UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

OFFICE OF CHEMICAL SAFETY
AND POLLUTION PREVENTION

May 17, 2021

Ronald Miller
Agent
PHIBRO-TECH, INC.
Glenpointe Center East, 3rd Floor
300 Frank W. Burr Boulevard, Suite 21
Teaneck, NJ 07666

Subject: Registration Review Label Mitigation for Copper Compounds
Product Name: COPPER SULFATE LIQUID
EPA Registration Number: 35896-33
Application Dates: 3/2/2020
Decision Numbers: 560329

Dear Mr. Miller:

The Agency, in accordance with the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), as amended, has completed reviewing all the information submitted with your application to support the Registration Review of the above referenced product in connection with the Copper Compounds Interim Decision, and has concluded that your submission is acceptable. The label referred to above, submitted in connection with registration under FIFRA, as amended, is acceptable.

Should you wish to add/retain a reference to the company's website on your label, then please be aware that the website becomes labeling under the Federal Insecticide Fungicide and Rodenticide Act and is subject to review by the Agency. If the website is false or misleading, the product would be misbranded and unlawful to sell or distribute under FIFRA section 12(a)(1)(E). 40 CFR 156.10(a)(5) list examples of statements EPA may consider false or misleading. In addition, regardless of whether a website is referenced on your product's label, claims made on the website may not substantially differ from those claims approved through the registration process. Therefore, should the Agency find or if it is brought to our attention that a website contains false or misleading statements or claims substantially differing from the EPA approved registration, the website will be referred to the EPA's Office of Enforcement and Compliance.

A stamped copy of your labeling is enclosed for your records. This labeling supersedes all previously accepted labeling. You must submit one copy of the final printed labeling before you release the product for shipment with the new labeling. In accordance with 40 CFR 152.130(c), you may distribute or sell this product under the previously approved labeling for 12 months from the date of this letter. After 12 months, you may only distribute or sell this product if it bears this new revised labeling or subsequently approved labeling. "To distribute or sell" is defined under FIFRA section 2(gg) and its implementing regulation at 40 CFR 152.3.

If you have any questions about this letter, please contact DeMariah Koger by phone at 703-347-0425, or via email at koger.demariah@epa.gov.

Sincerely,

Linda Arrington, Branch Chief
Risk Management and Implementation Branch 4
Pesticide Re-Evaluation Division
Office of Pesticide Programs

Enclosure

COPPER	GROUP	NOT CLASSIFIED	HERBICIDE

PHIBRO-TECH, INC.

COPPER SULFATE LIQUID

ALGAECIDE

ACTIVE INGREDIENT:

Copper Sulfate, CAS # 7758-98-7*.....15.07 %

OTHER INGREDIENTS.....84.93 %

TOTAL.....100.00 %

*(Metallic copper equivalent 6.00%)

Contains 0.59 pound metallic copper/gallon or 71 grams/liter

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 the label, find someone to explain it to you in detail.)

FIRST AID	
IF IN EYES:	•Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. •Call a poison control center or doctor for treatment advice.
IF SWALLOWED:	•Call a poison control center or doctor immediately for treatment advice. •Have person sip a glass of water if able to swallow. •Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.
IF ON SKIN OR CLOTHING:	•Take off contaminated clothing •Rinse skin immediately with plenty of water for 15-20 minutes •Call a poison control center or doctor for treatment advice.
IF INHALED:	•Move person to fresh air. •If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. •Call a poison control center or doctor for further treatment advice.
HOT LINE NUMBER	
For medical emergencies involving this product, call the Poison Control Center toll free 1-800-222-1222. Have the product container or label with you when calling a poison control center or doctor, or going for treatment.	
NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate use of gastric lavage.	

