DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

Storage and Disposal: Store product in a dry place. Do not contaminate water, food, or feed by storage or disposal. Open dumping is prohibited. Pesticide, spray mixture, or rinse water that cannot be used according to label instructions must be disposed of in compliance with Federal or state waste management regulations, except where specifically exempted. Completely empty bag by shaking and tapping sides and bottom to loosen clinging particles. Empty residue into application equipment. Then dispose of bags in a sanitary landfill or by incinceration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

General Instructions For Use

Copper sulfate effectively controls many species of both filamentous (mat forming green) and planktonic (single cell blue-green) algae. The dose of copper sulfate and control are affected by algae specifies, water hardness, water temperature, and concentration as well as whether water is clear, turbid, flowing, or static. Preferably water should be clear and above 60° F with treatment made in late morning on a sunny day. Static water usually requires less copper sulfate than flowing water. The harder the water or the greater the algae concentration, the higher the required dose of copper sulfate. If floating mats of green algae are present, it is advisable to especially treat the surface of these mats for best control. Algae will absorb the copper sulfate within hours after treatment, and death should be evident within 3 to 5 days. If there is some doubt about the concentration to apply, it is generally preferable to begin with a lower dose and increase the dost until algae are killed. (A few algae species are resistant to copper sulfate and may not be killed.) Repeat treatments within a season may be needed to keep algae under control to the desired level.

NOTE: Note the above fish toxicity precautionary statement under Environmental Hazards. Treatment of algae can also result in oxygen loss from the water caused by the decay of dead algae. This loss can cause fish suffocation. To minimize this hazard, treat 1/3 to 1/2 of the water area in a single operation and wait 10 to 14 days between treatments. Begin treatments along the shore and proceed outwards in bands to allow fish to move into untreated water.

When a water solution of copper sulfate is prepared, preferably mix in a plastic or glass container. When using a metal container, use one that is painted, enameled, or copper lined. Copper sulfate solutions will slowly react or corrode galvanized containers and brass parts.

Specific Directions For Use

1. To control algae in impounded waters, lakes, ponds, and reservoirs:
When to Apply: Early treatment is essential for most satisfactory algae control at the lowest dosage levels. Early growth is usually confined to shallower shore areas. Begin treatment when not over 5 to 10% of the water surface area is covered with algae growths which is usually nearest the shoreline. Delaying treatment until heavy algae growths are present usually requires a higher dose and may result in fish distress or death since rapid decomposition of heavy growths greatly reduces the oxygen content of the water. Several repeat treatments are usually necessary to control algae each season.

Dosage Rates to Control Algae: Accurately determine the surface acres of water to be treated at one time and multiply this by the average depth in feet of this water area to determine the acre feet of water to be treated. One acre foot = one surface acre (43,560 sq. ft.) X one foot of depth. Each acre foot of water contains 326,000 gallons, or 2,720,000 pounds of water. If the problem algae genera is known, use the table below and its equivalence to determine the approximate dosage of this product needed to control that genera. (A dose of 1 ppm equals 1 pound of this product for each million pounds of water.) If the genera of either filamentous or planktonic algae is not known, apply 0.8 to 1.75 pounds of this product per acre foot of water, using the lower rate in soft water and the higher rate in hard water. For control of bottom-attached algae Chara and Nitella use 1.75 to 2.3 pounds per acre foot of water to be treated. If control is not achieved or in very adverse waters, a higher rate may be needed, but consider the fish caution. Dose should not exceed 4 ppm of this product (1 ppm of copper as metallic) when water is used for drinking.

COPPER SULFATE REQUIRED FOR TREATMENT OF DIFFERENT GENERA OF ALGAE

The genera of algae listed below are commonly found in waters of the United States. Use the lower recommended rate in soft waters (less than 50 ppm methyl orange alkalinity) and the higher concentration in hard water (above 50 ppm alkalinity). Always consult State Fish and Game Agency before applying this product to public waters.

ORGANISM	1/4 to 1/2 ppm*	1/2 to 1 ppm*	1 to 1-1/2 ppm*	1-1/2 to 2 ppm*
Cyanophyceae (Blue-green)	Anabaena Anacystis Aphanizomenon Gloeotrichia Gomphosphaeria Polycystis Rivularia	Cylindrospermum Oscillatoria Plectonema	Nostoc Phormidium	Calothrix Symploca
Chlorophyceae (Green)	Closterium Hydrodictyon Spirogyra Ulothrix	Botryococcus Cladophora Coelastrum Draparnaldia Enteromorpha Gloeocystis Microspora Tribonema Zygnema	Chlorella Crucigenia Desmidium Golenkinia Oocystis Palmella Pithophora Staurastrum Tetraedron	Ankistrodesmus Chara Nitella Scenedesmus
Diatomaceae (Diatoms)	Asterionella Fragilaria Melosira Navicula	Gomphonema Nitzschia Stephanodiscus Synedra Tabellaria	Achnanthes Cymbella Neidium	
Protozoa (Flagellates)	Dinobryon Synura Uroglena Volvox	Ceratium Cryptomonas Euglena Glenodinium Mallomonas	Chlamydomonas Haematococcus Peridinium	Eudorina Pandorina

* 1/4 to 1/2 ppm = .67 - 1.3 lbs/acre ft.
* 1/2 to 1 ppm = 1.3 - 2.6 lbs/acre ft.
* 1 to 1-1/2 ppm = 2.6 - 3.9 lbs/acre ft.
* 1-1/2 to 2 ppm = 3.9 - 5.32 lbs/acre ft.

