

Oklahoma Conservation Commission
Blue Thumb Volunteer Water Quality Monitoring Program
Safety Procedures

I. General Safety Precautions

- a. Always monitor with at least one partner. Teams of three or four people are best. Always let someone else know where you are, when you intend to return, and what to do if you don't come back at the appointed time.
- b. Develop a safety plan. Find the location and telephone number of the nearest telephone and write it down. Locate the nearest medical center and write down directions on how to get from the center to your site so you can direct emergency personnel. Put this information in your first aid kit.
- c. Have a first aid kit. Your first aid kit should contain sterile saline eye wash, bandages, and emergency phone numbers.
- d. Never drink the water in a stream. Assume it is unsafe to drink and bring your own water from home.
- e. The stream may contain pathogenic bacteria or viruses or pollutants.
 1. Avoid water contact with your eyes, nose, and mouth.
 2. After monitoring, wash thoroughly with antibacterial soap.
 3. Avoid water contact with any breaks in your skin such as cuts, blisters, and open sores.
- f. Access
 - i. Trespass
 1. Do not attempt to enter land without owner's permission.
 2. Oklahoma Trespass Laws do apply.
 - ii. Choose a sampling site with a safe parking spot that does not pose a hazard to other drivers and that does not block traffic.
 - iii. Exercise caution when entering traffic to access a sampling site.
 - iv. Stream Access
 1. Avoid an unstable bank, disturbing the bank could cause it to collapse.
 2. If a stream bank is too steep, do not attempt to access the stream.

3. Rip-rap or other bank stabilization materials may be unsteady or slick, use caution when entering a stream with these types of embankments.

g. Vegetation

- i. Poison ivy grows as a trailing vine, shrub, or climbing vine that produces urushiol which can cause contact dermatitis, a very itchy rash.
 1. Identification – poison ivy has three leaflets with an alternate arrangement. Leaf color ranges from light green to bright red in fall. A white/gray berry can be found on the vine during fall and winter.
- ii. Mushrooms found in the wild should not be eaten. Even one bite of a toxic mushroom can have severe health effects or death.
- iii. Do not eat any berry unless it can be properly identified as edible.
- iv. Several plants found in Oklahoma have thorns. Take care around plants with thorns as they can cause puncture wounds.

h. Wildlife

- i. Do not disturb wildlife. If you feel unsafe, leave the area immediately.
- ii. Watch for stinging and biting insects, spiders, and scorpions.
- iii. Watch for venomous snakes. If you see a venomous snake, leave the area immediately.

II. In-Stream Hazards

- i. Use caution when walking on rocks. Rocks are often covered with algae making them very slippery. Rocks on banks and stream bottom can also be unstable.
- ii. Use caution when walking or swimming in water; woody debris may pose an injury risk.
- iii. Be aware of trash in the stream. Large objects such as refrigerators and ranges are often found in streams and may pose an injury risk. Small objects such as toys and plastic bags are also often found in streams and may also pose an injury risk.

III. Weather

- a. Monitor the weather carefully before each sampling event.
 - i. Heat
 - 1. During extremely hot and humid weather the body's ability to cool itself is affected. Heat-related illnesses can range from heat cramps to heat exhaustion to more serious heat stroke. Heat stroke can result in death and requires immediate medical attention.
 - a. Signs of heat illness include:
 - i. Muscle cramping
 - ii. Heavy sweating
 - iii. Weakness
 - iv. Cold, pale, clammy skin
 - v. Fast pulse
 - vi. Nausea or vomiting
 - vii. Fainting
 - viii. Body temperature above 103°F
 - b. Heat related illness can be prevented by:
 - i. Drinking water every 15 minutes, even if you're not thirsty.
 - ii. Resting in the shade to cool down.
 - iii. Wearing a hat and light-colored clothing.
 - iv. Learning the signs of heat illness and what to do in an emergency.
 - v. Keeping an eye on fellow workers.
 - 2. Any part of your body, including your earlobes, scalp and lips, can burn. Your eyes, which are extremely sensitive to the sun's ultraviolet light, also can burn. Sunburned eyes may feel painful or gritty. Signs and symptoms of sunburn usually appear within a few hours after sun exposure. But it may take a day or longer to know the full extent and severity of sunburn.
 - ii. Cold Weather/Winter Weather

