

APR 13 1995

Joel L. Goldschmidt
Old Bridge Chemical Co.
P.O. Box 175
Old Bridge, NJ 08857

Dear Mr. Goldschmidt:

Subject: Add Prohibition Against Use in Connecticut
Copper Sulfate
EPA Registration No. 46923-4
Your Submission Dated March 10, 1995

The amendment referred to above, submitted in connection with registration under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), as amended is acceptable provided that you:

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

a. Modify the prohibition so it reads similar to the following:

State law prohibits the use of this product in sewage systems in the State of Connecticut.

The text you proposed could imply that the restriction is due to a federal prohibition.

b. Place a box around the User Safety Recommendations section or otherwise highlight it as required by the Worker Protection Standard regulations.

c. Under General Instructions delete the duplicate "It is a violation...its labeling".

2. Submit one (1) copy of your final printed labeling before you release the product for shipment.

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

BEST COPY AVAILABLE

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-2-

The additional brand names "Copper Sulfate Fine Crystals" and "Copper Sulfate Ag Crystals" are acceptable and have been included in the files for this product. The basic brand name remains "Copper Sulfate". Please note we did not review or stamp accepted the labeling for "Copper Sulfate Ag Crystals" since the label text for additional brand names must be identical to the basic registration except for the brand name.

Sincerely yours,

15/

Cynthia Giles-Parker
Product Manager (22)
Fungicide Herbicide Branch
Registration Division (7505C)

Enclosure



OLD BRIDGE CHEMICALS, INC.

**ACCEPTED
with COMMENTS
In EPA Letter Dated:**

APR 13 1995

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

46923-4

**COPPER
SULFATE**
FINE CRYSTALS
(MESH: -35)

BEST COPY AVAILABLE

ACTIVE INGREDIENT:
COPPER SULFATE PENTAHYDRATE 99.0%
INERT INGREDIENTS: 1.0%
COPPER AS METALLIC NOT LESS THAN 25.2%

KEEP OUT OF REACH OF CHILDREN

DANGER/PELIGRO

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. (If you do not understand this label, find someone to explain it to you in detail.)

PRECAUTIONARY STATEMENTS

Hazards to Humans & Domestic Animals

Danger: Causes severe eye and skin irritation. Harmful if absorbed through the skin or inhaled. May cause skin sensitization reactions in certain individuals. Avoid contact with the skin, eyes or clothing. Avoid breathing dust.

PERSONAL PROTECTIVE EQUIPMENT

Applicators and other handlers must wear:

Long-sleeved shirt and long pants

Shoes plus socks

Protective eye wear

Waterproof gloves

Dust/mist filtering respirator (MSHA/NIOSH approval number prefix TC-21C)

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them.

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washable, use detergent and hot water. Keep and wash PPE separately from other laundry.

USER SAFETY RECOMMENDATIONS

Remove PPE immediately after handling this product. Wash outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

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.

Note to Physician: Probable mucosal damage may contraindicate the use of gastric lavage.

If splashed in eyes: Immediately flush eyes with plenty of water for at least 15 minutes and get medical attention.

If spilled on skin: Immediately wash skin with soap and plenty of water. See a physician.

ENVIRONMENTAL HAZARDS

This pesticide is hazardous to fish and aquatic organisms. Do not apply directly to water except as directed under the specific instructions section. Drift and runoff from treated areas may be hazardous to fish and aquatic organisms in adjacent aquatic sites. Direct application of Copper Sulfate to water may cause a significant reduction in population of aquatic invertebrates, plants and fish. Do not treat more than one-half of lake or pond at one time in order 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 by cleaning of equipment or disposal of wastes. Consult your State Fish and Game Agency before applying this product to public waters. Permits may be required before treating such waters.

Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to the discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance contact your State Water Board or Regional Office of the EPA.

**ENVIRONMENTALLY HAZARDOUS SUBSTANCE,
SOLID, N.O.S. (CUPRIC SULFATE),
9, UN3077, PG III, RQ**

**EPA Reg. No.
46923-4
EPA EST. NO.
46923-NJ-01**

(See Back Panel for Directions for Use)

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DIRECTIONS FOR USE

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

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Workers Protection Standard, 40 CFR part 170. This standard contains requirements for the protection of agricultural workers on farms, forests, nurseries and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protection equipment (PPE), and restricted-entry interval. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry (REI) for 24 hours.