How to Apply: Copper sulfate can be applied to impounded waters by several methods to control algae. Large crystals are usually applied by dragging them in a burlap or finer mesh bag attached to a boat or float so that bags are suspended in the top foot of water until the crystals are dissolved. Determine the quantity of crystals needed to treat the problem area following directions and cautions on this label. Drag the bag of crystals first near the shoreline and continue outward by moving the boat in parallel lines about 20 to 100 feet apart until the area has been treated or until 1/3 to 1/2 of the surface area has been treated. Continue dragging bag over treated area until the required minimum dose is applied and all crystals are dissolved. Various other application techniques may be used as long as the minimum required dose is applied uniformly to the water surface and large crystals are dissolved when applied to the water.

2. To control algae in irrigation conveyance systems using the slug application method. Make a dump of copper sulfate into the irrigation ditch or lateral at 1/4 to 2 lbs. per cubic foot per second of water per treatment. Repeat about every 2 weeks as needed. A dump is usually necessary every 5 to 30 miles depending on water hardness, alkalinity and algae concentration. Copper sulfate becomes less effective as the bicarbonate alkalinity increases. Its effectiveness is significantly reduced when the bicarbonate alkalinity exceeds about 150 ppm as $CaCO_3$.

3. To control root growth in sewers:

Commercial, Institutional, and Municipal Sewers, use as follows:

Sewers - Use 2 pounds of these crystals every 6 to 12 months, applied into each junction or terminal manhole as a preventive measure. Add copper sulfate crystals during period of reduced flow; however, a small flow is essential. If reduced flow due to root masses is observed, but not completely stopped, add the copper sulfate in the next manhole above the reduced flow area. If completely blocked, use a rod to penetrate the mass so some flow begins before treatment.

Storm Drains - Use 2 pounds of copper sulfate crystals per drain per year. Apply during a period of light water flow. In dry weather, introduce a flow with a hose. If storm drains become almost plugged, repeat treatment 3 or 4 times at 2-week intervals.

Sewer Pumps and Force Mains - Place 2 pounds of copper sulfate crystals in a cloth bag at the storage well inlet. Repeat as needed.

Residential or Household Sewer Systems:

General Information: Roots of shrubbery and trees growing near sewer lines frequently penetrate sewer lines in search of moisture and nutrient through even extremely small cracks, holes, or poorly sealed joints. These tiny root hairs, if not controlled, will continue to grow both in diameter and number, causing tile breakage, gradual reduced flow, and frequently flow stoppage. This product has successfully controlled roots for over 50 years in residential and commercial sewers.

Make treatment when the reduced flow rate thought to be caused by root growth is first noticed. Do not delay until stoppage has occurred. A slight flow is needed to move copper sulfate crystals to root growth. When roots accumulate sufficient copper sulfate to cause death, root decay will begin and flow rate should increase in 3 to 4 weeks. Since a copper sulfate treatment usually kills only those roots in the pipe, roots will regrow, requiring follow-up treatments. Generally make a treatment in the spring after plants begin to grow, and a second treatment during late summer or early fall each year, and/or any time when reduced flow possibly caused by root growth is noted.

How to Use Copper Sulfate Crystals: In household sewers use 2 to 6 pounds of crystals twice yearl as discussed before. Add crystals to sewer line by pouring about 1/2 pound into the toilet bowl nearest to the sewer line and flush, repeating process until recommended dose has been added, or remove cleanout plug and pour entire recommended quantity directly into the sewer line, replacing plug and flush toilet several times. Note: Do not apply copper sulfate through sink or tub drains as it will corrode these metal drains.

If system includes a cesspool or septic tank, the copper sulfate will precipitate in the septic tank and very little will pass into the absorption drain field. To treat drain field pipes, add 2 to 6 pounds of crystals to distribution box located between the septic tank and the drain field. If distribution box does not have an opening, it would be advisable to install a clean-out plug opening into the outlet pipe from the septic tank leading to the drain field for effective root control in the drain field pipes.