EPA Reg. No. 35896-33

EPA Est. Nos. 11435-CA-1
88420-CA-1
83165-CA-1

ACCEPTED

May 17, 2021

Under the Federal Insecticide, Fungicide and Rodenticide Act as amended, for the pesticide registered under EPA Reg. No. 35896-33

Net Volume _____ gallons

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS

DANGER – PELIGRO

Corrosive. Causes irreversible eye damage. Harmful if swallowed. Harmful if absorbed through the skin. Do not get in eyes, on skin, or on clothing. Avoid breathing spray mist.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Mixers, loaders, applicators and other handlers must wear:

- Long sleeved shirt and long pants
- Shoes and socks
- Chemical-resistant gloves made of any waterproof material
- Protective eyewear such as goggles, face shield, or safety glasses

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry. Discard clothing and other absorbent material that have been drenched or heavily contaminated with the product's concentrate. Do not reuse them. Wash the outside of gloves before removing.

USER SAFETY RECOMMENDATIONS

Users should wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet. Users should remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Users should remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

ENVIRONMENTAL HAZARDS

This copper product is toxic to fish and aquatic invertebrates. Unlike most organic pesticides, copper is an element and will not break down in the environment and will therefore accumulate with repeated applications. Copper is a micronutrient, but its pesticidal application rate exceeds the amount of copper needed as a nutrient. Do not apply directly to water except as directed under specific instruction section. Do not contaminate water when disposing of equipment wash water or rinsate. Drift may be hazardous to aquatic organisms in water adjacent to treated areas.

Waters treated with this product may be hazardous to aquatic organisms. Treatment of aquatic weeds and algae can result in oxygen loss from decomposition of dead algae and weeds. This oxygen loss can cause fish and invertebrate suffocation. To minimize this hazard, do not treat more than one-half of lake or pond at one time in order to avoid depletion of oxygen levels from decaying vegetation. Wait at least 14 days between treatments. Begin treatment along the shore and proceed outwards in bands to allow fish to move into untreated areas. Consult with the State or local agency with primary responsibility for regulating pesticides before applying this product to public waters, to determine if a permit is required.

Certain water conditions including low pH (≤ 6.5), low dissolved organic carbon (DOC) levels (3.0 mg/L or lower), and "soft" waters (i.e. alkalinity less than 50 mg/L), increase the potential acute toxicity to non-target aquatic organisms.

PHYSICAL AND CHEMICAL HAZARDS

Do not mix or allow to come in contact with reducing agents. Hazardous chemical reaction may occur.

ENGINEERING CONTROLS

This material undiluted is corrosive to many metals and must not be allowed to remain in contact with metal drip apparatus or spray equipment. Application, handling and storage equipment MUST be fiberglass, PVC, polypropylene, Viton, corrosion-resistance plastics, aluminum or stainless steel. NEVER use galvanized steel, nylon, copper, or mild steel around undiluted product. Wash spray equipment thoroughly with fresh clean water after each use.

Store copper sulfate liquid at temperatures above 32 F. Freezing or near-freezing temperatures may induce crystallization. Seller makes no warranty for the performance of product which has undergone freezing or crystallization.

Pilots must use an enclosed cab that meets the definition listed in the WPS for agricultural pesticides [40 CFR 170.305].

AGRICULTURAL USE REQUIREMENTS APPLICABLE TO USE ON RICE FIELDS

Use this product only in accordance with its labeling, and with the Worker Protection Standard (WPS), 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 protective equipment (PPE) and restricted-entry internal (REI). The requirements in this box only apply to uses of this product that are covered by the WPS.

Do not enter or allow worker entry into treated areas during the REI of 48 hours.

PPE required for early entry to treated areas that is permitted under the WPS and that involves contact with anything that has been treated, such as plants, soil, or water, is coveralls, shoes plus socks, chemical resistant gloves made of any waterproof material, and protective eyewear.

Restrictions

Pilots must use an enclosed cab that meets the definition listed in the WPS for agricultural pesticides [40 CFR 170.305].

NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box apply to uses of this product that are not within the scope of the WPS 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. Do not enter treated area until sprays have dried.

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage or disposal.

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

PESTICIDE DISPOSAL: Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide 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.

CONTAINER DISPOSAL

FOR BULK AND MINI-BULK REFILLABLE CONTAINERS]:

Refill these containers with pesticide only. Do not reuse these containers for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate

into application equipment or rinsate collection system. Repeat this rinsing procedure two more times. For final disposal of this container, either return it to the point of sale, puncture and dispose of in a sanitary landfill, or dispose of by other procedures approved by state and local authorities.

