



Clearigate®

GENERAL GUIDELINES:

Clearigate is a chelated copper formulation containing an emulsified surfactant/penetrant for highly effective control of coarse (thick cell-walled) filamentous algae, muscilaginous (colonial) planktonic algae, Chara and a variety of emergent, floating and submerged aquatic plants. Vegetation controlled includes: Cladophora, Pithophora, Lyngbya, Microcystis, Hydrilla, pondweeds, water milfoil, naiad and other species having a sensitivity to copper absorption in conjunction with a penetrant.

DIRECTIONS FOR USE: It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Read entire label. Use strictly in accordance with precautionary statements and directions and with applicable State and Federal Regulations.

STATIC WATER TREATMENT SURFACE SPRAY / INJECTION APPLICATION

For effective control, proper chemical concentration contact should be maintained for a minimum of three hours. Application rates in the chart below are based upon static or minimum flow situations in lakes, ponds, reservoirs and inactive irrigation conveyance systems or drainage systems. Where significant inflow occurs (greater than 10% of total water volume in 24 hours), it is recommended that flow be stopped for 24 hours during and following treatment. If this is not possible, treat inflowing water in accordance with Flowing Water Treatment instructions.

Due to the potential toxicity to fish at dosages in excess of 0.5 ppm copper, the use of Clearigate above this level is suggested only by experienced applicators. In areas where fish are not present or where some fish kill is not objectionable, total volume treatments can be made. In all other areas, treatments above 0.5 ppm copper should not exceed $\frac{1}{3}$ to $\frac{1}{2}$ of the entire water body, allowing one to two weeks between consecutive treatments.

Select dosage rate based upon species/type of plants being controlled. Choose a dilution which will allow relatively even application throughout the intended treatment area with the type of equipment being used. Avoid drift by using coarse spray droplets, applying close to the water surface and/or injecting solution below the water surface through submersed hoses for treatment of submersed growth.

Aquatic Vegetation Type of Species	Dosage PPM Copper	Rates Gallons Per Acre-Foot	Dilution % Spray Solution V/V	Treatment Comments
ALGAE				
Planktonic	0.1 - 0.5	0.9 - 4.4	1.5% - 5%	Apply lower dosage rates on light infestations. Use higher rates on heavy blooms and where algae masses are clumped and accumulated.
Filamentous	0.2 - 0.6	1.8 - 5.3	5% - 10%	Apply lower dosage rates on early season, light infestations or treatment of regrowth. Apply higher rates on surface mats and coarse species such as Pithophora, Cladophora, Lyngbya.
Chara/Nitella	0.4 - 0.8	3.6 - 7.1	10% - 15%	Apply lower dosage rates on new infestations or early season growth. Apply higher rates on older, established calcified plants. Apply as close to top of plant growth as possible.

FOR USE IN CROP AND NON-CROP IRRIGATION CONVEYANCE SYSTEMS: DITCHES, CANALS AND LATERALS; POTABLE WATER RESERVOIRS; LAKES; FARM, FISH, GOLF COURSE, INDUSTRIAL AND SWIMMING PONDS

EPA Reg. No. 8959-51
Pat. # 5,407,899
EPA Est. No. 42291-GA-1

ACTIVE INGREDIENT:
COPPER AS ELEMENTAL.....3.825%
INERT INGREDIENTS:.....96.175%
TOTAL.....100.000%

From mixed Copper Ethanolamines in an Emulsified Formulation
Clearigate® contains 0.31 lbs. of copper per gallon

 **applied biochemists**

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Aquatic Vegetation Type of Species	Dosage PPM Copper	Rates Gallons Per Acre-Foot	Dilution % Spray Solution V/V	Treatment Comments
SUBMERGED PLANTS				
<i>Egeria densa</i> (Brazilian Elodea)	0.6 - 1.0	5.4 - 8.7	10% - 20%	Apply lower dose on early season, low density growth. Apply higher rates in thicker stands of plants. Product should be applied as close to the top of the plants as possible. Underwater injection is recommended when plants are more than 1 ft. below water surface.
<i>Elodea canadensis</i>	0.8 - 1.0	7.1 - 8.7	10% - 20%	
<i>Hydrilla verticillata</i>	0.4 - 1.0	3.6 - 8.7	10% - 20%	
<i>Myriophyllum spp.</i> (Water Milfoil)	0.8 - 1.0	7.1 - 8.7	10% - 20%	
<i>Najas spp.</i> (Naiad)	0.5 - 1.0	4.4 - 8.7	10% - 20%	
<i>Potamogeton spp.</i> (Pondweeds)	0.5 - 1.0	4.4 - 8.7	10% - 20%	
FLOATING PLANTS		Gallons Per Surface Acre		
<i>Lemna spp.</i> (Duckweed)		4.4 - 8.7	20% - 25%	Apply lower rates to shallow (less than 1 ft.) infestations. Use higher rates for large infestations in deeper water (1 ft. or greater). Use a fine spray and wet plants thoroughly. Do not disturb with motor wake or paddles after treatment.
<i>Eichornia crassipes</i> (Water Hyacinth)		4.4 - 8.7	20% - 25%	