PPE required for entry into treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water is:

Coveralls

Waterproof gloves

Shoes plus socks

Protective eye wear

STORAGE AND DISPOSAL

Store in a cool, dry place. Do not contaminate water, food or feed by storage or disposal. Open dumping is prohibited. Do not reuse empty container. If container is damaged, place container in a plastic bag. Shovel any spills into plastic bag and seal with tape.

Container disposal: Completely empty liner by shaking and tapping sides and bottom to loosen clinging particles. Empty residue into application equipment. Then dispose of liner in a sanitary landfill or by incineration if allowed by State and local authorities.

GENERAL INSTRUCTIONS

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

NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses that are NOT within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR Part 170). The WPS applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses.

Protective clothing including goggles, should be worn. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.

ALGAE CONTROL

When using Old Bridge Copper Sulfate Pentahydrate to control algae, there are many factors to consider such as water hardness, temperature of the water, type and quantity of vegetation to be controlled and the amount of water flow. Algae can be controlled more easily and effectively if treatment with Copper Sulfate is made soon after plant growth has started. Under such circumstances, small amounts of Copper Sulfate can effectively control algae in water. However, if treatment is delayed until large amounts of algae are present, larger quantities of Copper Sulfate will be required. Control of algae in water systems is not always permanent. Usually algae is more difficult to control with Copper Sulfate when water temperatures are low. The dose rates for Old Bridge Copper Sulfate are based on a water temperature of 60°F. or higher. Larger quantities of Copper Sulfate will be required in hard water. Normally, larger quantities of Copper Sulfate will be required to kill algae in water that is flowing than in a body of stagnant water. If possible, curtail the flow of water before treatment and hold dormant for about three days after treatment or until plants have begun to die. When preparing a Copper Sulfate solution in water, it is best that the mixing vessel be made of plastic or glass. Metal containers lined with plastic or painted or enameled are permissible. Galvanized containers are to be avoided. It is usually best to treat algae on calm sunny days when heavy mats of filamentary algae are most likely to be floating on the surface where it can be sprayed directly. When in doubt about the concentration to be used, it is recommended to start with a lower concentration and gradually increase the concentration until the algae is killed.

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CALCULATIONS FOR AMOUNT OF WATER AND COPPER SULFATE PENTAHYDRATE TO BE USED

A. Calculate water volume as follows:

1. Obtain surface area by measuring regular shaped ponds or mapping irregular ponds or by use of previously recorded data or maps.
2. Calculate average depth by sounding in a regular pattern and taking the mean of these readings or by use of previously recorded data.
3. Multiply surface area in square feet by average depth in feet to obtain cubic feet of water volume, or
4. Multiply surface area in acres by average depth in feet to obtain total acre feet of water volume.

B. Calculate weight of water to be treated as follows:

1. Multiply volume in cubic feet by 8.344 to obtain total pounds of water, or
2. Multiply volume in acre feet by 2,720,000 to obtain total pounds of water.

C. Calculate amount of Copper Sulfate Pentahydrate to add:

To calculate the weight of Copper Sulfate Pentahydrate needed to achieve the desired concentration, multiply the weight of water in pounds by the recommended concentration. Since the recommended concentrations are given in parts per million (ppm), first convert the value to a decimal equivalent. A value of 1 ppm is equivalent to 0.000001 as a decimal value. Thus the amount of Copper Sulfate Pentahydrate required to treat 1 acre-foot (2,720,000 pounds) of water with 1 ppm of Copper Sulfate Pentahydrate would be: $0.000001 \times 2,720,000 = 2.72$ lbs Copper Sulfate Pentahydrate.

Treatment of algae can result in oxygen loss from decomposition of dead algae. This loss can cause fish suffocation. Therefore, to minimize this hazard, treat $\frac{1}{2}$ to $\frac{1}{3}$ of the water area in a single operation and 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.

