

AUG 3 1993

Phelps Dodge Refining Corporation  
c/o Alice Walker, Ph.D.  
Regulatory Consulting  
47 Country Club Drive  
Senatobia, MS 38668

Gentlemen:

Subject: Add Formulation of Pesticides and Label Revisions  
Triangle Brand Copper Sulfate Pentahydrate Algicide-  
Herbicide  
EPA Registration No. 1278-8 ✓  
Your Submission Dated June 9, 1993

The amendment referred to above, submitted in connection with registration under section 3(c)(7)(A) of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), is acceptable provided that you:

1. Submit/cite all data required for registration/-reregistration of your product under FIFRA section 3(c)(5) or 4(a) when the Agency requires all registrants of similar products to submit such data.

2. Make the labeling changes listed below before you release the product for shipment bearing the amended labeling:

- In the Formulation of Pesticides Section add the following statements:

It is the responsibility of formulators using this product to register all pesticidal formulations made from it with the EPA.

3. Submit one (1) copy of your final printed labeling before you release the product for shipment. If these conditions are not complied with, the registration will be subject to cancellation in accordance with FIFRA section 6(e). Your release for shipment of the product bearing the amended labeling constitutes acceptance of these conditions.

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

-2-

This acceptance of your label does not relieve you of your obligation to comply with the Worker Protection Standard (WPS). Under the WPS labeling regulations at 40 CFR Part 156, Subpart K, § 156.200(c)(3), you are prohibited from distributing or selling any product within the scope of the WPS requirements after April 21, 1994, without amended labeling accepted by the Agency.

Sincerely yours,

*CS*  
Cynthia Giles-Parker  
Product Manager (22)  
Fungicide-Herbicide Branch  
Registration Division (H7505C)

ACCEPTED  
with COMMENTS  
Re EPA Letter Dated

AUG 3 1991

Under the Federal Insecticide  
Fungicide, and Rodenticide Act  
as amended, for the pesticide  
registered under EPA Reg. No.

1278-8

PHELPS DODGE REFINING CORPORATION

**TRIANGLE BRAND  
COPPER SULFATE PENTAHYDRATE  
ALGICIDE-HERBICIDE**

Not for medicinal use

**ACTIVE INGREDIENT:**

Copper sulfate pentahydrate\* ..... 99.0%

INERT INGREDIENTS: ..... 1.0%

TOTAL ..... 100.0%

\*Metallic copper equivalent 25.2%

**KEEP OUT OF REACH OF CHILDREN**

**DANGER/PELIGRO**

**PRECAUCION AL USUARIO:** Si usted no lee ingles, no use este producto hasta que la etiqueta le haya sido explicada ampliamente.

Information for Right-to-Know States:

Copper sulfate pentahydrate: sulfuric acid, copper (2+) salt (1:1)/  
CAS Reg. No. 7758-98-7; Water/CAS Reg. No. 7732-18-5

**STATEMENT OF PRACTICAL TREATMENT**

**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. Do not give anything by mouth to an unconscious person.

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

**IF IN EYES:** Immediately flush eyes with plenty of water for at least 15 minutes and get medical attention.

**IF ON SKIN:** Remove contaminated clothes and shoes; immediately wash skin with soap and plenty of water and get medical attention.

**IF INHALED:** Remove victim to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth, and get medical attention.

EPA Reg. No. 1278-8

EPA Est No. 1278-TX-1

Manufactured by  
Phelps Dodge Refining Corporation  
El Paso, Texas 79998

Net Weight .....  
50 Lbs./22.68 Kg.

**BEST AVAILABLE COPY**

## PRECAUTIONARY STATEMENTS

### DANGER

#### HAZARDS TO HUMANS AND DOMESTIC ANIMALS

Causes severe eye and skin irritation. Harmful if swallowed, inhaled, or absorbed through the skin. Avoid breathing mist or dust and contact with skin, eyes, or clothing. Causes substantial but temporary eye injury. May cause skin sensitization reactions in certain individuals. Protective clothing, including goggles, should be worn. Wash hands, arms, and face thoroughly with soap and warm water after handling. Remove contaminated clothing and wash before reuse.

#### ENVIRONMENTAL HAZARDS

This pesticide is toxic to fish and aquatic organisms. For terrestrial uses, do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Drift and runoff from treated areas may be hazardous to fish and aquatic organisms in adjacent sites. Direct application of copper sulfate to water may cause a significant reduction in populations of aquatic invertebrates, plants, and fish. Do not treat more than one-half of lake or pond at one time to avoid depletion of oxygen levels due to decaying vegetation. Allow one to two weeks between treatments for oxygen levels to recover.