FOR OPTIMUM EFFECTIVENESS:

- Apply Clearigate early in the day under bright or sunny conditions when water temperatures are at least 60°F(15.5°C).
- Apply when growth first begins to appear or create a nuisance.
- Apply in a manner which will ensure even distribution of product within treatment area.
- Repeat application, as needed, if regrowth begins to appear and seasonal control is desired. Allow one to two weeks between consecutive treatments.

FLOWING WATER TREATMENT

DRIP SYSTEM/METERING PUMP APPLICATION

Effective aquatic plant control in flowing water (canals, ditches, laterals, etc.) is dependent upon maintaining suitable contact time with sufficient chemical concentrations. Other factors to consider include: type of growth present, degree of infestation, water temperature and weather conditions during and following treatment.

Fish may be killed at dosages in excess of 0.5 ppm copper in flowing water. Use dosages over 0.5 ppm only in areas where some fish kill is not objectionable or where fish have access to downstream avoidance of these concentration levels.

1. Prior to treatment, it is important to accurately determine water flow rates. In the absence of weirs, orifices or similar devices which provide accurate water flow measurements, volume of flow may be estimated via the following formula:

$$\text{Average Width (ft.)} \times \text{Average Depth (ft.)} \times \text{Velocity}^*(\text{ft}/\text{sec}) \times 0.9 = \text{Cubic Feet per Second (CFS)}$$

*Velocity is the time it takes a floating object to travel a given distance. Dividing the distance traveled (ft) by the time (seconds) will yield velocity (ft/sec). Repeat measurement at least 3 times at the intended application site and use the average of these measurements.

2. Calculate volume of ditch, canal, lateral or receiving pond in cubic feet based upon water levels at the time of treatment by using the following formula:

$$\text{Length (ft)} \times \text{Average width (ft)} \times \text{Average depth (ft)} = \text{Cubic Feet of Water}$$

3. Calculate turnover time (the amount of time it takes for the water in the system to be replaced by new water). Convert to hours using the following formula:

$$\frac{\text{Canal Volume (ft}^3\text{)}}{\text{Flow Rate (CFS)}} \div 3600 = \text{Turnover Time (hrs.)}$$

4. Select dosage rate from the chart to the right and calculate total Clearigate requirements by using the formula following the chart.

NOTE:

Use higher dosage range in cooler water (60°F - 70°F), under conditions of heavy growth and/or on matured plant growth. Lower dosage ranges may be used on maintenance control treatments, young plants and/or under minimal growth conditions in warmer waters (>70°F).

Aquatic Vegetation Type	PPM Copper	Dosage Rate Qt. Per CFS/Hour*
Planktonic Algae	0.1 - 0.5	0.3 - 1.4
Filamentous Algae	0.2 - 0.6	0.6 - 1.7
Chara/Nitella	0.4 - 0.8	1.2 - 2.3
Submerged Weeds	0.5 - 1.0	1.4 - 2.8

$$\text{Clearigate Required (qts)} = \text{Dosage Rate (qt/CFS/hr)} \times \text{Flow Rate (CFS)} \times \text{Turnover Time (hrs)}^*$$

*NOTE: If turnover time is less than 3 hrs., substitute 3 hrs. into this calculation.

5. For ditches, canals and laterals determine the number of drip/metering application sites required (based upon turnover time) by referring to the chart below:

TURNOVER TIME (Hrs)	NUMBER OF DRIP/METERING SITES
Less than 4.5	1
4.6–7.5	2
7.6–10.5	3
10.6–13.5	4
13.6–16.5	5
Etc.	