NOTE: If treated water is to be used as a source of potable water, the metallic copper residual must not exceed 1 ppm (4 ppm Copper Sulfate Pentahydrate).

SPECIFIC INSTRUCTIONS

TO CONTROL ALGAE IN IMPOUNDED WATER, LAKES, PONDS, AND RESERVOIRS:

There are several methods by which to apply Old Bridge Copper Sulfate to impounded water. Probably the simplest and most satisfactory method is to dissolve the Copper Sulfate crystals in water and to spray this solution over the body of water. A small pump mounted in the boat can easily be used for this purpose. Fine crystals may be broadcast directly on the water surface from a properly equipped boat. Old Bridge Copper Sulfate Ag Crystals, Feed Grade or Powder are preferred for this particular method of application. A specially equipped air blower can be used to discharge these size crystals at a specific rate over the surface of the water. When using this method, the wind direction is an important factor. Do not use this method unless completely familiar with this type of application. Old Bridge Copper Sulfate Ag Crystals and Granular grades are also designed to be used as a dry application from airplanes, using a maximum of 5.3 pounds per acre. Where the situation permits, Copper Sulfate may be applied under the water by dragging burlap bags containing Copper Sulfate. The crystals are placed in burlap bags and dragged through the water by means of a boat. Begin treatment along the shoreline and proceed outward until one-third to one-half of the total area has been treated. Care should be taken that the course of the boat is such as to cause even distribution of the chemical. In large lakes, it is customary for the boat to travel in parallel lines about 20 to 100 feet apart. Continue dragging the burlap bags over the treated area until the minimum dosage is achieved and all crystals have been dissolved. Old Bridge Copper Sulfate Large Crystals or Small Crystals should be used with this method since they dissolve slowly and evenly.

TO CONTROL ALGAE IN RICE FIELDS (Domestic and Wild): Application should be made when algae has formed on the soil surface in the flooded field. Applications are most effective when made prior to the algae's leaving the soil surface and rising to the water surface. Apply 10-15 pounds Copper Sulfate Pentahydrate to the water surface or dissolve in water and make a surface spray. Apply higher rate in deeper water (6 inches or greater).

CONTROL OF TADPOLE SHRIMP IN FLOODED RICE FIELDS: (Domestic and Wild): Old Bridge Copper Sulfate Pentahydrate is recommended for the control of Tadpole Shrimp in the rice fields. Copper Sulfate should be applied at a rate of 10 to 15 pounds per acre by mixing with 60 gals. of water and applying as a uniform surface spray using boat, plane or other professional means and pressurized spray device. This product is also designed to be used as a dry application from airplanes, using 10 to 15 pounds per acre. Use at the first indication of infestation after the field has been flooded to a depth of 6 to 8 inches. Old Bridge Copper Sulfate Pentahydrate is especially made for maximum solubility in this volume of water.

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 municipal waters.

(See Front Panel)

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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	Cylindrocapsa Oscillatoria Plectonema	Nostoc Phormidium	Calothrix Symptoca
Chlorophyceae (Green)	Closterium Hydrodictyon Spirogyra Ulothrix	Botryococcus Cladophora Coelastrum Draparnaldia Enteromorpha Gloecystis Microspora Tribonema Zygnema	Chlorella Crucigenia Desmidiium Golenkoidia Oocystis Palmella Pithophora Staurostrum Tetradon	Antistrodeum Chara Nitzschia Scenedesmus
Diatomaceae (Diatoms)	Asterionella Fragilaria Melosira Navicula	Gomphonema Nitzschia Stephanodiscus Synedra Tabellaria	Achnanthes Cymbella Nitzschia	
Protozoa (Flagellates)	Dinobryon Synura Uroglena Volvox	Ceratium Cryptomonas Euglena Glenodinium Mallomonas	Chlamydomonas Hantzschia Paridinium	Eudorina Pandorina

*1/4 - 1/2 ppm = .57 - 1.3 lbs/acre ft. *1/2 - 1 ppm = 1.3 - 2.5 lbs/acre ft. *1 - 1 1/2 ppm = 2.5 - 3.9 lbs/acre ft.
*1 1/2 - 2 ppm = 3.9 - 5.32 lbs/acre ft.