[FOR PLASTIC ONE-WAY CONTAINERS & BOTTLES LESS THAN 5 GALLONS]:
Nonrefillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling or reconditioning if available, or puncture and dispose of in a sanitary landfill or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

[FOR ONE-WAY PLASTIC DRUMS, 5 GALLONS OR LARGER]:
Nonrefillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container ¼ full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. Then offer for recycling or reconditioning if available, or puncture and dispose of in a sanitary landfill or, if allowed by state and local authorities, by burning. 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. 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.

SPRAY DRIFT

A variety of factors including weather conditions (e.g., wind direction, wind speed, temperature, relative humidity) and method of application (e.g., ground, aerial, airblast, chemigation) can influence pesticide drift. The applicator must evaluate all factors and make appropriate adjustments when applying this product.

Aerial Applications:

- Do not release spray at a height greater than 10 ft. above the vegetative canopy or water, unless a greater application height is necessary for pilot safety.
- For all aquatic applications, applicators are required to use a medium or coarser droplet size (ASABE S572.1).
- Do not apply when wind speeds exceed 15 mph at the application site. If the wind speed is greater than 10 mph, the boom length must be 65% or less of the wingspan for fixed-wing aircraft and 75% or less of the rotor diameter for helicopters. Otherwise, the boom length must be 75% or less of the wingspan for fixed-wing aircraft and 90% or less of the rotor diameter for helicopters.
- Applicators must use ½ swath displacement upwind at the downwind edge of the application area.
- Do not apply during temperature inversions.

Ground or Watercraft Mounted Boom Applications:

- Apply with the spray release height recommended by the manufacturer, but no more than 4 feet above the water.
- Applicators are required to use a medium or coarser droplet size (ASABE S572.1).
- Do not apply when wind speeds exceed 15 miles per hour at the application site.
- Do not apply during temperature inversions.

SPRAY DRIFT ADVISORIES

THE APPLICATOR IS RESPONSIBLE FOR AVOIDING OFF-SITE SPRAY DRIFT.

BE AWARE OF NEARBY NON-TARGET SITES AND ENVIRONMENTAL CONDITIONS.

IMPORTANCE OF DROPLET SIZE

An effective way to reduce spray drift is to apply large droplets. Use the largest droplets that provide target pest control. While applying larger droplets will reduce spray drift, the potential for drift will be greater if applications are made improperly or under unfavorable environmental conditions.

Controlling Droplet Size – Ground or Watercraft Mounted Boom

- Volume - Increasing the spray volume so that larger droplets are produced will reduce spray drift. Use the highest practical spray volume for the application. If a greater spray volume is needed, consider using a nozzle with a higher flow rate.
- Pressure - Use the lowest spray pressure recommended for the nozzle to produce the target spray volume and droplet size.
- Spray Nozzle - Use a spray nozzle that is designed for the intended application. Consider using nozzles designed to reduce drift.

Controlling Droplet Size – Aircraft

- Adjust Nozzles - Follow nozzle manufacturers recommendations for setting up nozzles. Generally, to reduce fine droplets, nozzles should be oriented parallel with the airflow in flight.

BOOM HEIGHT – Ground or Watercraft Mounted Boom

Use the lowest boom height that is compatible with the spray nozzles that will provide uniform coverage. For ground or watercraft mounted equipment, the boom should remain level with the water surface and have minimal bounce.

RELEASE HEIGHT – Aircraft

Higher release heights increase the potential for spray drift. When applying aerially to water bodies or rice fields, do not release spray at a height greater than 10 ft. above the water, unless a greater application height is necessary for pilot safety.

SHIELDED SPRAYERS

Shielding the boom or individual nozzles can reduce spray drift. Consider using shielded sprayers. Verify that the shields are not interfering with the uniform deposition of the spray on the target area.

TEMPERATURE AND HUMIDITY

When making applications in hot and dry conditions, use larger droplets to reduce effects of evaporation.

