

River Watch Health and Safety Plan

Introduction

A critical consideration in the River Watch volunteer monitoring program is the safety of its volunteers. All volunteers should be trained to perform the sampling and analysis in a safe manner and should have with them a copy of the Health and Safety Plan into the field and have a copy available in the laboratory. The Volunteer Team Leader (Teacher, Coordinator, or other responsible party) should be thoroughly familiar with the contents of this safety plan. Questions about this safety plan can be directed toward the River Watch Coordinator. The goal of implementing the safety plans is to avoid any problems. **Safety precautions can never be overemphasized.**

Safety Considerations

The following are some basic common sense safety rules established by the EPA Volunteer Monitoring Program.

At the site:

- 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.
- Develop a safety plan. See the **YOUR EMERGENCY RESPONSE HEALTH AND SAFETY PLAN** section below as a starting place.
- Have a first aid kit handy. It is best if at least one team member has first aid/CPR training.
- Know your equipment, reagents, sampling instructions, and procedures before going out into the field. Prepare labels and clean equipment before you get started.
- Listen to weather reports. Never go sampling if severe weather is predicted. Leave sample area if a storm occurs while at the site.
- Never wade in swift or high water. Do not monitor if the stream is at flood stage.
- If you drive, park in a safe location. Be sure your car doesn't pose a hazard to other drivers and don't block traffic.
- Watch for irate dogs, farm animals, wildlife (particularly snakes), and insects such as ticks, hornets, and wasps. Know what to do if you get bitten or stung.
- Never drink the water in a stream. After monitoring, wash your hands with antibacterial soap.
- Do not monitor if the stream is posted as unsafe for body contact. If the water appears to be severely polluted, contact your program coordinator.
- Do not walk on unstable stream banks. Disturbing these banks can accelerate erosion and might prove dangerous if a bank collapses. Disturb streamside vegetation as little as possible.

- Be very careful when walking in the stream itself. Rocky-bottom streams can be very slippery and can contain deep pools; muddy-bottom streams might also prove treacherous in areas with mud or silt. If you must cross the stream, use a walking stick to steady yourself and to probe for deep water or hazards. Your partner(s) should wait on dry land ready to assist you if you fall. Do not attempt to cross any streams that are swift and above the knee in depth.
- If you are sampling from a bridge, be wary of passing traffic. Never lean over bridge rails unless you are firmly anchored to the ground or the bridge with good hand/foot holds.
- **If at any time you feel uncomfortable about the condition of the stream or your surroundings, stop monitoring and reassess the situation and if warranted leave the site at once. Your safety is more important than the data!**

When using chemicals:

- Know your equipment, sampling instructions, and procedures before using. Prepare labels and clean equipment before you get started.
- Know how to use and store chemicals. Read and understand the Material Safety Data Sheets for the chemical you are using.
- Keep all equipment and chemicals away from small children. Many of the chemicals used in monitoring are poisonous. Tape the phone number of the local poison control center to your sampling kit.
- Avoid contact between chemical reagents and skin, eye, nose, and mouth. Wear appropriate Personal Protective Equipment when performing any chemical test or handling preservatives.
- Know chemical cleanup and disposal procedures. Wipe up all spills when they occur. Close all containers tightly after use and store properly.

Your Emergency Response Health and Safety Plan

Please read and understand this document, complete the blanks, and take with you while sampling.

Date Completed: _____

Sample Location (s): _____

Developed by: _____

Site Description:

Site Location:

Surrounding population:

_____ industrial _____ residential _____ rural _____ urban _____ unpopulated

Topography:

Other (including possible hazards):

Objectives

1. All operations shall be conducted in accordance with procedures established by field Volunteer Monitoring Team Leader.
2. All potential hazards are identified, and practices are in place to minimize risk.

Responsibilities

1. All volunteer monitors shall be provided with an initial site safety briefing to communicate the nature, level, and degree of hazards expected at the sample site.
2. Volunteers shall be adequately trained to perform their assigned tasks safely.
3. All volunteers entering the monitoring area shall be fully informed about potential hazards and applicable procedures at the site.
4. Volunteers will also receive regular briefings when:
 - Significant changes are made in the work procedures, safety plans,
 - New hazards such as high flows are expected, or
 - As needed for a refresher training.

The **Field Monitoring Team Leader (or their designate)** is responsible for the health and safety of all volunteer monitors. The responsibilities include (but are not limited to):

- Coordination of all safety and health concerns for the entire station
- Keeping this plan current, and
- Liaison with school officials, or other responsible individuals from the school or other organizations that have a need to know about the status of monitoring activities.

General Safe Work Practices

Depending on the circumstances, any or all of the safe work practices listed below will be adhered to while at the monitoring station. Place a check next to those that are appropriate for the your monitoring activity and station circumstances, make notes as needed on specific issues or practices for your site(s). Add any additional practices that may be required.

_____ **UNACCOMPANIED:** For most situations, more than one person should be present for monitoring activities.

_____ **TRAFFIC:** Does getting to the monitoring site expose monitors to traffic, road crossings, limited parking, sampling from a bridge, or other traffic hazards?