SEWER TREATMENT - ROOT DESTROYER (NOT FOR USE IN THE STATE OF CONNECTICUT)

- A. For Partial Stoppage: Add 1/2 pound of Copper Sulfate to sewer or drain and flush toward blockage with 5 gallons of water. Repeat at 6 month intervals to prevent growth of new roots.
- B. For Complete Stoppage: Physically remove the root blockage and repeat as above.

WOOD TREATMENT

(green, peeled posts)—fungus decay rot.

Prepare a solution of 18.0 pounds of sodium chromate in each 26 gallons of water to be used and a separate second solution of 18.0 pounds of Copper Sulfate in each 24 gallons of water to be used; soak the peeled, green posts, butt end down first in the copper sulfate solution for 3 days, then butt end down in sodium chromate solution for 2 days, and finally, turn the posts upside down in the sodium chromate solution for 1 additional day. Remove and rinse posts with clear water.

BORDEAUX MIXTURE

HOW TO UNDERSTAND BORDEAUX FORMULATIONS:

If the Bordeaux Mixture instructions read 10-10-100, the first figure means the number of pounds of Copper Sulfate Pentahydrate. The second figure means the pounds of hydrated spray lime, and the third figure, the gallons of water to be used. Use as a full coverage spray to runoff.

HOW TO PREPARE A BORDEAUX MIXTURE:

To prepare a Bordeaux Mixture, fill a tank with water, one-quarter full. Then with an agitator running, mix Old Bridge Copper Sulfate through a copper, bronze, stainless steel or plastic screen. Add water so the tank is three-quarters full. Mix in the hydrated spray lime through the screen, and finish filling the tank with water.

CHEMIGATION

Refer to supplemental label for Use Directions for Chemigation. Do not apply this product through any irrigation system unless supplemental labeling on chemigation is followed. Supplemental labeling is entitled:

SUPPLEMENTAL LABELING
COPPER SULFATE
EPA Reg. No. 46923-4
EPA Est. No. 46923-NJ-01
CHEMIGATION

CROPS

Almonds, Apricots, Peaches, Nectarines: Shot Hole Fungus - Prepare a 10-10-100 Bordeaux Mixture 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 Mixture and apply when buds begin to swell.

Sour Cherries: Leaf Spot - Prepare a 10-10-100 Bordeaux Mixture and 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 3-4 1/2-100 Bordeaux Mixture where there is no history of copper injury or a 3-2-6-100 (Zinc Sulfate-Copper Sulfate-Hydrated Lime-Gallons of Water) Bordeaux Mixture. Spray 6 gallons on skin of tree 3 to 4 feet high and 2 to 4 gallons on trunk and ground under the tree. If P. hibernalis is present, use 10 to 25 gallons to completely cover each tree. Apply in November or December just before or after first rain. In severe Brown Rot season, apply second application in January or February.

Lemons, Oranges, Grapefruit: Septoria Fruit and Leaf Spot (Central California), Brown Rot, Zinc and Copper deficiencies - Prepare a 3-2-6-100 Bordeaux Mixture (Zinc Sulfate-Copper Sulfate-Hydrated Lime-Gallons of Water) and use 10 to 15 gallons to completely cover each tree. Apply in October, November or December just before or after first rain.

Walnuts: Walnut Blight - Apply 15 pounds Copper Sulfate with 10 pounds of Hydrated Lime in 100 gallons of water plus 1/2 gallon summer oil emulsion. Apply in early pre-bloom and at 10 to 20% pistillate (not when catkin blooms are showing) just before or after rain. Use only if Bordeaux Mixture has been proven to be non-phytotoxic in your area.

Olive: Peacock Spot, Olive Knot - Prepare a 10-10-100 Bordeaux Mixture and apply in autumn before heavy winter rains to prevent Peacock Spot. In areas of less than 10 inches rainfall, use a 5-10-100 Bordeaux Mixture. To help protect against Olive Knot apply a 10-10-100 Bordeaux before heavy rains and again in the spring. Injury may occur in areas of less than 10 inches of rainfall.