TEMPERATURE INVERSIONS

Drift potential is high during a temperature inversion. Temperature inversions are characterized by increasing temperature with altitude and are common on nights with limited cloud cover and light to no wind. The presence of an inversion can be indicated by ground fog or by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing. Avoid applications during temperature inversions.

WIND

Drift potential generally increases with wind speed. AVOID APPLICATIONS DURING GUSTY WIND CONDITIONS. Applicators need to be familiar with local wind patterns and terrain that could affect spray drift

AQUATIC WEED RESISTANCE MANAGEMENT

For resistance management, COPPER SULFATE LIQUID is unclassified herbicide. Any weed population may contain or develop plants naturally resistant to COPPER SULFATE LIQUID and other unclassified herbicides. The resistant biotypes may dominate the weed population if COPPER SULFATE LIQUID is used repeatedly in the same water body. Appropriate resistance management strategies should be followed.

Apply up to 4.6 gallons of product (2.74 pounds of copper) per acre-foot. For treatment of whole water bodies, do not apply more than 37 gallons of product (21.9 pounds of copper) per acre-foot per year. For direct treatments to localized areas of a water body, or for water management units, do not apply more than 79 gallons of product (46.6 pounds of copper) per acre-foot per year. Do not make applications less than 14 days apart.

Water bodies or management units should be scouted prior to application to identify the weed species present and their growth stage to determine if the intended application will be effective. Water bodies or management units should be scouted after application to verify that the treatment was effective.

Suspected herbicide-resistant weeds may be identified by these indicators:

- Failure to control a weed species normally controlled by the herbicide at the dose applied, especially if control is achieved on adjacent weeds;
- A spreading patch of non-controlled plants of a particular weed species; and
- Surviving plants mixed with controlled individuals of the same species.

Report any incidence of non-performance of this product against a particular weed species to your retailer, representative or call 803-464-4650. If resistance is suspected, treat weed escapes with an herbicide having a different mechanism of action and/or use non-chemical means to remove escapes, as practical, with the goal of preventing further reproduction.

Implement the Early Detection, Rapid Response practice and Maintenance Control by using the following practices where possible:

- Identify weeds present in a management unit through scouting or history of the water body and understand the biology of target species.
- Applications should target weeds when populations are small and there is low biomass, early in the season to maximize efficacy.
- Applications should be made so that the herbicide contacts the weed. Use the appropriate application method for the use site/weed/chemical combination.

- Weed escapes should not be allowed to go to seed or produce asexual vegetative propagules.
- Use a diversified approach toward weed management. Whenever possible incorporate multiple weed-control practices such as mechanical control, biological management practices, and rotation of MOAs.
- Time applications to have the highest probability for control and minimize need for follow-up control measures. Apply during conditions that minimize herbicide degradation (light /temperature/microbes) and/or dissipation (water exchange).

Contact your local sales representative, local water management agency, or extension agent to find out if suspected resistant weeds to this MOA have been found in your region. If resistant biotypes of target weeds have been reported, use the application rates of this product specified for your local conditions. Tank mix products so that there are multiple effective mechanisms of actions for each target weed.

CONTROL OF ALGAE IN IMPOUNDED WATERS, RESERVOIRS, LAKES, PONDS, AND OPEN-CHANNEL IRRIGATION AND POTABLE WATER CONVEYANCE SYSTEMS

COPPER SULFATE LIQUID provides effective control of various filamentous, planktonic and branched algae which can occur in slow moving or quiescent bodies of water including: farm, industrial, golf course, irrigation and fire ponds; lagoons; fresh water lakes; potable water reservoirs and associated waters (rivers, streams, bays and coves); potable water conveyance systems; crop and non-crop irrigation conveyance systems (canals, laterals and ditches). This product is most effective when applied at the first signs of algal bloom. Water treated with COPPER SULFATE LIQUID may be used to irrigate crops, turf, fairways, putting greens and ornamental plants immediately after treatment. This product may be applied by aircraft, ground sprayer or spray boat as a direct surface spray or direct subsurface application through weighted hoses as appropriate. For applications in waters destined for use as drinking water, those waters must receive additional and separate potable water treatment. Do not apply more than 1.0 ppm as metallic copper in these waters.

