AQUATROLS Radiance™

Algicide

For Impounded Waters, Lakes, Ponds, Lagoons, Wastewater Lagoons, Reservoirs and Ornamental Water Features or Fountains

For Irrigation Conveyance Systems, Irrigation Reservoirs, Irrigation Canals and Ditches

DO NOT FREEZE

ACTIVE INGREDIENT	
Copper Sulfate Pentahydrate* (CAS No. 7758-99-8)	19.8%
OTHER INGREDIENTS	80.2%
TOTAL	100.0%

*Metallic Copper -----5%

THIS PRODUCT WEIGHS 9.9 LB. PER GALLON - 1.188 kg/L.

EPA Registration No. 64962-1-83940
EPA Establishment No. 64962-NE-001

KEEP OUT OF REACH OF CHILDREN

WARNING - AVISO

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

FIRST AID

IF IN EYES:	Hold eye open and rinse slowly and gently with water for 20 minutes. Remove contact lenses, if present, after first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for 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 to an unconscious person.
IF ON SKIN OR CLOTHING:	Take off contaminated clothing. Rinse skin immediately with plenty of soap and water for 15 to 20 minutes. Call a poison control center or doctor for treatment.
NOTE TO PHYSICIAN:	Probable mucosal damage may contraindicate the use of gastric lavage.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment.
You may also contact INFOTRAC 1-800-535-5053 for emergency medical treatment.

SEE ADDITIONAL PRECAUTIONARY STATEMENTS ON BACK PANEL.

Distributed by:

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NET CONTENTS:

- ONE (1) U.S. GALLON
- TWO AND ONE HALF (2.5) U.S. GALLONS (Commercial Use Only)
- X THIRTY (30) U.S. GALLONS

PRECAUTIONARY STATEMENTS
Hazards to Humans and Domestic Animals
WARNING

Causes substantial but temporary eye injury. Harmful if swallowed. Harmful if absorbed through skin. Do not get in eyes or on clothing. Avoid contact with skin. Wear protective eyewear (goggles, face shield or safety glasses), long sleeved shirt, long pants, shoes, socks and chemical-resistant gloves made of any waterproof material. Some materials that are chemical-resistant to this product are polyvinyl chloride, polyethylene and viton. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash clothing before reuse.

ENVIRONMENTAL HAZARDS

This pesticide is toxic to fish and aquatic invertebrates. 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 plants. Under some conditions, loss of oxygen can cause fish and invertebrate suffocation. To minimize this hazard, do not treat more than ½ of the water body to avoid depletion of oxygen due to decaying vegetation. Wait at least 14 days between treatments. Begin treatment along the shore and proceed 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.

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) increases the potential acute toxicity to non-target aquatic organisms. The application rates on this label are appropriate for water with alkalinity greater than 50 mg/L. Do not use these application rates for water with less than 50 ppm alkalinity (e.g., soft or acid waters) because trout and other species of fish may be killed under such conditions.

Consult your local state fish and game agency before applying this product to public waters. Permits may be required before treating these waters.

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.

PERSONAL PROTECTIVE EQUIPMENT
USER SAFETY REQUIREMENTS

Mixers, loaders, applicators and other handlers must wear the following:

- Long-sleeved shirt
- Long pants
- Shoes plus socks
- Chemical-resistant gloves made of any waterproof material (Chemical Resistance Category A)
- Protective eyewear

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.

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. As soon as possible, wash thoroughly and change into clean clothing.
- Wash the outside of gloves before removing.

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 requirement specific to your state and tribe, consult the agency responsible for pesticide regulation.

USE INFORMATION

Radiance™ is a highly soluble formulation. Radiance™ is used to control algae in impounded waters, lakes, ponds, lagoons, wastewater lagoons, reservoirs, and ornamental water features or fountains.

Radiance™ is used to control algae in irrigation conveyance systems, irrigation reservoirs, irrigation canals and ditches.