Laboratory studies have shown that copper sulfate added to an active 300 gallon septic tank at 2, 4, and 6 pounds per treatment temporarily reduced bacterial action, but was again normal 15 days after treatment. Trees and shrubbery growing near a treated line normally will have only a small portion of its total roots in contact with the copper sulfate that primarily kills only those roots inside the pipe, and thus not affecting the growing plants.

BLADEX plus Lasso 4 EC

Use BLADEX 4L at the proper rate for the soil texture and organic matter shown in Table 3 plus 2 quarts per acre of Lasso. (Use 2.5 quarts Lasso on clay soils containing 5 percent organic matter and over). Any rotational crop may be planted the fall or spring following this treatment.

BLADEX plus Sutan+ 6.7E, or Eradicane™ 6.7E

Use BLADEX 4L at the proper rate for the soil texture and organic matter shown in Table 3 plus 1.8 quarts per acre of Sutan+ or Eradicane for control of many annual grasses and broadleaf weeds. (Use 2.4 quarts of Sutan+ or Eradicane on loam soils containing 5 percent or more organic matter, and clay loams and clays containing 4 percent or more organic matter). Do not use on sands and loamy sands of less than 1 percent organic matter and the light sandy soils of eastern coastal states. Do not use on corn seed stock.

Apply before planting. Incorporate the mixture immediately upon application using power-driven cultivation equipment set for 2-3 inch depth, or a tandem disc set to cut to a depth of about 4 inches while operating at 4-6 mph. For thorough mixing, disc in two directions (cross disc), and follow with a harrow, drag, or other leveling device. Prior to the second discing, readjust the disc to prevent cutting deeper than 4 inches. BLADEX 4L may be applied preemergence as an overlay over previous incorporated Sutan+ or Eradicane if desired. Any rotation crop may be planted in the fall or spring following these treatments.

Existing stands of quackgrass, purple and yellow nutsedge must be turned under and thoroughly chopped up prior to chemical treatments.

Additional weeds controlled by Sutan+ or Eradicane combinations:

Grasses	Sandbur
	Shattercane (Wild Cane)*
	Texas Panicum
	Quackgrass (Eradicane only)
	Wild Proso Millet*
Perennial Weeds	Yellow Nutsedge (nutgrass)
	Purple Nutsedge (nutgrass)

*Suppression only--refer to Sutan+ or Eradicane label for appropriate supplement cultural and tillage practices.

For fields with moderate to heavy infestations of these weeds refer to the Sutan+ or Eradicane labels for appropriate higher rates.

FA2195012/1

A stamped copy of the label is enclosed for your records.

Sincerely yours,

Richard P. Mountfort
Product Manager (23)
Fungicide-Herbicide Branch
Registration Division (TS-767)

Enclosure

TS-767:MOUNTFORT:DCR-25273:WANG-3586C:KIM:Raven:479-2013:4/6/83

NET WEIGHT 50 LBS.

COPPER SULFATE

MEDIUM CRYSTALS

Active Ingredient:	
Copper sulfate (pentahydrate)	99%
Inert Ingredients	1%
(Copper Expressed as Metallic 25.2%)	

FOR:

- Algae control in impounded waters, lakes, ponds and reservoirs.
- Algae control in irrigation conveyance systems using the slug application method.
- Control root growth in sewers.
- Also for manufacturing, repackaging, formulation of algaecides, fungicides, and other non-pesticidal uses.

Keep out of reach of children.

DANGER

PRECAUTIONARY STATEMENTS:

HAZARDS TO HUMANS AND DOMESTIC ANIMALS.

Corrosive. Causes irreversible eye damage. Do not get into eyes. Wear goggles or face shield. May be harmful or fatal if swallowed.

STATEMENT OF PRACTICAL TREATMENT:
If in eyes immediately flush eyes with plenty of water for at least 15 minutes. For eyes, call a physician. If swallowed drink promptly a large quantity of milk, egg white, or gelatin solution; if these are not available, drink large quantities of water. Call a physician immediately. Avoid alcohol.

NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate the use of gastric lavage. Measures against circulatory shock, respiratory depression and convulsion may be needed.

ENVIRONMENTAL HAZARDS:
Trout and certain other fish species may be killed at application rates recommended on this label, especially in soft or acid waters. However, fish toxicity generally decreases when the hardness of the water increases. When controlling algae in impounded waters, lakes or reservoirs (not including rice fields) and the entire body of water is to be treated, treat only 1/3 to 1/2 of the water area in a single operation and wait 13 to 14 days between treatments. Consult your State Fish and Game Agencies before applying this product, especially to public waters. Do not contaminate water by cleaning of equipment or disposal of waste.

NOTE: If treated water is to be used as potable water, the residual metallic copper content must not exceed 1 ppm (4 ppm copper sulfate pentahydrate).

EPA Reg. No. 1109-19 EPA Est. No. 1109-TN-1

TENNESSEE CHEMICAL COMPANY

COPPERHILL, TENNESSEE 37317