Waters treated with this product may be hazardous to aquatic organisms. Treatment of aquatic weeds and algae can result in a loss of oxygen from decomposition of dead biomass. This oxygen loss can cause fish and invertebrate suffocation. To minimize this hazard, do not treat more than one-half of the water body (excluding water infrastructure and constructed conveyances such as drainage canals, ditches and pipelines or intakes and aquaducts for drinking water or irrigation use) to avoid depletion of oxygen due to decaying vegetation. Wait at least 14 days between treatments. Begin treatment along the shore and move outward in bands to allow fish to move into untreated areas. Consult with the state or local agency with primary responsibility for regulating pesticides before applying to public waters to determine if a permit is required.

Application of algaecides to high density blooms of cyanobacteria can result in the release of intracellular contents into the water. Some of these intracellular compounds are known mammalian hepato- and nervous system toxins. Therefore, to minimize the risk of toxin leakage, manage cyanobacteria effectively in order to avoid applying this product when blooms of toxin-producing cyanobacteria are present at high density. In situations where rapidly reproducing toxic algal species pose a public health threat to drinking or recreational water sources, applicators must receive authorization from applicable state, local or tribal water resources authorities to apply copper at intervals shorter than 14 days should the circumstance demand.

Certain water conditions including low pH $\leqslant$ 6.5), low dissolved organic carbon (DOC) levels (3.0 mg/L or lower) and “soft” waters (i.e. alkalinity less than 50 mg/L) increase the potential acute toxicity to non-target aquatic organisms. The application rates on this label are appropriate for water with pH values >6.5, DOC levels >3.0 mg/L, and alkalinity greater than 50 mg/L. Avoid treating waters with pH <6.5, DOC levels <3.0 mg/L, and alkalinity less than 50 ppm (e.g. soft or acid waters), as trout and other sensitive species of fish may be killed under such conditions if present.

Consult your state department of natural resources or fish and game agency before applying this product to public waters. Permits may be required before treating such waters.

If the treated water is to be used as a source of potable water, the copper concentration must not exceed 1.0 ppm. For applications in waters intended for use as drinking water, those waters must receive additional and separate potable water treatment.

Areas treated with COPPER SULFATE LIQUID may be used for swimming or fishing immediately after treatment. Water from treated lakes or ponds may be used to irrigate turf, fairways, putting greens and ornamental plants.

Pre-Application Dose Determination

For algae and aquatic plant treatments, applicators should conduct initial dose determination tests simulating a full-scale treatment program to determine the minimum efficacious concentrations for eliminating the target species, unless an effect dose is already known for the given target pest population.

Calculations

For quiescent water bodies or water bodies with minimal flow, calculate the amount of water to be treated if not already known. Determine the average depth by sounding in a regular pattern and taking the average of these readings, or by reference to previously recorded data. Determine the surface area of the water body or portion of the water body to be treated by measuring regularly-shaped areas, mapping large or irregularly-shaped areas, or by reference to previously recorded data or maps. The surface area of regularly-shaped bodies may be calculated using applicable geometric formulas:

Square and rectangular bodies: Area (square feet) = Length (feet) x Width (feet)

Circular bodies: Area (square feet) = Diameter (feet) x Diameter (feet) x 0.785

Oval bodies: Area (square feet) = Length (feet) x Width (feet) x 0.785

Calculation using acre-feet: The water volume in acre-feet is the surface area in acres times the average depth in feet. One acre-foot of water is equivalent to 326,000 gallons or 2,720,000 pounds of water.

Calculation using cubic feet: The water volume in cubic feet is the surface area in square feet times the average depth in feet. One cubic foot of water is equivalent to 7.48 gallons or 62.4 pounds of water.

For flowing water situations such as found in water conveyance systems, accurately determine the flow rate of water in cubic feet per minute (CFM) or gallons per minute (GPM). One CFM equals 7.48 GPM.