Lilacs: Botrytis Blight - Prepare a 10-10-100 Bordeaux Mixture and apply at beginning of emergence. Repeat at 7 to 10 day intervals. Apply more often during frequent rainfalls or when severe disease conditions occur.

CONDITIONS OF SALE LIMITED WARRANTY AND LIMITATIONS OF LIABILITY AND REMEDIES

The directions for use of this product reflect the opinion of experts based on field use and tests. The directions are believed to be reliable and should be followed carefully. However, it is impossible to eliminate all risks inherently associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or the manner of use or application, all of which are beyond the control of Old Bridge or the seller. All such risks shall be assumed by the purchaser and user.

Old Bridge warrants that this product conforms to the chemical description on the label and is reasonably fit for the purpose referred to in the directions for use subject to the inherent risks referred to above. Old Bridge makes no other warranty or representation of any kind, express or implied, concerning the product, including NO IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE, and no such warranties shall be implied by the law.

The exclusive remedy against Old Bridge for any cause of action relating to the handling or use of this product is a claim for damage and in no event shall damages or any other recovery of any kind against Old Bridge Chemical Company exceed the price of the product which causes the alleged loss, damage, injury, or other claim. Old Bridge shall not be liable and any and all claims against Old Bridge are waived, for special, indirect, incidental, or consequential damages or expenses, of any nature, including, but not limited to, loss of profits or income, and crop or property loss or damage, whether or not based on Old Bridge's negligence, breach of warranty, strict liability in tort or any other cause of action.

Old Bridge and the seller offer this product and the buyer and user accept it, subject to the foregoing conditions of sale and limitations of warranty, liability and remedies which may only be varied by agreement in writing signed by a duly authorized representative of Old Bridge.

EPA Reg. No. 46923-4

EPA Est. No. 46923-NJ-01

OLD BRIDGE CHEMICALS, INC.

(for Directions For Use)

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46923-4
APR 13 1995
Joel L. Goldschmidt
Old Bridge Chemical Co.
P.O. Box 175
Old Bridge, NJ 08857

Dear Mr. Goldschmidt:

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c. Under General Instructions delete the duplicate "It is a violation...its labeling".

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Product Manager (22)
Fungicide Herbicide Branch
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**ACCEPTED
with COMMENTS
In EPA Letter Dated:**

APR 13 1995

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Fungicide, and Rodenticide Act
for the pesticide
under EPA Reg. No.

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Dust/mist filtering respirator (MSHA/NIOSH approval number prefix TC-21C)

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them.

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

USER SAFETY RECOMMENDATIONS

Remove PPE immediately after handling this product. Wash outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

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.

Note to Physician: Probable mucosal damage may contraindicate the use of gastric lavage.

If **splashed in eyes:** Immediately flush eyes with plenty of water for at least 15 minutes and get medical attention.

If **spilled on skin:** Immediately wash skin with soap and plenty of water. See a physician.

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 EPA EST. NO.
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(See Back Panel for Directions for Use)

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PPE required for early entry to treated areas that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water is:

Coveralls	Shoes plus socks
Waterproof gloves	Protective eye wear

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Store in a cool, dry place. Do not contaminate water, food or feed by storage or disposal. Open dumping is prohibited. Do not reuse empty container. If container is damaged, place container in a plastic bag. Shovel any spills into plastic bag and seal with tape.