_____ **LIGHTNING:** Volunteer monitors should be aware of potential lightning, and will stay out of the water, as well as take other precautions if there is a risk of lightning.

_____ **WORK IN WATER:** All personnel working in water should be aware of water hazards. Sampling should be restricted to near shore or from a bridge if there are any concerns about the volume or velocity of flow. In general, never enter moving water that rises above your knees without necessary training and equipment. Post a downstream spotter.

_____ **HEAT STRESS:** High temperatures and physical activity can lead to heat stress. Restrict the amount of time you are exposed to high temperatures, take and consume plenty of water. Never drink the river/sample water.

_____ **COLD STRESS:** Volunteer monitors should have access to adequate warm clothing, and exposure protection. Do not remain in low temperatures for extended periods.

_____ **FALL HAZARDS:** Steep banks, unstable soils, loose rocks, and other fall hazards should be noted and practices put in place to minimize fall hazards, such as established routes to the stations.

_____ **UV LIGHT EXPOSURE:** Sunscreens with protection factor 15 (or greater) and UV tinted safety glasses should be worn. This is a type of personal protective equipment.

_____ **MOTOR VEHICLES:** Drivers shall maintain a safe speed at all times, and shall not be allowed to operate vehicles in a reckless manner. Seat belts will be worn.

Other: _____

Flora & Fauna Awareness: The listed items represent the types of dangers that may be associated with the plants, insects, and animals native to the area of deployment. The Volunteer Monitoring Team Leader will gather information to determine the specific dangers faced in the particular area.

_____ **INSECT STINGS:** Bee and/or wasp bites, ticks. Use DEET for Mosquito bite protection

_____ **POISONOUS SPIDERS:** Black widow, Brown recluse, Scorpions, Tarantula

_____ **TICKS:** Carriers of Rocky Mountain spotted fever and Lyme disease

_____ **ANIMAL BITES:** Skunks, prairie dogs, foxes, bats, dogs, cats, raccoons, and horses

_____ **SNAKE BITES:** Rattlesnakes

_____ **POISONOUS PLANTS:** Poison ivy

_____ **BITE ALLERGIES:** do any monitors have bite allergies, are antidotes available?

Other General Precautions:

Chemical Hazards

All volunteers using chemicals should have an understanding of chemical hazards related to the chemicals they are working with. Specific safety practices designed to ensure minimize risk should be undertaken. **Personal protective equipment and training in the proper use, handling, and emergency response should be provided to Volunteer Monitors.** At the monitoring station and in the lab, volunteer monitors may be exposed to small quantities of hazardous materials, including Nitric Acid. In general, adults should handle this and other hazardous materials.

- Personnel protective equipment should be worn in accordance with Material Safety Data Sheets (MSDS), and those sheets should be brought to the site.
- The MSDS information should have been reviewed and understood by the Volunteer Monitoring Team Leader.
- Volunteers are trained in the safe handling use of hazardous chemicals.
- Safe chemical handling procedures are required for participation in the program.
- Chemicals are stored in secure location.
- All chemical are labeled correctly.
- First Aid for chemical exposure is understood.
- Use of hazardous materials is minimized during field activities.

Below is a list of the hazardous chemicals used during River Watch volunteer monitoring and their safety information.

Product Name: Nitric Acid

Chemical Formula: HNO₃, with not more than 70% nitric acid

Physical Data: Appearance: clear liquid

Caution Warning: CAUTION! CORROSIVE MATERIAL

Hazard Data: Causes eye burns, irritation to skin and respiratory tract.

First Aid: Eyes and skin: Flush with water for 15 minutes. Ingestion: Drink 1 to 2 glasses water. Do NOT induce vomiting. Call physician. If inhaled, remove to fresh air.

Applicable Safety

Equipment: Wear suitable protective clothing, chemical safety goggles, lab coat, and gloves.

Test: Metal sample preservative

Product Name: Sulfamic Acid Powder Pillows

Chemical Formula: $\text{NH}_2\text{SON}_3\text{H}$

Physical Data: Appearance: white crystalline powder

Caution Warning: CAUTION! CORROSIVE MATERIAL

Hazard Data: Causes eye burns, irritation to skin and respiratory tract.

First Aid: Eyes and skin: Flush with water for 15 minutes. Ingestion: Drink 1 to 2 glasses water. Do NOT induce vomiting. Call physician. If inhaled, remove to fresh air.

Applicable Safety

Equipment: Wear suitable protective clothing, chemical safety goggles, lab coat, and gloves.

Test: Dissolved oxygen preparation

Product Name: Manganous Sulfate Solution

Concentration: 38%

Chemical Formula: MnSO_4

Physical Data: Appearance: pink liquid

Caution Warning: CAUTION! IRRITANT

Hazard Data: May cause irritation on contact with skin, eyes, or mucous membranes.

First Aid: Skin: wash thoroughly with soap and water. Eyes: rinse immediately with plenty of water for at least 15 minutes. If inhaled, remove to fresh air.

Applicable Safety

Equipment: Protective gloves, safety glasses with side shields. Wash thoroughly after handling.