Treatment Levels for Common Genera of Algae

Organisms	0.2 – 0.5 ppm Copper		0.5 – 1.0 ppm Copper	
Cyanophyceae (Blue-green)	Anabaena Anacystis Aphnizomenon Cylidospermum Gloeotrichia Gomphosaeria	Mycocystis Oscillatoria Plectonema Polycystis Rivularia	Calothrix Nostoc	Phomidium Symploca
Chlorophyceae (Green)	Botryococcus Closterium Cladaphora Coelastrum Draparnaldia Enteromorpha Gloeocystis	Hydrodictyon Microspora Spyrogyra Tribonema Ulothrix Zygnema	Ankistrodesmus Chara Chlorelia Crucigenia Desmidium Golenkinis Nitella	Oocystis Palmella Pithophora Scenedesmus Staurastrum Tetraedron
Diatomaceae (Diatoms)	Asterionella Fragilaria Gomophonema Melosira Navicula	Nitzchia Stephanodiscus Synedra Tabellaria	Achnanthes Cymbella	Neidium
Protozoa (Flagellates)	Ceratium Cryptomonas Dinobryon Euglena Glenodinum	Mallomonas Synura Uroglena Volvox	Chlamydonomas Eudorina Hawmatococcus	Pandorina Peridinium

0.2 ppm copper is equivalent to: 0.92 gallons of COPPER SULFATE LIQUID per acre-foot of water
27 oz. of COPPER SULFATE LIQUID per 10,000 cubic foot of water
3.6 oz. of COPPER SULFATE LIQUID per 10,000 gallons of water

0.5 ppm copper is equivalent to: 2.3 gallons of COPPER SULFATE LIQUID per acre-foot of water
68 oz. of COPPER SULFATE LIQUID per 10,000 cubic foot of water
9 oz. of COPPER SULFATE LIQUID per 10,000 gallons of water

1.0 ppm copper is equivalent to: 4.6 gallons of COPPER SULFATE LIQUID per acre-foot of water
135 oz. of COPPER SULFATE LIQUID per 10,000 cubic foot of water
18 oz. of COPPER SULFATE LIQUID per 10,000 gallons of water

Control of Algae – Static or Minimal Flow Water Bodies

Apply the required amount of COPPER SULFATE LIQUID as indicated by the table above. Apply in late spring or early summer when algae first appear. Use the higher rates in the table for higher algae concentrations, lower water temperatures, hard or turbid waters, or where there is the possibility of dilution due to flow. If there is uncertainty regarding the required dose, start with the lower application rate and increase until control has been achieved or the maximum allowable annual dosage has been reached.

Break up floating mats prior to application. The most effective algae control is obtained under calm, sunny conditions. If the average depth of the water is greater than 4 feet and the lake is known to be stratified, it is necessary to treat only the upper 6 feet of water. Apply COPPER SULFATE LIQUID as needed to control and prevent algae growth. More frequent applications may be needed in times of higher water temperatures, but do not make applications less than 14 days apart.

Maximum Annual Application

Treatment of Whole Water Bodies

The maximum allowable annual application rate is 21.9 pounds of metallic copper (37 gallons of COPPER SULFATE LIQUID) per acre-foot (8 applications per year up to 1 ppm). This rate/frequency is calculated based on staggering the treatment of each half of the water body every 14 days (at a rate of 2.74 pounds of metallic copper per acre-foot = 1 ppm) for eight months (244 days). In situations where rapidly reproducing toxic algal species pose a public health threat to drinking or recreational water resources, applicators must receive authorization from applicable state, local or tribal water resources authorities to apply copper in excess of 21.9 pounds of metallic copper per acre-foot per year (8 applications per year up to 1 ppm).

Treatment of Water Management Units (Water Body Sections)

The maximum allowable annual application rate is 46.6 pounds of metallic copper (79 gallons of COPPER SULFATE LIQUID) per acre-foot (17 applications per year up to 1 ppm). This rate/frequency is calculated based on staggering the treatment of each half of the water body every 14 days (at a rate of 2.74 pounds of metallic copper per acre-foot = 1 ppm) for eight months (244 days). Do not apply more than 46.6 pounds of metallic copper to a water management unit, regardless of the pest(s) targeted by applications. In situations where rapidly reproducing toxic algal species pose a public health threat to drinking or recreational water resources, applicators must receive authorization from applicable state, local or tribal water resources authorities to apply copper in excess of 46.6 pounds of metallic copper per acre-foot per year for a single water management unit.

