

**Hygiene Protocol**  
**For Control of Disease and Aquatic Organism Transmission**

Executive Order 13112 (February 3, 1999) directs all Federal agencies to ensure that their actions do not promote the introduction or spread of invasive species. Please comply with the following prevention and equipment cleaning guidelines to prevent the spread of aquatic invasive plants and animals as well as diseases.

This protocol is to be implemented when: 1) employees, contractors, permittees, or outfitter/guides will be working between different bodies of water before equipment has had 5 days to dry thoroughly; and/or 2) after entering bat roosts or handling bats. In these cases, it is required that all gear/equipment be properly treated using either a 10% bleach solution, an acceptable hospital-grade fungicide/virucide, or 70% isopropyl. Following are examples of equipment that would need to be treated before reusing at another site.

**Examples of equipment used at aquatic sites:**

- Waders or shoes/boots
- Pygmy meters, weirs, flumes, tape measures and other hydrologic instruments
- Dip nets, seines, traps, nets and other aquatic sampling gear
- Fire engines, pumps, drafting hoses, helicopter dip buckets, and other fire-fighting equipment
- Backhoes, frontend loaders, bobcats, and other equipment used to clean/fix earthen tanks.

**Examples of equipment used in bat roosts or when monitoring bats:**

- Spelunking equipment
- Rulers, calipers, headlamps, gloves, bat bags
- Mist nets, mist net poles, stakes, and guy wires

**Procedure:**

- 1) **Inspect** - Before leaving site, inspect all gear for mud, vegetation, and aquatic organisms
- 2) **Clean**- Wash, in site water, as much of the mud/dirt on equipment and gear and remove any vegetation or detritus attached to gear by shaking, rinsing in water and hand picking.
- 3) **Disinfect** - *Complete all sterilizing well away from streams or ponds.* Cleaning solutions fall in these categories: hospital-grade fungicide/virucide (eg. Quat 128 or Sparquat 256), 10% bleach/water solution, 70% isopropyl alcohol, and drying equipment for a minimum of 5 days. Note that if using a bleach solution, do not store the solution for more than 24 hours as the bleach will begin to break down once it is diluted.

If equipment is coated in thick mud, follow these instructions:

- Fill a large container (bucket, ice chest, rubber tub, etc.) with clear water (from pond or spigot).
- Mix the appropriate amount of disinfectant with the needed amount of water (see following table).

Volume of Water	Volume of Bleach	Volume of Quat 128	Volume of Sparquat 256
100 mL	10.4 mL or 0.35 oz	4.62 mL or 0.16 oz	3.00 mL or 0.1 oz
1 liter	104 mL or 3.5 oz or 7.0 Tbsp	46.2 mL or 1.6 oz or 3.1 Tbsp	30.0 mL or 1.0 oz, or 2.0 Tbsp
1 gallon	400 mL or 13.5 oz or 27 Tbsp or 1.7 cups	6.35 liquid oz or 12.7 Tbsp or 0.79 cups	4.12 liquid oz or 8.2 Tbsp or 0.51 cups

- Stir to mix with brush.
- Clean off any remaining vegetation or mud with brush that may have been missed earlier.
- Dip and rotate equipment in solution, shake off, open and lay out in sun/wind to dry
- Dip shoes/waders in solution and scrub with a brush, shake off and let dry in sun.

- Don't forget to sterilize brushes in solution.

If equipment is wet but clean of mud and vegetation, follow these instructions:

Instead of making a solution to dip equipment in, fill a spray bottle with same solution concentration and spray down equipment.

For vehicles and heavy equipment, follow these instructions for disinfecting:

If possible, power wash with clean hot water (>140F).

Make the appropriate amount of disinfecting solution needed:

Volume of Water	Volume of Quat 128	Volume of Sparquat 256
100 mL	4.62 mL or 0.16 oz	3.00 mL or 0.1 oz
1000 mL	46.2 mL or 1.6 oz or 3.1 Tbsp	30.0 mL or 1.0 oz, or 2.0 Tbsp
1 gallon	6.35 liquid oz or 12.7 Tbsp or 0.79 cups	4.12 liquid oz or 8.2 Tbsp or 0.51 cups
100 gallons	4.96 gallons	3.22 gallons
1000 gallons	49.6 gallons	32.2 gallons

Tanks, hoses, pumps, buckets and other equipment that comes into contact with raw water should be sanitized with 5% cleaning solution (Quat 128, or Sparquat 256).

Set up a portable disinfection tank using 5% cleaning solution of Quat 128 or Sparquat 256.

For engines and tenders, empty the tank then circulate the 5% solution for 10 minutes. Float portable pumps in the disinfection tank and pump cleaning solution through for 10 minutes. Pump cleaning solution through hose, then rinse with water. Discard cleaning solution back into the disinfection tank for re-use.

Dip gear or equipment (e.g. helicopter buckets) into the cleaning solution. Or, put the 5% cleaning solution in backpack spray pumps to clean portable tanks, helicopter buckets, and other equipment. The solution must be in contact with the surface being sanitized for at least 10 minutes and then rinsed with water.

### **Other Important Information**

Sometimes it's possible and prudent to save remaining disinfecting solution in a sealable container for later use, but only if solution doesn't have too much suspended solids.

If solution must be discarded, dispose of on asphalt, cement or hard roadbed, well away from and not connect to any water bodies.

If at all possible, allow all gear and equipment to dry completely before reuse at next site.

Note that the same procedures are required for anyone entering bat roosts or handling bats. This is to prevent the introduction and spread of White Nose Syndrome.

Quat 128 and Sparquat 256 are available from GSA and local janitorial and swimming pool chemical suppliers.