

13.1 Draft Product Labeling

INDICATIONS FOR USE: For the treatment of ichthyophthiriasis (*Ichthyophthirius multifiliis*) on Ictalurid catfish cultured in earthen ponds.

DIRECTIONS FOR USE: Measure total alkalinity immediately prior to treatment; do not rely on historical values. Apply copper sulfate to water at a concentration of 0.4 to 1 part per million (ppm or mg/L) copper sulfate per 100 ppm total alkalinity (as CaCO₃) once daily for 5 - 11 days to treat ichthyophthiriasis (*Ichthyophthirius multifiliis*) on Ictalurid catfish cultured in earthen ponds.

One ppm is achieved by applying 2.72 pounds of copper sulfate per acre-foot of water. To find acre-feet of water in a body of water, measure the surface of the body of water in feet. Calculate the surface area in square feet, divided by 43,560 (square feet per acre), times the average depth in feet.

LIMITATIONS AND CAUTIONS: If total alkalinity is less than 50 ppm, copper sulfate treatments are not recommended. If total alkalinity is over 300 ppm, no more than 3 ppm copper sulfate should be used. Copper sulfate may be very toxic to fish in soft or acid waters so preliminary testing is necessary. Copper sulfate should be tested on a small batch of fish in a sample of the pond water before treating the entire population of fish. This product should only be used in earthen catfish ponds.

The concentration of free copper ions may be affected by water quality parameters such as alkalinity, dissolved solids, temperature, pH, and hardness. For instance, water with low dissolved solids may have a higher concentration of free copper than water with high dissolved solids; a higher concentration of free copper can increase toxicity.

Application of copper sulfate to catfish ponds may cause short-term reductions in the populations of aquatic invertebrates, plants and algae residing within these ponds. Dissolved oxygen may be depleted due to decaying material so careful monitoring of dissolved oxygen is recommended and supplemental aeration may be required to maintain satisfactory oxygen levels. If there is a heavy algal bloom or no aeration, copper treatments are not recommended since treatment could cause oxygen concentrations to drop and result in fish kills.

The long-term effects of copper sulfate applications have not been evaluated for organisms within catfish ponds and with continued use there may be decreased pond productivity.

Do not discharge pond water for at least 72 hours after the final copper sulfate application in order to avoid causing toxicity to aquatic life in receiving waters.

When completely draining a pond, the last 20-25% of pond volume should be released slowly to prevent possible resuspension of sediment with elevated copper concentrations. Drains on empty ponds that have previously been treated with copper sulfate should be closed to prevent erosion and sediment discharge. Sediments removed from ponds during cleaning should be used to repair earthwork and embankments, or should be disposed of in a manner that will prevent copper contamination of surface or ground water.

STORAGE: Store unused product in original container only in a cool, dry area out of reach of children and animals.

SPILLS: Contain all spills and dispose of according to disposal directions.

DISPOSAL: Dispose of unused product and spills in a manner that will not lead to contamination of surface water. Contact your State Environmental Control Agency or the Hazardous Waste Representative at the nearest EPA Regional Office for guidance. Open dumping is prohibited.