Trout and other species of fish 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 water increases. Do not contaminate water when disposing of equipment washwaters. Consult your State Fish and Game Agency before applying this product to public waters. Permits may be required before treating such waters.

#### STORAGE AND DISPOSAL

**DO NOT CONTAMINATE WATER, FOOD, OR FEED BY STORAGE OR DISPOSAL.**

##### STORAGE

Store unused product in original container only in a cool, dry area out of reach of children and animals. If container or bag is damaged, place the container or bag in a plastic bag. Shovel any spills into plastic bags and seal with tape.

##### DISPOSAL

**PESTICIDE DISPOSAL:** Pesticide wastes are acutely hazardous. Improper disposal of pesticide, spray mixture, or rinsate is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance. Open dumping is prohibited.

**CONTAINER DISPOSAL:** Do not reuse empty container. Completely empty liner by shaking and tapping sides and bottom to loosen clinging particles. Place the pesticide into

**BEST AVAILABLE COPY**

application equipment. Then dispose of liner in a sanitary landfill or by incineration if allowed by State and local authorities. If burned, stay out of smoke.

### DIRECTIONS FOR USE

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

### FORMULATION OF PESTICIDES

This product is suitable for use in the manufacturing of algacides, fungicides, mildewcides, herbicides, wood preservatives, including CCA, ACA, and ACZA compounds and tanning and preserving agents for leather and hides.

### CONTROL OF ALGAE AND TADPOLE SHRIMP (TRIOPS LONGICAUDATUS) IN RICE FIELDS (DOMESTIC AND WILD)

Tadpole shrimp in rice fields may be effectively controlled by the prompt and proper use of Copper Sulfate. After the rice field has been flooded to a depth of 6 to 8 inches, the Copper Sulfate should be uniformly applied at a rate of 10 to 15 pounds per acre at the first sign of infestation. Following these directions carefully should keep the concentration of copper sulfate less than 10 ppm. The "Diamond" size crystals are especially graded for maximum solubility.

### SEWER TREATMENT FOR ROOT AND FUNGUS CONTROL

Phelps Dodge Refining Corporation Triangle Brand Copper Sulfate Pentahydrate is effective in keeping sewer lines free of roots.

**FOR PARTIAL STOPPAGE:** Add 1/2 pound of Phelps Dodge Refining Corporation Triangle Brand Copper Sulfate Pentahydrate to sewer or drain and flush toward blockage with 5 gallons of water. Repeat at 6 month intervals to prevent growth of new roots.

**FOR COMPLETE STOPPAGE:** Physically remove the root blockage and repeat as above.

**FOR HOUSEHOLD SEWERS:** Use 2 to 6 lbs. Copper Sulfate Small Crystals twice yearly in spring and early fall. Apply in toilet bowl near sewer line. Flush 1/2 lb. portions at a time. Or, remove the clean-out plug and pour entire quantity directly into sewer line and flush with water.

### FOR COMMERCIAL, INSTITUTIONAL AND MUNICIPAL USE:

**SEWERS:** Use 2 lbs. of Copper Sulfate Small Crystals each 6 to 12 months, applied to each junction or terminal manhole.

**STORM DRAINS:** Use 2 lbs. of Copper Sulfate Small Crystals per drain per year. Apply during period of light flow. In dry weather, induce a flow with hose. If storm drains become almost plugged, repeat treatment 3 or 4 times at two week intervals.

**SEWER PUMPS AND FORCE MAINS:** Place 2 lbs. of Copper Sulfate Small Crystals in a cloth bag at the storage wall inlet. Repeat as needed.

## CONTROLLING WEEDS, ALGAE, AND MICROSCOPIC ORGANISMS.

### TO CONTROL ALGAE IN IMPOUNDED WATERS, LAKES, PONDS, AND RESERVOIRS

#### PRECAUTION CONCERNING FISH

The treatment of algae with Copper Sulfate can result in oxygen loss in the water from decomposition of dead algae. This can cause the fish to suffocate. Therefore, to minimize this hazard, treat 1/3 to 1/2 of the water area in a single operation. Wait 7 to 14 days between treatments. Begin treatments along the shore and proceed outwards in bands to allow fish to move into untreated water.

#### APPLICATION BY DRAGGING BURLAP BAGS WITH COPPER SULFATE UNDER WATER

Large or small sized Copper Sulfate is placed in burlap bags and dragged through the water by means of a boat. Begin treatment along the shoreline and proceed outward until 1/3 to 1/2 of the total area has been treated. The path of the boat should insure a distribution that is even. In large lakes, the boat should move in parallel lines about 60 feet apart. Continue dragging until all of the weighed Copper Sulfate is dissolved.