1. If a winter storm event has caused roads to be hazardous, consider rescheduling your monitoring trip.
 2. Hypothermia is most likely at very cold temperatures, but it can occur even at cool temperatures (above 40°F) if you have been chilled from rain, sweat, or submersion in cold water.
 - a. Signs of hypothermia include:
 - i. Shivering
 - ii. Clumsiness or lack of coordination
 - iii. Slurred speech or mumbling
 - iv. Stumbling
 - v. Confusion or difficulty thinking
 - vi. Poor decision making, such as trying to remove warm clothes
 - vii. Drowsiness or very low energy
 - viii. Apathy or lack of concern about one's condition
 - ix. Progressive loss of consciousness
 - x. Weak pulse
 - xi. Slow, shallow breathing
 - b. Hypothermia can be prevented by:
 - i. Wearing layers with an inner layer of wool, silk, or synthetic to wick moisture away from the body.
 - ii. Wearing a hat.
 - iii. Wearing insulated footwear.
 - iv. Keeping a change of dry clothes.
 3. Frostbite is an injury to the body that is caused by freezing.

Frostbite causes a loss of feeling and color in affected areas. It most often affects the nose, ears, cheeks, chin, fingers, or toes. Frostbite can permanently damage the body, and severe cases can lead to amputation.
- iii. If enough rain has fallen to cause a significant rise in stream stage or a flash flood, do not attempt to enter the stream.

- iv. Hurry to a safe building or vehicle when you first hear thunder, see lightning or observe dark threatening clouds developing overhead. Stay inside until 30 minutes after you hear the last clap of thunder. Do *not* shelter under trees.
- v. High wind can cause tree limbs or branches to fall which can lead to serious injury or death.

IV. PPE

a. Personal Protective Equipment (PPE)

- i. A personal flotation device (PFD) should be considered if water is deep and/or swift. A PFD should also be considered if you are unable to swim or feel unbalanced. Young children should always be fitted with a PFD when playing in or around water.
- ii. To protect your skin from the sun's damaging ultraviolet rays, it is recommended that sunscreen be applied according to label directions.
- iii. To protect from biting insects, bug repellent may be applied according to label directions.
- iv. Long pants and long sleeves are always recommended when sampling to protect from weather conditions, hazardous vegetation, biting insects, and the sun's ultraviolet rays.
- v. Wearing a hat or visor will protect your eyes and skin from the sun's ultraviolet rays.
- vi. It is recommended that you wear sunglasses to protect your eyes from the sun's ultraviolet rays.
- vii. During cold weather, it is recommended that you wear waders (hip or chest), gloves, and a stocking cap to protect against heat loss and frostbite.
- viii. To protect your feet against unknown hazards, it is recommended that you wear close-toed shoes during sampling events.

V. Chemicals

a. Ethanol (specimen preservation)

- i. Causes severe eye irritation, respiratory tract irritation, and moderate skin irritation. May cause adverse reproductive and fetal effects, central nervous system depression, and liver, kidney, and heart damage.
 - ii. Do not ingest. If ethanol comes in contact with your skin or eyes, flush with water immediately.
- b. Formalin (37% Formaldehyde solution) (specimen preservation)
 - i. Formaldehyde can be highly toxic if swallowed, inhaled, or absorbed through skin. Ingestion of as little as 30 mL (1 oz.) of formalin has been reported to cause death in adults.
 - ii. Do not ingest. If formalin comes in contact with your skin or eyes, flush with water immediately.
- c. Test Kits
 - i. Chemical tests should be performed in a controlled environment such as a classroom or house.
 - ii. Chemical tests should be performed in a well-ventilated area.
 - iii. Wear goggles/safety glasses when performing chemical tests.
 - iv. Wear latex/non-latex gloves when performing chemical tests.
 - v. Dispose of liquid waste in a toilet connected to a sewer system. If you conduct your chemical tests in a place with a septic system, place your liquid waste in a bag of kitty litter and dispose in the trash.