

Birmingham-Southern College Field Equipment Sterilization Protocols:

Explanation of protocols:

This protocol was developed for the Birmingham-Southern Biology Department. Each semester several classes take students to different destinations to sample aquatic flora and fauna. Our protocol essentially involves sterilization of all field equipment after their return from the field and before their use at a new destination.

Dunk tank sterilization: We opted to maintain a tank where we could soak equipment in a bleach solution. Using the tank allows for us to quickly sterilize a lot of equipment at once. We suspect this is more effective than a spray treatment. Our 'tank' was a rain barrel purchased locally and it is kept in our field equipment room which is a 'wet room'.

Because bleach quickly evaporates from the solution, the solution in the tank needs recharging before each use. We worked out what the pH needs to be of a 1% bleach solution in a 40 gallon tank, and users use pH as a guide for determining whether the solution is at 1% bleach. Other aspects of the protocol are specific to our field equipment room.

Field sterilization: When sampling multiple sites within a trip, it is usually not practical to return to the home institution for sterilization. Instead, a spray treatment may be used in the field. We are still developing this protocol but are planning to use a 3-gal tank sprayer for sanitizing nets (\$40 each). The solution in the tank will be a least a 1% bleach solution. A secondary 3-gal tank sprayer will be used to wash bleach off equipment prior to use in a waterbody. Containment of runoff from the bleach spray and rinse is an environmental concern, even with these small amounts. Care should be taken when choosing a field site for sterilization (e.g., sterilizing equipment far away from a waterbody). Baking soda could be used to help neutralize the bleach in the wastewater generated. Potentially, equipment could be sterilized on a tarp, and the tarp used to collect wastewater. This could then be poured into a container for transport back to the home institution for proper disposal.

The following protocol is posted in our field equipment room for the dunk tank sterilization.

Protocol for Cleaning Nets, Buckets, Waders, Aquaria, etc.

Chytrid fungus is present in the area's wetlands. This is a very deadly fungus being blamed for extinctions of amphibians across the globe. Therefore, it is crucial that all of the sampling equipment be sanitized so that we don't spread this or other pathogens.

We will clean and sanitize nets and other equipment after sampling. If a class is going to the same site several days in a row, equipment can be sanitized on the last day.

If equipment is used at multiple sites within a day, then bring supplies to sanitize nets in the field between locations. See lab coordinator for these instructions, supplies, and equipment.

Steps:

- 1. Fill tan barrel in the field equipment room to 40-gallon fill line.**
- 2. Test pH to determine how much bleach to add to water. Note: water is neutral at pH 7.5.**
- 3. Adjust pH by adding bleach until the pH is 10.0 or higher. If pH is 7.5 then add 30 oz. Otherwise, add bleach 10 oz at a time until pH is 10.0 or higher. Bleach, measuring cup, and pH test strips are kept on nearby shelf. Note: bleach evaporates quickly, and barrel will likely need recharging.**
- 4. Fill out logbook, including starting and ending pH in barrel. This information helps us keep track of whether our system is working.**
- 5. Before sanitizing, rinse equipment in the corner wash basin with water hose. Use scrub brush to remove all mud and any aquatic organisms (plants and animals).**
- 6. Place equipment in bleach solution within the barrel. Small equipment (thermometers, rulers, etc.) can be put into the mesh bag so they don't sink to bottom.**
- 7. Let equipment sit in bleach solution for 1 hour.**

8. If any portion of the equipment (e.g., net poles) was not submerged during the hour, flip the equipment and soak unsanitized portion for 1 hour.
9. After sanitizing, rinse equipment in wash basin to remove bleach.
10. Set wet nets (rolled up) on hooks on wall on the left side of field equipment room to drain and dry. After drying, leave nets on hooks on wall so that the basin is free to wash nets and other equipment.
11. Waders should be put to dry on wader hooks on back wall.
12. Lay small items to dry on the shelf with the white absorbent paper.
13. If barrel water looks very dirty after cleaning, empty barrel into floor drain so the next group can start with clean water.

**Thank you for helping to protect our
biodiversity!!**