Treatment of Water Flowing Systems

The maximum annual application rate of 13 lbs metallic copper (22 gallons of COPPER SULFATE LIQUID) per year per 5 miles of conveyance per cubic foot per second (CFS). Apply copper into irrigation conveyance system or lateral at up to a maximum rate of 0.5 lbs metallic copper (1 pint of COPPER SULFATE LIQUID) per cubic foot per second of water per 5 to 30-mile treatment depending on water hardness, alkalinity and algae concentration."

This method may only be used in constructed irrigation conveyance systems, laterals and aqueducts.

Application Methods

Dilute the recommended amount of COPPER SULFATE LIQUID with at least 20 parts of water and apply the mixture as a subsurface application, a uniform surface spray, or by pouring on the surface if appropriate. Do not treat more than half the water body at a given time. Wait at least 14 days between treatments.

Shoreline Application

COPPER SULFATE LIQUID is most easily applied to smaller water bodies by spraying from the shore using an electrical or manually operated hand-held spray device. Removal of the spray nozzle permits delivery of liquid in a steady stream rather than a spray or mist and results in a greater reach of the

dispensed stream and reduced potential for drift. Direct the stream of diluted COPPER SULFATE LIQUID solution approximately 5 feet from the shoreline while walking around the water body until half of the circumference has been traversed. Then reverse course back to the starting point, projecting the stream approximately 10 feet from the shoreline. Repeat, increasing the application distance in 5-foot increments until the midpoint of the water body or the maximum range of the sprayer is reached. Do not use this method when the wind speed exceeds 10 mph, when you must stand downwind of the application point, or when there is a potential for exposure to spray drift.

Surface Spray

COPPER SULFATE LIQUID may be applied to larger water bodies by spraying diluted COPPER SULFATE LIQUID solution from a boat mounted boom or by aerial application. Begin parallel to the shoreline at a distance no closer than the width of the application swath and continue halfway around the water body. Reverse course and continue as described for shoreline applications, except using a distance between passes appropriate to the width of the application swath. Refer to the sections on Spray Drift in this label to minimize spray drift.

Subsurface Application

The possibility of spray drift may be eliminated using subsurface application. In this method, diluted COPPER SULFATE LIQUID solution is pumped through a hose or a manifolded gang of hoses trailed from the rear or side of the boat, with the hose outlet(s) below the surface of the water. Use an application pattern as described for surface application, using a distance between passes appropriate to the width of the application swath. Do not drag hoses on the bottom of the water body.

Control of Algae – Flowing Water Situations

Accurately determine the flow rate of water in cubic feet per second (CFS), cubic feet per minute (CFM) or gallons per minute (GPM). One CFS equals 60 CFM. One CFS equals 450 GPM.

*Open-channel Irrigation and Potable Water Conveyance System*s

Apply at a drip rate of 3 pints of COPPER SULFATE LIQUID per hour per CFS by a gravity feed or similar drip system and maintain this drip rate for 45 minutes. This drip rate will maintain a copper concentration of 1 ppm in the flowing water for 45 minutes. Make the application at a point of turbulence in the canal for good dispersion of the chemical. The distance of control depends upon the density of algae growth. For this reason, the application should be made as soon as the algae start interfering noticeably with the flow of water. For applications in waters intended for use as drinking water, those waters must receive additional and separate potable water treatment. Do not apply more than 1.0 ppm metallic copper in these waters.

Sprinkler, Drip, and Other Types of Irrigation Equipment

Apply COPPER SULFATE LIQUID continuously for the duration of the water application using a drip or injection system at the rates specified in the following table. Use the maximum rate if algae are already present and the lower rates as preventative measures. If there is uncertainty about the optimum rate, begin with the lowest rate and increase the dosage until either control is attained or the maximum rate is reached.