#### APPLICATION BY SPRAYING COPPER SULFATE SOLUTION ON WATER SURFACE

A solution can be made with Copper Sulfate Powder or Fine Crystals which dissolve easily in water. This solution can then be sprayed on the pond or lake surface from a boat. When using this method, the wind direction is important as well as the operation of the boat. DO NOT ENDANGER PEOPLE OR ANIMALS IN THE BOAT WITH THE COPPER SULFATE SPRAY.

#### APPLICATION BY SPRAYING DRY COPPER SULFATE CRYSTAL FROM AIRPLANES

Professional personnel licensed by the State Agricultural Extension Service are allowed to apply Copper Sulfate Crystals in some states.

If treated water is to be used as a source of potable water, the metallic residual must not exceed 1 ppm copper. This equals 10.64 pounds per acre foot of water or 4 ppm of this product.

#### HOW TO FIND THE POUNDS OF COPPER SULFATE TO ADD TO WATER

To find acre-feet of water in a body of water, measure the body of water in feet. Calculate the surface area in square feet, divided by 43,560 (sq. ft./acre) times the average depth in feet.

1 acre-foot of water	=	Water measuring 208.7 ft. long by 208.7 ft. wide by 1 ft. deep.
1 acre-foot of water	=	43,560 cubic feet of water.
1 cubic foot of water	=	62.4 pounds.
1 acre-foot of water	=	$(43,560)(62.4) = 2,720,000$ pounds.

## COPPER SULFATE PENTAHYDRATE IN WATER

POUNDS OF COPPER SULFATE PENTAHYDRATE PER ACRE-FOOT OF WATER	=	PARTS (BY WEIGHT) COPPER SULFATE PENTAHYDRATE PER MILLION PARTS (BY WEIGHT) OF WATER	=	PARTS (BY WEIGHT) COPPER PER MILLION PARTS (BY WEIGHT) OF WATER
0.67#/acre-foot	=	1/4 ppm	=	0.0625 ppm
1.3#/acre-foot	=	1/2 ppm	=	0.125 ppm
2.6#/acre-foot	=	1 ppm	=	0.25 ppm
5.32#/acre-foot	=	2 ppm	=	0.50 ppm

## TREATMENT OF SOME ALGAE WITH COPPER SULFATE PENTAHYDRATE

Dosage is in ppm of copper sulfate pentahydrate. A higher concentration is required if the water is hard. Consult with the State Fish and Game Agency before applying product in municipal waters.

0.25 to 0.50 ppm    0.50 to 1.00 ppm    1.00 to 1.50 ppm    1.50 to 2 ppm

### CYANOPHYCEAE ORGANISM (BLUE GREEN)

Anabaena	Cylindrospermum	Nostoc	Calothrix
Anacystis	Oscillatoria	Phormidium	Symploca
Aphanizomenon	Plectonema		
Gloeotrichia			
Gomphosphaeria			
Polycystis			
Rivularia			

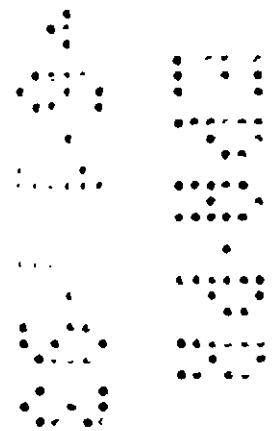
### CHLOROPHYCEAE ORGANISM (GREEN)

Closterium	Botryococcus	Chlorella	Ankistrodemus
Hydrodictyon	Cladophora	Crucigenia	Chara
Spirogyra	Coelastrum	Desmidium	Nitella
Ulothrix	Draparnaldia	Golenkinia	Scenedesmus
	Enteromorpha	Oocystis	
	Gloeocystis	Palmella	
	Microspora	Pithophora	
	Tribonema	Staurostrum	
	Zygnema	Tetraedron	

0.25 to 0.50 ppm    0.50 to 1.00 ppm    1.00 to 1.50 ppm    1.50 to 2 ppm

### DIATOMACEAE ORGANISM (DIATOMS)

Asterionella	Gomphonema	Achnanthes
Fragilaria	Nitzschia	Cymbella
Melorias	Stephanodiscus	Neidium
Navicula	Synedra	
	Tabellaria	