USE IN CONTROL OF ALGAE

For algae control, apply in the late spring or early summer when algae first appear. The dosages are variable and depend upon algae species, water hardness, water temperature, amount of algae present, as well as whether water is clear, turbid, flowing or static. Preferably, the water should be clear with temperature above 60 degrees F (15.6 degrees C). Higher dosages are required at lower water temperatures, higher algae concentrations and for hard waters. See Specific Directions for Use. Applications should be done by pouring a measured amount of Radiance™ directly from a container into the lakes, ponds, reservoirs or irrigation canals. Radiance™ is very soluble and will quickly disperse. Radiance™ application for 3 acres or less should be poured directly into ponds, small lakes and reservoirs. Radiance™ application for 3 acres or more should be applied at several points in the ponds, lakes or reservoirs. Larger bodies of water can be treated with Radiance™ by dragging a weighted bag of Radiance™ across the body of water. This will speed up the dispersion of the product to give a quicker control of algae. Radiance™ will quickly diffuse throughout the water body in several hours. Radiance™ should be applied to irrigation by a drip system or feeder pump according to the flow volume. Use higher dosages for chara, nitella and filamentous algae and lower dosages for planktonic algae. If there is uncertainty about the dosage begin with the lower dosage and increase until control is achieved or until the maximum allowable level has been reached. See Specific Directions for Use.

Treatment of algae can result in oxygen loss from the decomposition of dead algae. This loss can cause fish suffocation. If the algae cover more than 1/3 of the total water area, treat in sections. Treat 1/2 of the water area in a single operation and wait for 14 days between treatments. Begin treatment along the shore and proceed outward in bands to allow fish to move into untreated areas.

In regions where ponds freeze in winter, treatment should be done 6 to 8 weeks before expected freeze to prevent masses of decaying algae under an ice cover. Before treating bodies of water, consult proper state authorities such as the fisheries commissioner or conservation department to obtain any necessary permits. For use in controlling algae and cyanobacteria at all aquatic application sites do not exceed a copper concentration in water of 1.0 ppm of metallic copper concentration.

For example, if you wish to achieve 1.0 ppm of metallic copper, 1 gallon of Radiance™ added to 60,000 gallons of water is equal to 1.0 ppm metallic copper. In order to attain 1.0 ppm of metallic copper in the treated water, the amount of Radiance™ added to a water body is equal to the gallons of water being treated divided by 60,000 multiplied by 1 (e.g., see Gallons of Radiance™ and Water table below). Use volumetric measurement devices that are calibrated in accordance with manufacturer specifications.

Gallons of Radiance™ and Water

Gallons Radiance™	Gallons Water	Metallic Copper ppm
0.1 (.4 quarts or 0.8 pints)	6,000	1.0
¼ (1 quart)	15,000	1.0
½	30,000	1.0
1	60,000	1.0
1½	100,000	1.0

Use formula for calculating water volume and flow rates. Calculate the volume of water (multiply the average depth by surface area). To calculate the gallons of water multiply the volume in cubic feet times 7.5. One cubic foot per second of flow equals 27,000 gallons/hour. One acre foot equals 326,000 gallons. See below for additional directions on methods of application to flowing water.

SPECIFIC DIRECTIONS FOR USE

To Control Algae in Irrigation Reservoirs, Impounded Waters, Lakes, Ponds, Lagoons, Reservoirs, and Ornamental Water Features or Fountains: For fish-bearing lakes, ponds, reservoirs, irrigation canals and other applications, apply at the rate of 1 quart of Radiance™ per 250,000 gallons of water, or 1 gallons of Radiance™ per 1,000,000 gallons of water for preventive treatment of algae. This will yield a concentration of 0.06 ppm metallic copper.

For applications without fish or for wastewater lagoons apply at the rate of up to 1 quart of Radiance™ per 15,000 gallons of water, or 1 gallon of Radiance™ per 60,000 gallons of water. This will yield a rate of 1.0 ppm metallic copper.

Do not exceed 1 gallon of Radiance™ per 60,000 gallons of water (1.0 ppm metallic copper) under any circumstances. Radiance™ may be poured into the water manually after calculating the volume of water to be treated and measuring the quantity Radiance™ necessary to attain a concentration of 0.06 ppm or by using an automated dispenser calibrated to release the required amount. For best results dispense Radiance™ evenly throughout the body of water on a sunny day when algae are near the surface. Do not apply copper sulfate to water with less than 50 ppm alkalinity.

To Control Algae in Open Channel Irrigation Conveyance Systems, Ditches, Canals and Similar Irrigation Conveyances: To prevent algae growth using a static application method, apply 1 gallon of Radiance™ per 1,000,000 gallons of water to yield a rate of 0.06 ppm metallic copper. If algae are present, apply 16.6 gallons of Radiance™ to 1,000,000 gallons of water to yield 1.0 ppm metallic copper. To prevent algae growth using continuous flow systems, a metered flow rate of 1 milliliter per minute is added to a pumping flow of 267 gallons per minute to yield a rate of 0.06 ppm metallic copper. If algae are present, do not exceed the total dose of 1 gallon of Radiance™ in 60,000 gallons of water (1.0 ppm metallic copper). See Example Calculation table below for continuous flow rates.

