A Guide for Aquatic Science Safety in Laboratory and Field Investigations. By Coach Trow

Laboratory Safety

- Lab Dress Code
- General Safety
- Chemical Safety
- Biological Safety

Lab Dress Code

- 1)Wear safety goggles when directed. Never wear contact lenses in the lab.
- 2)Wear a lab coat or apron when directed.
- 3)Tie back loose hair whenever chemicals or open flames are being used.
- 4)Do not wear loose, baggy clothing or loose jewelry (ID badge lanyards) when working with chemicals or open flames.
- 5)Always wear shoes (no sandals, flip-flops, or exposed toes or feet.
- 6)When done with Lab: Clean up. Put away everything correctly. Turn off/unplug. Wash hands. Check Out with teacher.

General Safety

Personal Conduct

- 1) Never "horse around" in the lab. Be serious and alert.
- 2) Be ready to work when you enter the lab. Understand the procedures before you begin and any hazards associated with the lab.
- 3) Read all directions before the lab. If you are unsure of proper procedure, ask your teacher before proceeding.
- 4) Never perform activities that are not authorized by your teacher. Obtain permission BEFORE you do something that "you are not supposed to be doing."
- 5) Never handle any equipment without permission from teacher.
- 6) If you spill something, tell the teacher immediately so that you can clean it up according to proper procedure.
- 7) Never eat, taste, or drink anything. Do not apply cosmetics. Wash hands before and after each activity.
- 8) Know location and use of safety equipment in lab.
- 9) Notify teacher of any health issues you may have, such as asthma, allergies, etc...
- 10) Keep your area neat and free of clutter. No books, bags, unnecessary papers etc...

• First Aid

Report all accidents, no matter how minor, immediately to the teacher.
 Know what to do in the case of specific accidents such as acid spills, fires, or chemicals on skin or in eyes.

3)Know the location of the first aid kit, Nurse's and Office phone number and how to respond in case of an emergency. Your teacher should administer any first aid that you require, but if the teacher goes down you need to help.

Heating and Fire Safety

1)Never use a heat source such as a candle or burner without wearing goggles.

2)Never heat anything that you are not instructed to heat.

3)Keep work area clear of clutter.

4)Never reach across a flame.

5)Make sure you know how to light a burner. If you do not your teacher will show you.

6)Point test tubes or bottles that are being heated away from you and others.

Chemicals can boil or splash out of the tube.

7)Never heat a closed container.

8)Never pick up a container without first checking to see if it is hot. If you can feel heat when you hold the back of your hand near it, use heat gloves or tongs to pick it up.

Glassware Safety

- 1)Never force glass tubing into a rubber stopper. Your teacher will demonstrate the proper procedure to do this.
- 2)Never heat glassware that is not dry. Use wire gauze to protect glass from the flame.
- 3)Hot glass does not look hot. Don't pick up any glassware that may have been heated without checking to see if it is hot first.
 4)Never use broken or chipped glassware. If glass breaks, tell teacher immediately and dispose of glass in GLASS BOX.
 5)Never eat or drink out of lab glassware.

Using Sharp Instruments

 Handle scalpels and razor blades with extreme care. Never cut material toward yourself or others. Cut away from you and others.
 Be careful with sharp stuff including broken glass.
 Notify your teacher if you cut yourself.

Chemical Safety

- Never mix chemicals for the "fun of it." See unauthorized experiments (rule #8).
 Never touch, taste, smell etc... any chemical unless instructed to do so.
- 3) Use only the chemicals needed for an investigation. Keep all lids closed when a chemical is not in use. Notify teacher if spills occur.
- 4) Dispose of all chemicals as instructed by teacher. To avoid contamination do not return chemicals to their original containers.
- 5) Be careful when working with chemicals such as acids or bases. Always pour them over the sink rather than over your work area.
- 6) When diluting an acid always add small amounts of Acid to Water. A to W. Ahhh. W to A. WAAAAA!
- 7) Rinse acids or bases off of skin immediately. Notify teacher immediately of spills.
- 8) When using scientific probes: Know how to use it. Know how to clean it up. Know how to store it properly.

Biological Safety

- 1) No investigations that will cause pain, discomfort, or harm to mammals, birds, reptiles, fish, and amphibians should be done in the classroom or at home. (Some harm will be done in the lab to plant-life, microbes, and Some Insect larvae. Dissections will be done as well, but the organisms have already been euthanized according to acceptable scientific practices.)
- 2) Treat all organisms, living or dead, with care and respect. Do not touch any organism in the field or lab without permission. Animals should be handled only if necessary. If an animal is excited or frightened, pregnant, feeding, or with its young, special handling is required.
- Your teacher will instruct you as to how to handle each species that may be brought into the classroom.
- 4) Treat all microorganisms as if they were harmful. Use antiseptic procedure, as directed by your teacher, when working with microbes. Dispose of microbes as your teacher directs.
- 5) Clean your hands thoroughly after handling animals or the cage containing them.
- 6) Wear gloves when handling small mammals. Report bites or stings to teacher immediately.
- 7) If instructed to euthanize an organism, do it as instructed to insure a legal and "humane kill."