**PROTOZOA ORGANISM (FLAGELLATES)**

Dinobryon  
Synura  
Uroglena

Ceratium  
Cryptomonas  
Euglena  
Glenodinium  
Mallomonas

Chlamydomonas  
Hawmatococcus  
Peridinium  
Eudorina  
Pandorina

**TO CONTROL ALGAE AND WEEDS IN FLOWING WATER**

**TO CONTROL POTAMOGETON PONDWEEDS**, leafy and sago, in irrigation conveyance systems, use the continuous application method, selecting proper equipment to supply copper sulfate crystals at 0.25 to 0.5 pounds per hour for each cubic foot per second of flow for 12 hour of each 24 hours. For best control, begin copper sulfate additions when water is first turned into system to be treated and continue throughout the irrigation season. Copper sulfate becomes less effective for mature plants. Copper sulfate becomes less effective as the bicarbonate alkalinity increases and is substantially reduced above 150 ppm as  $\text{CaCO}_3$ . Mechanical or other means may then be required to remove excess growth.

**TO CONTROL ALGAE** (such as filamentous green, pigmented flagellates, diatoms) in irrigation conveyance systems, begin continuous addition when water is first turned in, using suitable equipment to uniformly deliver 0.1 to 0.2 pounds of copper sulfate per hour per cubic foot per second of flow for 12 of each 24 hours. (Note: Triangle Copper Sulfate comes in several "free flowing" crystal sizes but should be selected to match requirements of your feeder.)

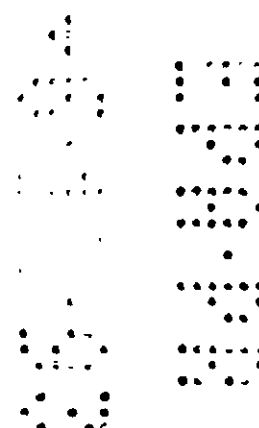
**TO CONTROL ALGAE AND WEEDS IN IRRIGATION SYSTEM BY "SLUG" METHOD OF ADDITION**, add 1/2 to 2 pounds for each cubic foot per second of flow. Repeat every two weeks. A pile is required for every 5 to 30 miles of length depending on alkalinity of the water.

**NOTICE TO BUYER**

Seller makes no warranty, expressed or implied, concerning the use of this product other than indicated on the label. Buyer assumes all risk of use and/or handling of this material when such use and/or handling is contrary to label instructions.

DOT Hazard Class  
RQ, ORM-E, NA 9188, RQ 10/4.54

Copper Sulfate Pentahydrate  
CAS No. 7758-99-8





# CHEMIGATION

**SUPPLEMENTAL LABELING COPPER  
SULFATE PENTAHYDRATE  
EPA REGISTRATION NO. 1278-8  
EPA ESTABLISHMENT NO. 1278-TX-1**

**SUPPLEMENTAL LABELING COPPER  
SULFATE PENTAHYDRATE  
EPA REGISTRATION NO. 1278-5  
EPA ESTABLISHMENT NO. 1278-TX-1**

## Special Use Direction for Chemigation Applications.

Apply this product only through sprinkler systems including center pivot, lateral move, end tow, side (wheel) roll, solid set, or hand move. Do not apply this product through any other type of irrigation system. Do not use this product in sprinkler systems connected directly to public water systems. Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from nonuniform distribution of treated water. If you have questions about calibration, you should contact State Extension Service Specialists, equipment manufacturers or other experts. Do not connect an irrigation system (including green house systems) used for pesticide application to a public water system unless the pesticide label prescribed safety devices for public water systems are in place. A person knowledgeable of the chemigation system and responsible for its operation, or under the supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise.

The system must contain a functional check valve, vacuum relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from backflow. The pesticide injection pipeline must contain a functional,

automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump. The pesticide injection pipeline must also contain a functional, normally closed solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops. The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected. Systems must use a motor-driven pump, such as positive displacement injection pump (e.g., diaphragm pump) properly designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock. Do not apply when wind speed favors drift beyond the area intended for treatment.

To mix this product for application, add it to the supply tank containing sufficient water to maintain a pumpable fluid for your equipment with continuous agitation. Continuous agitation is required in the pes-

ticide supply tank when this product is present until it is completely empty.

If other known compatible pesticides or products are tank-mixed, add this product and other wettable powders first to the water, followed by flowables, liquids, and last emulsifiable products. In lateral move, end tow, side (wheel) roll, solid set, or hand move inject products in the last 15 to 30 minutes of each set allowing sufficient time for all of the required pesticide to be applied by all sprinkler heads. In continuous moving system, inject this product-water mixture continuously applying the labeled rate per acre for that crop. In continuous moving systems, best disease control results when water applications are low, but do not exceed one inch per acre.

**phelps  
dodge**  
Refining & Corporation

EL PASO, TEXAS 79998

**BEST AVAILABLE COPY**