To Control Algae in Sprinkler, Drip or Other Types of Irrigation Equipment: Agitation is not required. Do not mix with basic substances. Radiance™ must be applied continuously for the duration of the water application. To prevent growth of algae, treat at a rate of 1 gallon Radiance™ per 60,000 gallons of water to 1 gallon Radiance™ per 1,000,000 gallons of water. This will yield a rate of 1.0 ppm to 0.06 ppm metallic copper (see Example Calculation table below). If algae are visible, start by cleaning the pipes or lines and then applying 1 gallon of Radiance™ in 60,000 gallons of water (1.0 ppm metallic copper). See Example Calculation table below for continuous flow rates. Once the lines are cleaned, use the preventive dose described above.

EXAMPLE CALCULATION IRRIGATION FLOW RATES (0.06 ppm Cu)

Water Flow Rate gpm	Water Flow Rate cfm	Dosage Rate ppm Metallic Cu	Radiance™ fl oz/min	Feeder Pump Setting Radiance™ mL/min
3,000	400	0.06	0.4	11.3
6,000	800	0.06	0.8	22.6
9,000	1,200	0.06	1.1	34.0
12,000	1,600	0.06	1.5	45.3

EXAMPLE CALCULATION IRRIGATION FLOW RATES (1.0 ppm Cu)

Water Flow Rate gpm	Water Flow Rate cfm	Dosage Rate ppm Metallic Cu	Radiance™ fl oz/min	Feeder Pump Setting Radiance™ mL/min
3,000	400	1.0	6.4	188.7
6,000	800	1.0	12.8	377.3
9,000	1,200	1.0	19.1	566.2
12,000	1,600	1.0	25.5	755.0

APPLICATION AND HANDLING EQUIPMENT

Application, handling or storage equipment MUST consist of fiberglass, PVC, polypropylene, viton, corrosion resistant plastics or stainless steel. Never use mild steel, nylon, brass or copper around Radiance™. Always rinse and clean equipment thoroughly each night with plenty of fresh, clean water.

STORAGE AND DISPOSAL

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

PESTICIDE STORAGE: Store in a safe place away from pets and keep out of the reach of children. Store away from excessive heat. Radiance™ will freeze. Always store Radiance™ above 32 degrees F (Do Not Freeze). Freezing may cause product separation.

SHAKE WELL BEFORE USING

Always keep container closed. Store Radiance™ in its original container only. Keep away from galvanized pipe, and any nylon storage or handling equipment.

DISPOSAL

PESTICIDE DISPOSAL: Pesticide wastes are acutely hazardous. Improper disposal of excess Radiance™ 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. In the event of spill, neutralize with limestone or baking soda before disposal. May deteriorate concrete.

CONTAINER HANDLING

Containers with capacities 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. 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 1 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 the application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure 2 more times. Offer for recycling if available. If recycling is not available, puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

Containers with capacities greater than 5 gallons: Nonrefillable container. Do not reuse or refill this container. Offer for recycling, if available. 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 1 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 the application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure 2 more times. Offer for recycling if available. If recycling is not available, puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

Containers too large to shake: Refillable container. Refill this container with pesticide only. Do not reuse this container 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 before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10% 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 2 more times. Offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

IMPORTANT
READ BEFORE USING
LIMITED WARRANTY AND LIMITATION OF REMEDIES

Read the entire Directions for Use, Limited Warranty and Limitation of Remedies (including limitations on liability) before using this product. If terms are not acceptable, return the unopened product container at once. By using this product, user or buyer accepts the following conditions, disclaimer of warranties and limitations of liability.

The Directions for Use of this product are believed to be adequate and must be followed carefully. However, it is impossible to eliminate all risks 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 Earth Science Laboratories, Inc. To the extent consistent with applicable law, all such risks shall be assumed by the user or buyer.

To the extent consistent with applicable law, seller warrants that the product conforms to the chemical description and is reasonably fit for the purposes stated on the label for use under normal conditions, but makes no other warranties of FITNESS OR MERCHANTABILITY expressed or implied, or any other warranty if the product is used contrary to the label instructions or under conditions not foreseeable to the seller. To the extent consistent with applicable law, the seller shall not be liable for more than the cost of this product to the buyer and will in no event be liable for any consequential, special or incidental damages connected with the use or handling of this product. This product is offered and the buyer or user accepts it subject to the foregoing terms which may not be varied. Seller makes no warranty for product which has been frozen.

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