COPPER SULFATE LIQUID APPLICATION RATE EXAMPLES

Water Flow Rate		Maximum Rate (1.0 ppm copper)	Moderate (0.2 ppm copper)	Light (0.06 ppm copper)
C.F.S.	Gal./Min.			
1	450	3.0 pints/hour 0.81 fluid ounce/minute 24 mL/minute	0.6 pints/hour 0.16 fluid ounce/minute 4.8 mL/minute	0.18 pints/hour 0.05 fluid ounce/minute 1.4 mL/minute
2	900	6.1 pints/hour 1.6 fluid ounce/minute 48 mL/minute	1.2 pints/hour 0.32 fluid ounce/minute 9.6 mL/minute	0.36 pints/hour 0.10 fluid ounce/minute 2.9 mL/minute
3	1,350	9.1 pints/hour 2.4 fluid ounce/minute 72 mL/minute	1.8 pints/hour 0.49 fluid ounce/minute 14.4 mL/minute	0.55 pints/hour 0.15 fluid ounce/minute 4.3 mL/minute
4	1,800	12 pints/hour 3.2 fluid ounce/minute 96 mL/minute	2.4 pints/hour 0.65 fluid ounce/minute 19 mL/minute	0.73 pints/hour 0.19 fluid ounce/minute 5.7 mL/minute
5	2,250	15 pints/hour 4.0 fluid ounce/minute 120 mL/minute	3.0 pints/hour 0.81 fluid ounce/minute 24 mL/minute	0.91 pints/hour 0.24 fluid ounce/minute 7.2 mL/minute
10	4,500	30 pints/hour 8.1 fluid ounce/minute 240 mL/minute	6.1 pints/hour 1.6 fluid ounce/minute 48 mL/minute	1.8 pints/hour 0.49 fluid ounce/minute 14.4 mL/minute
20	9,000	61 pints/hour 16 fluid ounce/minute 480 mL/minute	12 pints/hour 3.2 fluid ounce/minute 96 mL/minute	3.6 pints/hour 0.97 fluid ounce/minute 29 mL/minute

This material undiluted is corrosive to metal and must not be allowed to remain in contact with metal drip apparatus or spray equipment. Rinse application equipment thoroughly after use.

RICE FIELDS

Control of Algae

Apply 2.45 - 2.74 pounds of metallic copper (4.2 - 4.6 gallons of COPPER SULFATE LIQUID) per acre-foot of water to the water surface as a surface spray to give a concentration of 0.9 - 1.0 ppm copper. Application should be made when the algae has formed on the soil surface but prior to rising to the water surface. The maximum annual application rate must be no greater than 5.48 pounds of metallic copper (9.2 gallons of COPPER SULFATE LIQUID) per acre-foot per year for algae control in water-seeded rice.

Control of Tadpole Shrimp or Simultaneous Control of Algae and Tadpole Shrimp

Apply 5.48 – 6.85 pounds of metallic copper (9.3 to 11.6 gallons of COPPER SULFATE LIQUID) per acre-foot of water to the flooded field to give a concentration of 2.0 – 2.5 ppm copper. Application should be made at any time the pest appears between planting time and until the seedlings are rooted and have emerged through the water surface. The maximum annual application rate must be no greater than 13.7

pounds of metallic copper (23.2 gallons of COPPER SULFATE LIQUID) per acre-foot per year for control of tadpole shrimp.

Organic Rice Retreatment Interval

In aquatic rice fields for control of tadpole shrimp and algae, do not exceed one application per field during any 24-month period. This statement applies only to crops intended for organic certification, and otherwise shall not conflict with any conventional label requirement.

NOTE: Recommendations for use of this product is based upon tests believed to be reliable. Since aquatic field conditions vary widely, the user must determine the suitability of this product for his/her particular application. Necessary approval and/or permits should be obtained in states where required.

DO NOT APPLY THIS PRODUCT UNDILUTED THROUGH ANY TYPE OF METALLIC IRRIGATION SYSTEM.

WARRANTY STATEMENT

Phibro-Tech, Inc. warrants that the product conforms to the chemical description on the label and is reasonably fit for the purposes set forth on the label when used according to directions under normal use conditions. THERE ARE NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE. This warranty does not extend to the handling or use of this product contrary to label instructions or under abnormal conditions or under conditions not reasonably foreseeable to seller and to the extent consistent with applicable law, buyer assumes all risk of any such use.

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