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When using Old Bridge Copper Sulfate Pentahydrate to control algae, there are many factors to consider such as water hardness, temperature of the water, type and quantity of vegetation to be controlled and the amount of water flow. Algae can be controlled more easily and effectively if treatment with Copper Sulfate is made soon after plant growth has started. Under such circumstances, small amounts of Copper Sulfate can effectively control algae in water. However, if treatment is delayed until large amounts of algae are present, larger quantities of Copper Sulfate will be required. Control of algae in water systems is not always permanent. Usually algae is more difficult to control with Copper Sulfate when water temperatures are low. The dose rates for Old Bridge Copper Sulfate are based on a water temperature of 60°F. or higher. Larger quantities of Copper Sulfate will be required in hard water. Normally, larger quantities of Copper Sulfate will be required to kill algae in water that is flowing than in a body of stagnant water. If possible, curtail the flow of water before treatment and hold dormant for about three days after treatment or until plants have begun to die. When preparing a Copper Sulfate solution in water, it is best that the mixing vessel be made of plastic or glass. Metal containers lined with plastic or painted or enameled are permissible. Galvanized containers are to be avoided. It is usually best to treat algae on calm sunny days when heavy mats of filamentary algae are most likely to be floating on the surface where it can be sprayed directly. When in doubt about the concentration to be used, it is recommended to start with a lower concentration and gradually increase the concentration until the algae is killed.

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CALCULATIONS FOR AMOUNT OF WATER AND COPPER SULFATE PENTAHYDRATE TO BE USED

A. Calculate water volume as follows:

1. Obtain surface area by measuring regular shaped ponds or mapping irregular ponds or by use of previously recorded data or maps.
2. Calculate average depth by sounding in a regular pattern and taking the mean of these readings or by use of previously recorded data.
3. Multiply surface area in square feet by average depth in feet to obtain cubic feet of water volume, or
4. Multiply surface area in acres by average depth in feet to obtain total acre feet of water volume.

B. Calculate weight of water to be treated as follows:

1. Multiply volume in cubic feet by 62.44 to obtain total pounds of water, or
2. Multiply volume in acre feet by 2,720,000 to obtain total pounds of water.

C. Calculate amount of Copper Sulfate Pentahydrate to add:

To calculate the weight of Copper Sulfate Pentahydrate needed to achieve the desired concentration, multiply the weight of water in pounds by the recommended concentration. Since the recommended concentrations are given in parts per million (ppm), first convert the value to a decimal equivalent. A value of 1 ppm is equivalent to 0.000001 as a decimal value. Thus the amount of Copper Sulfate Pentahydrate required to treat 1 acre-foot (2,720,000 pounds) of water with 1 ppm of Copper Sulfate Pentahydrate would be: $0.000001 \times 2,720,000 = 2.72$ lbs Copper Sulfate Pentahydrate.

Treatment of algae can result in oxygen loss from decomposition of dead algae. This loss can cause fish suffocation. Therefore, to minimize this hazard, treat $\frac{1}{2}$ to $\frac{1}{3}$ of the water area in a single operation and 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.

NOTE: If treated water is to be used as a source of potable water, the metallic copper residual must not exceed 1 ppm (4 ppm Copper Sulfate Pentahydrate).

SPECIFIC INSTRUCTIONS

TO CONTROL ALGAE IN IMPOUNDED WATER, LAKES, PONDS, AND RESERVOIRS:

There are several methods by which to apply Old Bridge Copper Sulfate to impounded water. Probably the simplest and most satisfactory method is to dissolve the Copper Sulfate crystals in water and to spray this solution over the body of water. A small pump mounted in the boat can easily be used for this purpose. Fine crystals may be broadcast directly on the water surface from a properly equipped boat. Old Bridge Copper Sulfate Ag Crystals, Feed Grade or Powder are preferred for this particular method of application. A specially equipped air blower can be used to discharge these size crystals at a specific rate over the surface of the water. When using this method, the wind direction is an important factor. Do not use this method unless completely familiar with this type of application. Old Bridge Copper Sulfate Ag Crystals and Granular grades are also designed to be used as a dry application from airplanes, using a maximum of 5.3 pounds per acre. Where the situation permits, Copper Sulfate may be applied under the water by dragging burlap bags containing Copper Sulfate. The crystals are placed in burlap bags and dragged through the water by means of a boat. Begin treatment along the shoreline and proceed outward until one-third to one-half of the total area has been treated. Care should be taken that the course of the boat is such as to cause even distribution of the chemical. In large lakes, it is customary for the boat to travel in parallel lines about 20 to 100 feet apart. Continue dragging the burlap bags over the treated area until the minimum dosage is achieved and all crystals have been dissolved. Old Bridge Copper Sulfate Large Crystals or Small Crystals should be used with this method since they dissolve slowly and evenly.