Test: Dissolved oxygen preparation

Product Name: Alkaline iodide-azide

Chemical Formula: NaOH (96%), NaI (75%), NaN_3 (2%), H_2O

Physical Data: Appearance: colorless liquid, contains Sodium Hydroxide.

Caution Warning: DANGER! CORROSIVE LIQUID, BASIC & TOXIC

Hazard Data: Skin and eyes: severe burns. Skin absorption: readily absorbed. Inhalation: irritates. Ingestion: toxic.

First Aid: Skin and eyes: Flush the contact area with lukewarm running water for at 15 minutes. Inhalation: Remove to fresh air. Ingestion: Do NOT induce vomiting. Have victim drink 200-400ml of water to dilute. Seek medical attention.

Applicable Safety

Equipment: Approved vent fume hood, protective gloves, safety glasses, plastic apron, and sleeves as applicable.

Test: Dissolved oxygen preparation.

Product Name: Sulfuric Acid

Chemical Formula: 0.02N H₂SO₄, H₂O

Concentration: H₂SO₄ - <5%

Physical Data: Appearance: colorless liquid

Caution Warning: CAUTION! IRRITANT

Hazard Data: May cause eye and skin irritation. Do not ingest.

First Aid: Skin and eye contact: immediately flush eyes with lukewarm water for 15 minutes. Wash skin with soap and plenty of water. Ingestion: give large quantities of water. Call physician immediately. Inhalation: remove to fresh air immediately.

Applicable Safety

Equipment: Wear suitable protective clothing, chemical safety goggles, lab coat, and gloves.

Test: Alkalinity titration

Product Name: Ethyl Alcohol

Chemical Formula: C₂H₅OH

Concentration: 100%

Physical Data: Appearance: colorless liquid

Caution Warning: CAUTION! FLAMMABLE

Hazard Data: May cause eye and skin irritation. Do not ingest.

First Aid: Skin and eye contact: immediately flush eyes with cool water for 15 minutes. Ingestion: give large quantities of water. Call physician immediately. Inhalation: remove to fresh air immediately.

Applicable Safety

Equipment: Wear suitable protective clothing, chemical safety goggles, lab coat, and gloves.

Test: Macroinvertebrate sampling

Personal Protective Equipment (PPE)

Field PPE includes equipment necessary to safely carry out the monitoring activity:

___ Waders with non-stick sole

___ Sunscreen/sun glasses

___ DEET

___ Safety Glasses

___ Latex gloves

___ Lab coat

Emergency Procedures

When a health or safety incident occurs, personnel should not restart work until:

- The condition resulting in the emergency has been investigated by supervisory personnel, and has been corrected.
- Hazards have been reassessed.
- Personnel have been briefed on any changes in the operation and site safety plan.

The closest hospital for regular emergencies is _____ miles away (if emergency medical services or more than an half hour away, you may wish to significantly reduce possibly dangerous activities).

Response to Accidents Involving Injuries

1. Determine the extent of the injury to decide the best mode of response. Avoid further injury to the victim or to oneself.
2. If the injury requires medical treatment other than first aid, call 911 immediately, providing directions and indicating whether or not chemicals or other agents are involved.
3. Render first aid at the scene for minor injuries. More serious injuries will require professional medical treatment.
4. Assist emergency personnel upon arrival, directing them to the scene.

Response to Chemical Spills

1. Follow steps above.
2. Protect yourself and others from additional exposure to chemicals and vapors.
3. Clean up spills in accordance with MSDS sheets.

CHEMICAL BURNS

Flush the affected area with water for 10 to 15 minutes and remove or cut away clothing.
Get victim to medical help as needed.

Response to Weather Emergencies

1. Monitor local radio/TV broadcasts for weather information.
2. Adhere to travel warnings.
3. Do not enter water if lightning or flash flood threat exists.
4. Know the evacuation routes to your destination. Climb to safety in case of flash flood.

Directions and Distance to Nearest Hospital: _____

Emergency Notification

Responsible Official: _____

Voice/phone: _____

Cellular: _____

Volunteer Monitoring Field Leader: _____

Voice/phone: _____

Cellular: _____

Police: **Emergency: 911** Non-Emergency: _____

Fire/EMS: **Emergency: 911** Non-Emergency: _____

Hospital: _____

Other numbers: _____

Medical Form

Name: First _____ Middle _____ Last _____		
Number & Street: _____		
Phone: () _____ - _____ Cell Phone () _____ - _____		
City: _____ State: _____ Zip _____		
Age _____ Birthday: _____ / _____ / _____		
Other Emergency Contact: Name	Relationship	Phone Number

Health History: (list details, approximate dates for conditions like frequent ear infections, heart defect/disease convulsions, diabetes, bleeding/clotting disorders, hypertension, and diseases such as mononucleosis etc.):

Allergies Health History: (No, or yes and describe):

Seizure: (No, or yes and type, frequency, describe):

Restricted Activities: (No, or yes and describe):

Medication Name	Dose	Frequency:	For What

SIGNATURE _____ DATE _____

SIGNATURE OF PARENT / GUARDIAN (under 18)

_____ DATE _____