

Miscellaneous Operating Procedure

- I. **Title:** Disinfecting with Bleach
- II. **Purpose:** To describe a procedure to prepare and disinfect hatchery equipment and field gear with chlorine bleach
- III. **Procedures:**
 - A. Standard chlorine bleach can be safely used to disinfect hatchery equipment and field gear that have been used in water or with fish possibly exposed to infectious pathogens.
 1. Disinfection can be achieved using a dosage of 200 ppm (mg/L) chlorine for 10 - 60 minutes. A concentration of 200 ppm chlorine is the standard typically used in aquaculture for complete sterilization of equipment (Piper et al. 1982).
 2. To determine the amount of chlorine bleach (6% sodium hypochlorite), use the following equation:
 - a.
$$[\text{target conc (ppm)}] \times [\text{vol of water (gal)}] \times 0.00378 / \% \text{ active ingredient} = \text{mL of bleach to add (assume 1 mL of bleach weighs 1 g)}$$
 - b. example:

To make a 200-ppm solution of chlorine bleach in a 5-gallon bucket = $((200 \text{ ppm})(5 \text{ gal})(0.00378))/0.06 = 63 \text{ mL}$ of chlorine bleach mixed with 5 gal of water.
 - B. Spray or sponge on bleach solution and leave for 10 - 60 minutes before rinsing thoroughly.
 1. To disinfect equipment such as YSI 95 Temp and DO meter:
 - a. Submerge the probe into a 200 ppm bleach solution for 1 minute.

- b. After removing probe from the chlorine solution, rinse thoroughly in water, then change the membrane according to it's appropriate SOP.
- 2. To disinfect gear such as neoprene waders:
 - a. Spray or sponge on chlorine solution and leave for 10 minutes before rinsing with clean water. Do not submerge neoprene waders in chlorine solution.
- C. CAUTION: Chlorine is toxic to all fish; consequently, if troughs, tanks, or ponds full of water are disinfected, the chlorine should be neutralized with a compound such as sodium thiosulfate. One gallon of 200 ppm chlorine can be neutralized with 5 - 6 g of sodium thiosulfate (Piper et al. 1982) before it is allowed to drain or to enter water containing fish. Chlorine will break down in the presence of air and light. Chlorine bleach solutions should be discarded according to routine BFTC disposal methods.

V. References:

Piper, R. G., I. B. McElwain, L. E. Orme, J. P. McCraren, L. G. Fowler, and J. R. Leonard. 1982. Fish hatchery management. United States Department of the Interior, U.S. Fish and Wildlife Service, Washington, DC.

Post, G. 1987. Textbook of fish health. T. F. H. Publications, Inc., Neptune City, New Jersey.

APPROVED BY: _____ DATE _____
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