TO CONTROL ALGAE IN RICE FIELDS (Domestic and Wild): Application should be made when algae has formed on the soil surface in the flooded field. Applications are most effective when made prior to the algae's leaving the soil surface and rising to the water surface. Apply 10-15 pounds Copper Sulfate Pentahydrate to the water surface or dissolve in water and make a surface spray. Apply higher rate in deeper water (6 inches or greater).

CONTROL OF TADPOLE SHRIMP IN FLOODED RICE FIELDS: (Domestic and Wild): Old Bridge Copper Sulfate Pentahydrate is recommended for the control of Tadpole Shrimp in the rice fields. Copper Sulfate should be applied at a rate of 10 to 15 pounds per acre by mixing with 60 gals. of water, and applying as a uniform surface spray using boat, plane or other professional means and pressurized spray device. This product is also designed to be used as a dry application from airplanes, using 10 to 15 pounds per acre. Use at the first indication of infestation after the field has been flooded to a depth of 6 to 8 inches. Old Bridge Copper Sulfate Pentahydrate is especially made for maximum solubility in this volume of water.

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 municipal waters.

(See Front Panel)

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 Anacyclops Aphanizomenon Gloeotrichia Gomphosphaeria Polycystis Rivularia	Cylindrospermum Oscillatoria Plectonema	Nostoc Phormidium	Calothrix Symplissa
Chlorophyceae (Green)	Chlorella Hydrodictyon Spirogyra Ulothrix	Botryococcus Cladophora Coelastrum Draparnakia Enteromorpha Gloeocystis Microspora Tribonema Zygnema	Chlorella Crucigenia Desmidiun Golenkinia Oocystis Palmella Pithophora Staurostrum Tetradron	Antistrodesmus 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 Hawmalococcus Peridinium	Eudorina Pandora

*1/4 - 1/2 ppm = .57 - 1.3 lbs/acre ft. *1/2 - 1 ppm = 1.3 - 2.6 lbs/acre ft. *1 - 1 1/2 ppm = 2.6 - 3.9 lbs/acre ft.
*1 1/2 - 2 ppm = 3.9 - 5.32 lbs/acre ft.

SEWER TREATMENT - ROOT DESTROYER (NOT FOR USE IN THE STATE OF CONNECTICUT)

- A. For Partial Stoppage: Add 1/2 pound of Copper Sulfate to sewer or drain and flush toward blockage with 5 gallons of water. Repeat at 6 month intervals to prevent growth of new roots.
- B. For Complete Stoppage: Physically remove the root blockage and repeat as above.

WOOD TREATMENT

(green, peeled posts)—fungus decay rot.

Prepare a solution of 18.0 pounds of sodium chromate in each 26 gallons of water to be used and a separate second solution of 18.0 pounds of Copper Sulfate in each 24 gallons of water to be used; soak the peeled, green posts, butt end down first in the copper sulfate solution for 3 days, then butt end down in sodium chromate solution for 2 days, and finally, turn the posts upside down in the sodium chromate solution for 1 additional day. Remove and rinse posts with clear water.

BORDEAUX MIXTURE

HOW TO UNDERSTAND BORDEAUX FORMULATIONS:

If the Bordeaux Mixture instructions read 10-10-100, the first figure means the number of pounds of Copper Sulfate Pentahydrate. The second figure means the pounds of hydrated spray lime, and the third figure, the gallons of water to be used. Use as a full coverage spray to runoff.

HOW TO PREPARE A BORDEAUX MIXTURE:

To prepare a Bordeaux Mixture, fill a tank with water, one-quarter full. Then with an agitator running, mix Old Bridge Copper Sulfate through a copper, bronze, stainless steel or plastic screen. Add water so the tank is three-quarters full. Mix in the hydrated spray lime through the screen, and finish filling the tank with water.