Sewage treatment ponds and other sites where water is stored for a calculated retention time and are fed by a single input source will require a single dripper/metering system. Inflowing water should be treated at the appropriate dosage rate from the chart in #4 for the duration of the entire turnover time calculated in #3.

6. Calculate distance between drip/metering sites by using the following formula:

$$\frac{\text{Canal/Ditch/Lateral Length (ft)}}{\text{No. of Drip/Metering Sites}} = \text{Distance Between Drip/Metering Systems (ft)}$$

7. Calculate amount of Clearigate required per drip/metering site by using the following formula:

$$\frac{\text{Total Clearigate Required (qts)}}{\text{No. of Drip/Metering Sites}} = \text{Clearigate Required Per Site (qts.)}$$

8. Calculate drip/metering duration per site by using the following formula:

$$\frac{\text{Clearigate Required Per Site (qts)}}{\text{Dosage Rate (qt/CFS/hr) x Flow Rate (CFS)}} = \text{Drip Metering Duration (hrs) Per Site}$$

9. Calculate Drip/Metering Rate by using the following formula to convert to oz./min or ml/min.

$$\text{Flow Rate (CFS) x Drip Rate (qt/CFS/hr) x 0.533*} = \text{Drip Rate (oz/min)}$$

*NOTE: 0.533 is a constant used to convert qt/hr to oz/min

$$\text{METRIC CONVERSION: Drip Rate (oz/min) x 29.57} = \text{Drip Rate (ml/min)}$$

Calibrate drip system, metering pump or similar dosage device to establish output rate determined in #9. This can be done using a watch with a second hand and a calibrated measuring cup, graduated cylinder or similar vessel. If possible, calibrate all drip/metering devices prior to beginning actual treatment. Turn them on as simultaneously as possible, beginning with the device furthest upstream. Begin with only the amount of product required at each site or record your start-up time and shut down drip/metering systems after the drip/metering duration time period determined in #8.

Remove containers from application sites following treatment. Triple rinse application equipment. Dispose of empty containers in accordance with container disposal instructions on this label. Partially used containers should be resealed with original closures and stored in accordance with storage instructions on this label.

SPRAY DRIFT MANAGEMENT

A variety of factors including weather conditions (e.g., wind directions, wind speed, temperature, relative humidity) and method of application (ground, aerial airblast, chemigation) can influence pesticide drift. The applicator must evaluate all factors and make appropriate adjustments when applying this product. **Droplet Size** - Apply only as a medium or coarser spray (ASAE standard 572) or a volume mean diameter of 300 microns or greater for spinning atomizer nozzles. **Wind Speed** - Do not apply at wind speeds greater than 15 mph. Only apply this product if the wind direction favors on-target deposition (approximately 3 to 10 mph), and there are no sensitive areas within 250 feet downwind. **Temperature Inversions** - If applying at wind speeds less than 3 mph, the applicator must determine if a) conditions for temperature inversion exist, or b) stable atmospheric conditions exist at or below nozzle height. Do not make applications into areas of temperature inversions or stable atmospheric conditions. **Other State and Local Requirements** - Applicators must follow all state and local pesticide requirements regarding application of copper compounds. Where states have more stringent regulations, they must be observed.

Equipment - All application equipment must be properly maintained and calibrated using appropriate carriers or surrogates. If Aerial application is permitted:

- The boom length must not exceed 75% of the wingspan or 90% of the rotor blade diameter.
- Release spray at the lowest height consistent with efficacy and flight safety. Do not release spray at a height greater than 10 feet above the crop canopy unless a greater height is required for aircraft safety.
- When applications are made with a crosswind, the swath must be displaced downwind. The applicator must compensate for this displacement at the up and downwind edge of the application area by adjusting the path of the aircraft upwind.

Ground boom application: Do not apply with a nozzle height greater than 4 feet above the crop canopy.

GENERAL APPLICATION RESTRICTIONS: Do not enter or allow others to enter until sprays have settled in area.

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. Call Poison Control Center or doctor for treatment advice. **IF ON SKIN OR CLOTHING:** Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call Poison Control Center or doctor for treatment advice. **IF SWALLOWED:** Call Poison Control Center or doctor immediately for treatment advice. Have the person sip a glass of water if able to swallow. Do not induce vomiting unless told to by a Poison Control Center or doctor. Do not give anything by mouth to an unconscious person. **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 Poison Control Center or doctor for further treatment advice.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. If a medical emergency arises contact Arch Chemicals Emergency Action Network in the US call 1-800-654-6911 or outside the US call 423-780-2970. For help with a spill, leak, fire or exposure involving this material call CHEMTREC 1-800-424-9300.

NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate the use of gastric lavage. Measures against circulatory shock as well as oxygen and measures to support breathing manually or mechanically may be needed. If persistent, convulsions may be controlled by the cautious intravenous injection of a short-acting barbiturate drug.

PRECAUTIONARY STATEMENTS/HAZARDS TO HUMANS AND DOMESTIC ANIMALS

CORROSIVE. Causes irreversible eye damage and skin damage. May be fatal if absorbed through skin. Harmful if swallowed or inhaled. Do not get in eyes, on skin or on clothing. Avoid breathing dust or spray mist. Wear protective clothing, protective eyewear, and rubber gloves. Wash thoroughly with soap and water after handling and before eating, drinking, using tobacco or using toilet. Remove contaminated clothing and wash before reuse.

PERSONAL PROTECTIVE EQUIPMENT (PPE): Mixers, Loaders, Applicators and other handlers must wear: Coveralls over long sleeved shirt and long pants; Goggles or face shield; Chemical-resistant footwear plus socks; Chemical-resistant gloves made of any waterproof material; Chemical-resistant headgear for overhead exposure; Chemical-resistant apron when mixing, loading or cleaning equipment.

ENVIRONMENT HAZARDS: For Aquatic Use: 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 algae and weeds. This oxygen loss can cause fish and invertebrate suffocation. To minimize this hazard, do not treat more than 1/2 of the water body to avoid depletion of oxygen due to decaying vegetation. Wait at least 10 to 14 days between treatments. Begin treatment along the shore and proceed outwards in bands to allow fish to move to 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 (3.0mg/L or lower), and "soft" waters (i.e. alkalinity less than 50 mg/L), increases the potential acute toxicity to non-target aquatic organisms.

Clearigate may be hazardous to aquatic organisms. Clearigate may be toxic to trout and other species of fish. Fish toxicity is dependent upon the hardness of water. Do not use in water containing trout if the carbonate hardness of water does not exceed 50 ppm. Do not use in waters containing Koi and hybrid goldfish. Not intended for use in small volume, garden pond systems.

For application 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.

For Terrestrial use: This pesticide is toxic to fish and aquatic invertebrates and may contaminate water through runoff. This product has a potential for runoff for several months or more after application. Poorly drained soils and soils with shallow water tables are more prone to produce runoff that contains this product. Drift and runoff may be hazardous to aquatic organisms in water adjacent to treated areas. Do not apply directly to water, to areas where surface water is present, or to intertidal areas below the mean high water mark when disposing of equipment washwater or rinsate.

Some states may require permits for application of this product to public water. Check with local authorities.

PHYSICAL/CHEMICAL HAZARDS: Do not use or store near heat or open flame.

STORAGE & DISPOSAL

Do not contaminate water, food or feed by storage or disposal. Open dumping is prohibited.

PESTICIDE STORAGE: Keep container closed when not in use. Keep pesticide in original container. Do not put concentrate or dilute into food or drink containers. Do not reuse or refill container. Do not contaminate feed, feedstuffs, or drinking water. Do not store or transport near feed or food. Store at temperatures above 32°F. Do not store near heat or flame.

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

CONTAINER DISPOSAL: (For <5 gallon non-refillable containers only): Nonrefillable container. Do not reuse container. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 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 approved landfill, or incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke. Consult Federal, State or local authorities for approved alternative procedures. (For >5 gallon non-refillable containers only): Nonrefillable container. Do not reuse container. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 with water and recap. 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 container on its 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 approved landfill, or incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke. Consult Federal, State or local authorities for approved alternative procedures. (For 275 Gallon refillable container only): Refillable container. 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 container about 10 percent full with water. Agitate vigorously or recirculate water with pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat rinsing procedure two more times. Then offer for recycling or reconditioning if available or puncture and dispose of in approved landfill, or incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke. Consult Federal, State or local authorities for approved alternative procedures.

WARRANTY

To the extent consistent with applicable law neither the manufacturer nor the seller makes any warranty, expressed or implied concerning the use of this product other than indicated on the label. To the extent consistent with applicable law buyer assumes risk of use of this material when such use is contrary to label instructions. Read and follow the label directions.