Field Safety

- Field Dress Code
- General Field Safety
- Assessing Danger in the Field
- Field Checklist
- Description Poisonous Organism Identification

Field Dress Code

- 1)Wear Comfortable clothing that is appropriate for the site that you will be studying. (Ex. Long Pants for grassy prairies, but not necessarily for seining a creek.)
- 2)Wear a hat and sunglasses that will keep you from overexposure to the sun.
- 3)Apply and reapply sunscreen unless site has specific regulations against the use of sunscreen.
 4)Always wear shoes (no sandals, flip-flops, or exposed toes or feet.)

5)Wear protective gear whenever directed. (gloves, chaps, boots, etc...)

General Field Safety

1)Most of the rules that you use in the lab will be used in the field, however some rules are lifted during field investigations as well. Watch the video for more information on "Assessing Dangers in the field," <u>http://www.youtube.com/watch?v=h03wzwBiJbE&feature=related</u> follow the checklist on the next slide, know common dangers associated with field studies and apply these simple rules.

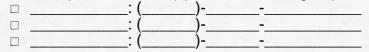
- 1) Don't be stupid.
- 2) Know before you go.
- 3) Have a partner "cover your back."
- 4) Just in case, have a "home base."
- 5) Pack in. Pack out.

Field Checklist

Before you go:

- Fill out Two of these: One for home base and one to leave in your car near the location
 Check off items on checklist and write other items out to side if not on checklist.
- Check the weather
- □ Leave this checklist at home base and make sure your "home buddy" knows where it is.
 - Where going(detailed instructions on back)_

 - When you left: Date: ______Time: _____AM/PM
 When you'll be back: Date: ______Time: _____AM/PM
 - □ Names of members in group: ____
 - □ What you have with you. (checked on Checklist)
 - □ Names & Cell phone number(s) of members in group that will be answered if called (not left in vehicle):



- □ Take With you: *if needed
 - □ Sunscreen
 - Hat & Sunglasses
 - Waterproofed First aid/Survival kit
 - *Cell Phone (Charged up)
 - Emergency Whistle
 - Bandages
 - Antiseptic
 - Wraps
 - Water (Lunch)
 - Field Journal and Pen/Pencil
 - Field Kit
 - Collection vials
 - Nets (seine/dip/dredge)
 - Small Towels
 - □ *Measuring tape
 - *Thermometer
 - Digital Camera (waterproofed)
 - □ *Probes
 - DO D
 - Turbidity
 - Temp/Humidity/Pressure
 - D pH
 - Conductivity

Leave in your car: *if needed

- Copy of this checklist
- Change of Shoes/clothes
- *Towel
- *One group member's cell phone (turned off to conserve charge) in case others get damaged

Other items we have with us:



Dangerous Organisms

(Most of these you have a good probability of running across in the field and a *few that you might not.)

□Any Animal that appears to be injured or with young should be avoided at all costs as they will try to protect themselves at the expense of your well being. Call animal control if you are concerned about an injured animal.

□Venomous Snakes

Cotton Mouth/Water Moccasin/Copper Head

Rattlesnake

Coral Snake

□Venomous Spiders

Brown Recluse

Black Widow

DInsects That Sting

□ Wasps/bees

□ Mosquitos (west nile)

GFire Ants

Plants that cause Discomfort

DPoison Ivy

□Fish that can do some damage if handled improperly

Catfish

Gar

Reptiles to steer clear of:

Alligator

□ snapping turtles (most turtles in general)

□**Mammals** That you should keep your distance from and look for signs of:

Ferrell Hogs
Coyotes
Skunks
Opossum
Raccoons

Mountain Lions

□Legendary Critters (documenting these critters in our area might mark you as a Great Discoverer or a Quack) Be careful around these organisms as not much is known of their behavior.

Chupacabra or Goatsucker

D*Sasquatch, Yeti, Bigfoot

□*Mothman

D Frolferman

Weirdicus dudus and various subspecies

Snakes

DCottonmouth **D**Water Moccasin □Copperhead

DRattlesnake DCoral Snake









SpidersBlack Widow





Brown Recluse





□ Fire ants



Mosquitos (West Nile)



Wasps & Bees







Plants Don't Eat ANY Plants or berries of plants as most of them are POISONOUS!

DPoison Ivy (Leaves of three Leave it be.) DPoison Oak





Catfish

Gar



barbs can cut like knives





Reptiles

D Alligators



□ Snapping Turtle



Mammals DHogs

Skunks

DRaccoon



Coyotes





□Opossum





Mountain Lion



Legends Chupacabra



DSasquatch



DMothman





Weirdicus dudus



Weirdicus dudus noodlaris