CHEMIGATION

Refer to supplemental label for Use Directions for Chemigation. Do not apply this product through any irrigation system unless supplemental labeling on chemigation is followed. Supplemental labeling is entitled:

SUPPLEMENTAL LABELING
COPPER SULFATE
EPA Reg. No. 46923-4
EPA Est. No. 46923-NJ-01
CHEMIGATION

CROPS

Almonds, Apricots, Peaches, Nectarines: *Shot Hole Fungus* - Prepare a 10-10-100 Bordeaux Mixture 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 Mixture and apply when buds begin to swell.

Sour Cherries: *Leaf Spot* - Prepare a 10-10-100 Bordeaux Mixture and 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 3-4 1/2-100 Bordeaux Mixture where there is no history of copper injury or a 3-2-6-100 (Zinc Sulfate-Copper Sulfate-Hydrated Lime-Gallons of Water) Bordeaux Mixture. Spray 6 gallons on skirt of tree 3 to 4 feet high and 2 to 4 gallons on trunk and ground under the tree. If *P. hibernalis* is present, use 10 to 25 gallons to completely cover each tree. Apply in November or December just before or after first rain. In severe Brown Rot season, apply second application in January or February.

Lemons, Oranges, Grapefruit: *Septoria Fruit and Leaf Spot* (Central California), *Brown Rot*, Zinc and Copper deficiencies - Prepare a 3-2-6-100 Bordeaux Mixture (Zinc Sulfate-Copper Sulfate-Hydrated Lime-Gallons of Water) and use 10 to 15 gallons to completely cover each tree. Apply in October, November or December just before or after first rain.

Walnuts: *Walnut Blight* - Apply 15 pounds Copper Sulfate with 10 pounds of Hydrated Lime in 100 gallons of water plus 1/2 gallon summer oil emulsion. Apply in early pre-bloom and at 10 to 20% pistillate (not when catkin blooms are showing) just before or after rain. Use only if Bordeaux Mixture has been proven to be non-phytotoxic in your area.

Olive: *Peacock Spot*, *Olive Knot* - Prepare a 10-10-100 Bordeaux Mixture and apply in autumn before heavy winter rains to prevent Peacock Spot. In areas of less than 10 inches rainfall, use a 5-10-100 Bordeaux Mixture. To help protect against Olive Knot apply a 10-10-100 Bordeaux before heavy rains and again in the spring. Injury may occur in areas of less than 10 inches of rainfall.

Lilies: *Botrytis Blight* - Prepare a 10-10-100 Bordeaux Mixture and apply at beginning of emergence. Repeat at 7 to 10 day intervals. Apply more often during frequent rainfalls or when severe disease conditions occur.

CONDITIONS OF SALE LIMITED WARRANTY AND LIMITATIONS OF LIABILITY AND REMEDIES

The directions for use of this product reflect the opinion of experts based on field use and tests. The directions are believed to be reliable and should be followed carefully. However, it is impossible to eliminate all risks inherently associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or the manner of use or application, all of which are beyond the control of Old Bridge or the seller. All such risks shall be assumed by the purchaser and user.

Old Bridge warrants that this product conforms to the chemical description on the label and is reasonably fit for the purpose referred to in the directions for use subject to the inherent risks referred to above. Old Bridge makes no other warranty or representation of any kind, express or implied, concerning the product, including NO IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE, and no such warranties shall be implied by the law.

The exclusive remedy against Old Bridge for any cause of action relating to the handling or use of this product is a claim for damage and in no event shall damages or any other recovery of any kind against Old Bridge Chemical Company exceed the price of the product which causes the alleged loss, damage, injury, or other claim. Old Bridge shall not be liable and any and all claims against Old Bridge are waived, for special, indirect, incidental, or consequential damages or expenses, of any nature, including, but not limited to, loss of profits or income, and crop or property loss or damage, whether or not based on Old Bridge's negligence, breach of warranty, strict liability in tort or any other cause of action.

Old Bridge and the seller offer this product and the buyer and user accept it, subject to the foregoing conditions of sale and limitations of warranty, liability and remedies which may only be varied by agreement in writing signed by a duly authorized representative of Old Bridge.

EPA Reg. No. 46923-4

EPA Est. No. 46923-NJ-01

OLD BRIDGE CHEMICALS, INC.

(for Directions For Use)

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