PM23 10103-10 1-86

NOV 10 1987

Mr. Arthur F. Gohlke
Tennessee Chemical Company
3400 Peachtree Road NE., Suite 401
Atlanta, GA 30326

Dear Mr. Gohlke:

Subject: Amendments - Revised Labeling for Copper Sulfate Pentahydrate Products
Copper Sulfate Large Crystals
EPA Registration No. 1109-1
Copper Sulfate Powdered Instant Bluestone
EPA Registration No. 1109-7
Copper Sulfate Medium Crystals
EPA Registration No. 1109-19
Copper Sulfate Granular Crystals
EPA Registration No. 1109-20
Copper Sulfate Snow Crystals
EPA Registration No. 1109-21
Copper Sulfate Superfine Crystals
EPA Registration No. 1109-32
Mountain Brand Copper Sulfate Liquid
EPA Registration No. 10103-10
Your Submission Dated September 24, 1987
EPA Received Date October 26, 1987

The labeling referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act, is acceptable provided that you:

1. Make the changes below before releasing the products for shipment bearing amended labeling. For all products except 1109-7 and 10103-10:

   a. Modify first aid for swallowing to read:

      If Swallowed: Drink promptly a large quantity of milk, egg white, gelatin solution, or, if these are not available, large quantities of water. Avoid alcohol.

15684:I:Mountfort:MF-2:KENCO:11/05/87:11/17/87:SG:EK:LF:CB

b. Delete Endangered Species labeling per our letter of June 25, 1987. This labeling is deferred until further notice from the Agency.

c. Modify Environmental Hazards language as follows:

- For products 1109-17, -19, -20, -21, and -32 delete "If effluent of treated terrestrial . . . sites . . ." and precede the rest of that paragraph with the qualifier "For Manufacturing Uses."

- For product 10103-10 delete proposed statements and substitute the same language as product 1109-7.

d. For product 1109-7, add the Spanish signal word "PELIGRO" and the text "Precaucion al usari . . ." to front panel. Note applicable language in PR Notice 87-1 for chemigation use.

e. Under "How to Apply," indicate approximate spray volume for aquatic sites to assist the user in preparing spray solutions.

f. For product 10103-10, modify the active ingredient declaration to read:

Copper expressed as metallic* 6%

*From copper sulfate pentahydrate.

Adjust inert ingredient declaration to total 100%.

g. Under Hazards to Humans, add:

Causes eye irritation. May cause skin sensitization in certain individuals. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.

The contaminated clothing statement in the following paragraph should be deleted. In the reentry section, change "WARNING" to "CAUTION."

h. Under Storage and Disposal modify the Pesticide Disposal statement to read:

Wastes resulting from use of this product must be disposed of according to applicable Federal, State, or local procedures.

2. Submit one (1) copy of final printed labeling incorporating the changes above. For products not presently being marketed, submit draft versions with the changes.

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

Sincerely yours,

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

Enclosures

Replace with Attachment 1

CAUTION

PRECAUTIONARY STATEMENTS

HAZARD TO HUMANS AND DOMESTIC ANIMALS

Harmful if swallowed. Avoid contact with skin, eyes, or clothing.

STATEMENT OF PRACTICAL TREATMENT:

If in eyes or on skin, flush with plenty of water for at least 15 minutes. If in eyes, call a physician. If on skin, wash with soap and water. Remove contaminated clothing before reuse. If swallowed, promptly drink large quantities of milk, egg white or gelatin solution. If these are not available, drink large quantities of water. *Call a physician immediately.*

Note to Physicians: Probably 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. If the entire water body is to be treated, treat only 1/3 to 1/2 of the water area in a single operation and wait 10 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 wastes. Avoid contact with or drift to desirable plants or crops since the concentrated product may cause injury.

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).

NET CONTENTS _____ GALLONS

MOUNTAIN BRAND COPPER SULFATE LIQUID

ACTIVE INGREDIENT	
Copper sulfate anhydrous*	15.0%
INERT INGREDIENTS	85.0%

* (Metallic copper equivalent ... 6%)

One gallon contains 0.68 lbs copper as metallic which equals 2.3 lbs copper sulfate pentahydrate or Bluestone. Specific gravity of solution = 1.18

ACCEPTED with comments In Connection with EPA Reg. No. 10103-10 NOV 10 1987 Under the Federal Insecticide, Fungicide, and Rodenticide Act for the pesticide named above.

- Algae control in impounded waters, lakes, ponds and reservoirs.
- Algae and Potomogeton pond weed control in potable water or irrigation conveyance systems.
- Preparation of a Bordeaux spray to control certain plant diseases.
- *Also for manufacturing, repackaging, formulating algaecides, fungicides, and other non-pesticidal uses.*

Keep Out of Reach of Children

CAUTION

See side panel of label for additional precautionary and statement of practical treatment.

EPA Reg. No. 10103-10 **EPA Est. No. 10103-CA-1**

Form 10103-10A87

TENNESSEE CHEMICAL COMPANY
Pittsburg, California 94565

1. **For Algae Control in Reservoirs, Lakes, and Ponds:**

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: First, 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. Secondly, 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. If the genera of either filamentous or planktonic algae is not known, apply 3 to 6 quarts 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 6 to 8 quarts 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 species.

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

PPM $CuSO_4$ pentahydrate = Quarts of this product
- *1/4 to 1/2 ppm = 1.2 to 2.4 qts/acre foot of water
- *1/2 to 1 ppm = 2.4 to 4.5 qts/acre foot of water
- *1 to 1-1/2 ppm = 4.5 to 6.8 qts/acre foot of water
- *1-1/2 to 2 ppm = 6.8 to 9.3 qts/acre foot of water

How to Apply this Liquid Copper Sulfate Product: Dilute the recommended amount of this product in sufficient water to thoroughly and uniformly spray the water surface including any floating algae mats.

