as the shock of too rapid a rewarming could cause dangerous heart problems.

Frostbite is the freezing of body parts exposed to the cold, and its severity depends on the intensity and duration of the exposure. Symptoms of frostbitten flesh are lack of feeling and a waxy, discolored appearance in the affected area. In treating a frostbite victim, avoid touching or rubbing the affected area(s). For frostbitten fingers and toes, soak in lukewarm water (105° F or less) until the frostbitten area looks red and feels warm. Place gauze or cotton between fingers or toes, then loosely bandage the whole area with a dry, sterile dressing. Do not break any blisters that may be present. Seek medical help as soon as possible.

Heat Cramps, Heat Exhaustion, and Heat Stroke

Heat cramps are painful muscle spasms, usually in the legs or abdomen. The best treatment is to rest in a cool place, drink cool, non-alcoholic, non-caffeinated fluids, and gently stretch or massage the affected area. These are the least serious heat-related illness, but they are a warning that a heat-related emergency could occur.

Heat exhaustion is a serious condition that can sneak up on a field worker. Watch for cool, moist, pale, or flushed skin, headache, nausea, dizziness, weakness, and exhaustion. To treat, get out of the heat, remove perspiration-soaked clothing, apply cool, wet cloths to the skin, and drink water or a sports drink at the rate of about 4 ounces every 15 minutes. (Sip the water, do not gulp or chug!) If the victim starts to get nauseous, have him or her stop drinking fluid until the stomach settles, then start again with small amounts of water being sipped. Refusing water, vomiting, or loss of consciousness is a sign that the condition is rapidly worsening. If this occurs, call medical personnel for assistance, and keep the victim cool by applying cold packs to the wrists and ankles.

Heat stroke is an uncommon but severe heat emergency that can occur when people ignore the symptoms of heat exhaustion. The signals of heat stroke include red, hot, dry skin; changes in consciousness; rapid, weak pulse; and rapid, shallow breathing. This condition is life threatening, and medical personnel should be called immediately.

—Medical Emergencies—

Various types of other medical emergencies could potentially warrant a response by a field crew. Such emergencies can arise from chronic conditions (allergies, diabetes, epilepsy) or can be acute reactions to a particular stimulus (for example, overexposure). Common danger signs for many of these emergencies are altered mental state, lightheadedness, dizziness, weakness, nausea and vomiting, difficulty with breathing, abnormal pulse, and changes to the appearance of the skin. When a field crew member displays these symptoms, provide general care and call for medical help.

Handling of cardiovascular emergencies is thoroughly covered in first aid

texts by the American Red Cross and will not be dealt with here. The following are descriptions and treatment approaches for fainting, seizures, and diabetic emergencies, problems for which advice may not be readily available in the crew's first aid references.

Fainting

Fainting results from deprivation of blood to the brain and can happen with or without warning. If a crew member faints, summon help, checking first for a medical-information bracelet or necklace. Move the victim to a lying-down position, check for injuries, loosen tight clothing, and elevate the legs. Do not give drinks.

Seizures

Seizures result when brain function is interrupted by injury, disease, fever, or infection. Epilepsy is a common cause of seizures; even if controlled most of the time, a failure of medication or unusual circumstances could cause a lapse. Common symptoms of seizures include irregular breathing, drooling, upward rolling of the eyes, and rigidity. In nonconvulsive seizures, the body is relatively still. In convulsive seizures, the body is subject to sudden, uncontrollable muscular spasms.

When assisting a crew member who is having a seizure, let nature take its course; do not try to stop or control the seizure. Protect the victim by clearing the surrounding space of objects, paying particular attention to the area near the head. If no spinal injury is suspected, roll the victim on his or her side to help keep the airway open. Do not force anything between the victim's teeth.

Some people experience mild, periodic seizures that do not require outside medical help. Outside help *is* required if the seizure lasts more than a few minutes, the victim has repeated seizures, the victim appears injured, the cause of the seizure is uncertain, the victim is pregnant, the victim is a known diabetic, the victim is an infant or child, the seizure occurs in water, or the victim fails to regain consciousness.

Diabetic Emergencies

Diabetic emergencies are of two types: hyperglycemia, in which too much sugar is in the blood as a result of too little insulin; and hypoglycemia, in which too much insulin is present. Signs and symptoms of both types of emergencies are similar: change in mental state (dizziness, drowsiness, confusion, loss of consciousness), irregular breathing, abnormal pulse, and feeling or appearance of being ill.

Summon medical help immediately if symptoms are moderate to severe. If symptoms are mild and the victim is fully conscious, give some sugar by way of food or beverage and wait 5 minutes to see if the symptoms abate. (Giving sugar will help a victim of hypoglycemia, and it will not hurt a victim of hyperglycemia.)