2. **Algae Control in Irrigation and Potable Water Conveyance Systems:** Accurately determine the water flow rate in Cubic Feet per Second (C.F.S.) or gallons per minute (Gal/Min). One C.F.S. equals 450 Gal/Min. Treatment can be made by either the Continuous or Slug application method. Copper sulfate becomes less effective as the bicarbonate alkalinity increases and is significantly reduced when the bicarbonate alkalinity exceeds about 150 ppm as $CaCO_3$ regardless if applied by either of the following methods.

For Algae Control by the Continuous Application Method, begin treatment when water is first turned into the system and continue until water flow is stopped, applying 5-3/4 to 11-1/2 fl. oz. (170 to 340 mls) per C.F.S. of water during each 24 hours. **For Leafy and Sago Pondweed Control** continuously apply 5 to 7 pints (2600 to 3300 mls) per C.F.S. of water during each 24 hours. Should copper sulfate fail to control pondweeds satisfactorily, it may be necessary to treat the ditch with either a suitable approved herbicide or use mechanical means to remove the excess growth. In either case resume copper sulfate addition as soon as possible.

For Algae Control using the Slug Application Method, apply 1 to 7 pints (410 to 3300 mls) per C.F.S. of water per treatment. Repeat about every 2 weeks as needed. A slug is usually necessary every 5 to 30 miles depending on water hardness, alkalinity, and algae concentration.

BORDEAUX SPRAY PREPARATION
to control certain plant diseases

Understanding a Bordeaux formulation: As an example, if a Bordeaux spray recommendation reads 10-10-100, the first figure means the number of pounds of copper sulfate pentahydrate. The second figure means the pounds of hydrate spray grade lime $Ca(OH)_2$, and the third figure is the gallons of water into which both ingredients are mixed. This spray formulation is usually applied to the point that the spray runs off of the plants. Various Bordeaux sprays including 8-8-100, 5-5-100, and 2-6-100 are commonly used on various crops.

To Formulate a Bordeaux Spray: For a 10-10-100 mix 4-1/3 gallons of this Copper Sulfate Liquid (which provides copper sulfate equal to 10 lbs. of copper sulfate pentahydrate) in spray water, then add spray grade hydrated lime and remaining water as given in the next section on Mixing a Bordeaux Spray. For a 3-2-6-100 Bordeaux spray, mix 3 lbs zinc sulfate, 7 pints of this Copper Sulfate Liquid, 6 lbs of spray grade hydrated lime to give 100 gallons final water.

Mixing a Bordeaux Spray: Fill a tank 3/4 full with water. Then with agitator running, pour in the required amount of this product. Add the hydrated lime by washing it through a bronze, stainless steel or plastic screen and finish filling tank with water. Continue agitation until all spray has been applied.

CROP	TO CONTROL	DIRECTIONS
Almonds, Apricots, Peaches, Nectarines	Shot-Hole Fungus	Prepare a 10-10-100 Bordeaux and apply as a dormant spray in late fall or early spring.
Almonds, Apricots, Cherries, Peaches, Nectarines, Plums, Prunes	Brown Rot Blossom Blight	Prepare a 10-10-100 Bordeaux and apply when buds begin to swell.
Sour Cherries	Leaf Spot	Prepare a 10-10-100 Bordeaux. Apply as a full coverage spray after petal fall or as recommended by the State Extension Service.
Lemons, Oranges, Grapefruit	Phytophthora Brown Rot	Prepare a 3-2-6-100 (3-2-6-100 Sulfate-Hydrate water) Bordeaux skirt of tree 3 gallons on trunk. If P.hibernalis gallons to spray. Apply in March first rain. Repeat apply second time.
Lemons, Oranges, Grapefruit	Septoria Fruit and Leaf Spot, Central Calif. and Brown Rot and Zinc and Copper Deficiencies	Prepare a 3-2-6-100 10 to 25 gallons each tree. Apply before or after
Walnuts	Walnut Blight	Prepare a 100 gallon summer early problems when catkins before or after Bordeaux mixture non-phytotoxic in

Seller's guarantee shall be limited to the terms of the label and that the package conforms to the chemical description on the label; and Seller assumes any risk to persons or property arising out of use or handling on these conditions.

{Do not apply this product through irrigation equipment.

		3-2-6-100 (Zinc Sulfate-Copper Sulfate-Hydrated Lime-Gallons of water) Bordeaux. Spray 6 gallons on skirt of tree 3 to 4 feet high and 2 to 4 gallons on trunk and ground under tree. If P.hibernalis is present, use 10 to 25 gallons to completely cover each tree. Apply in Nov. or Dec. just before or after first rain. In severe brown rot season, apply second application in Jan. or Feb.
Lemons, Oranges, Grapefruit	Septoria Fruit and Leaf Spot, Central Calif. and Brown Rot and Zinc and Copper Deficiencies	Prepare a 3-2-6-100 Bordeaux and use 10 to 25 gallons to completely cover each tree. Apply in Oct., Nov., or Dec. before or just after first rain.
Walnuts	Walnut Blight	Prepare a 15-10-100 plus one-half gallon summer oil emulsion. Apply in early prebloom 10-20% pistillate (not when catkin blooms are showing) before or after rain. Use only if Bordeaux mixture has been shown to be non-phytotoxic in your area.

Seller's guarantee shall be limited to the terms of the label and that product in its unopened package conforms to the chemical description on the label; and subject thereto the buyer assumes any risk to persons or property arising out of use or handling and accepts the products on these conditions.

{Do not apply this product through any type of irrigation equipment.