

10324-88

1 of 10



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460
OFFICE OF PREVENTION, PESTICIDES AND TOXIC SUBSTANCES

JAN 15 2010

Ms. Elizabeth Tannehill
Mason Chemical Company
721 W. Algonquin Rd.
Arlington Heights, IL 60005

Subject: Maquat 4450-10% S & W
EPA Registration No. 10324-88
Amendment Date: Oct 06, 2009
EPA Receipt Date: Oct 23, 2009

Dear Ms. Tannehill,

The following amendment, submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), section 3(C)(7)(A) is acceptable with the conditions below.

Proposed Amendment

- Response to Agency letter dated 05-21-2009

Conditions

Revise the label as follows:

- 1) On page four of the label revise the first sentence in the section labeled "**Dosing Conditions**" by deleting the word *should* and revising it to read: "This product is to be applied ..."

General Comments

A stamped copy of the accepted labeling is enclosed. Submit 1 copy of your final printed label before distributing or selling the product bearing the revised labeling.

CONCURRENCES

SYMBOL							
SURNAME							
DATE							

Should you have any questions concerning this letter, please contact Velma Noble at (703) 308-6233.

Sincerely,



Velma Noble
Acting Product Manager (31)
Regulatory Management Branch
Antimicrobials Division (7510P)

CONCURRENCES

SYMBOL								
SURNAME								
DATE								



MASON CHEMICAL COMPANY

"The Quaternary Specialists"

721 W. Algonquin Road / Arlington Heights, IL 60005 | 847-290-1621 or 800-362-1855

E.P.A. Reg. No. 10324-88

E.P.A. Est. No. 10324-IL-1

MAQUAT 4450-10%-S&W

Net Contents

Batch No.

**PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS
AND DOMESTIC ANIMALS**

DANGER. Keep Out of Reach of Children. Corrosive. Causes irreversible eye damage and skin burns. Harmful if swallowed, inhaled or absorbed through the skin. Do not get in eyes, on skin or on clothing. Wear protective eyewear (goggles, face shield, or safety glasses), rubber gloves and protective clothing when handling. Avoid breathing vapor. Wash thoroughly with soap and water after handling and before eating, drinking, using tobacco, or using the toilet. Remove contaminated clothing and wash before reuse.

(If container is 5 gallons or larger the following statement must appear on the label)

ENVIRONMENTAL HAZARD

This pesticide is toxic to fish, aquatic invertebrates, oysters, and shrimp. 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 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.

(If container is less than 5 gallons use the following environmental hazard statement.)

ENVIRONMENTAL HAZARD

This product is toxic to fish.

PHYSICAL OR CHEMICAL HAZARDS

Do not use or store near heat or open flame.

Do not mix with oxidizers, soap or anionic detergents or other water treating chemicals.

First Aid

Have the product container or label with you when calling a poison control center or doctor, or going for treatment.

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 IN EYES: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after 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 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.

A Water Treatment Microbiocide for Recirculating Cooling Water Towers, Retort Water Systems, Auxiliary Water and Waste Water Systems, Oil Field Water Flood/Salt Water Disposal Systems, and Swimming Pools, Outside Spas/Whirlpools/Hot Tub Baths, (Containerized) Decorative Fountains and Pools. ("Outside" description, "Containerized" and "Retort Water Systems" not for use in California.)

ACTIVE INGREDIENT:

Didecyl dimethyl ammonium chloride 10.0%

INERT INGREDIENTS:

..... 90.0%

TOTAL:

..... 100.0%

Weight approx. 8 lbs. /gallon

KEEP OUT OF REACH OF CHILDREN

DANGER PELIGRO

See left (back) (side) (right) panel (or label) (below) for additional precautionary statements and first aid statements

(Note to Reviewer: This information has been verified per DOT regulations. It is NOT required to be on the label but is being requested by a customer.)

Transportation Information

DOT Hazard Class: 8 Corrosive

DOT Proper Shipping Name: Disinfectant Liquid Corrosive (Quaternary Ammonium Compound), 8, UN1903, PGI1

PELIGRO: SI NO PUEDE LEER EN INGLES, PREGUNTE A SU SUPERVISOR SOBRE LAS INSTRUCCIONES DE USO APROPIADAS ANTES DE TRABAJAR CON ESTE PRODUCTO.

Manufacturing and/or Lot no. Date:

ACCEPTED
with COMMENTS
in EPA Letter Dated:

JAN 15 2010

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

10324-88

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This formulation (Maquat® 4450-10% S&W) is for use in:

- Industrial and/or commercial recirculating cooling water towers.
- Once through water cooling systems.
- Paper mills and paper mill process water systems.
- Oil field water flood or salt water disposal system and fracturing fluids.
- Oil field injection and waste water.
- Gas production and transmission pipelines and systems.
- Gas storage wells and systems.
- Pipeline pigging and scraping operations.
- Drilling, completion and workover fluids systems.
- Packer fluids.
- Hydrotesting

This product has been designed specifically for control of sulfate-reducing bacteria (SRB) that contribute to souring, the production of sulfide, and abiotic corrosion in water cooling systems, paper mill process water systems, oil field systems, gas production and transmission pipelines and systems.

A microbiocide for use in controlling sulfate-reducing bacteria and slime forming bacteria in oil well drilling, oil field processing applications, oil field water systems, oil and gas productions and transmission pipelines and systems, and gas storage fields and equipment; such as steam-injection water holding tanks, flood water, injection water, holding pond water, disposal-well water, water holding tanks, fuel storage tanks and related refinery and oil field closed, industrial recirculating water handling systems.

A highly effective microbiocide for use in controlling bacteria including slime forming bacteria and sulfate-reducing bacteria (SRB) and fungi (yeast and molds) and algae in air washers and industrial scrubbing systems, recirculating cooling and process water systems including those that contain reverse osmosis membranes and in service water and auxiliary systems and heat transfer systems and in wastewater systems including wastewater sludge and holding tanks, and in paper mills and paper mill process water systems and water based coatings for paper and paperboard.

When this product is used as directed it will prevent development of *Chlorella pyrenoidosa* (green algae), *Phormidium inundatum* (black algae), *Phormidium retzi* (blue-green algae), *Lyngbya versicolor* (blue-green algae), and other swimming pool algae.

This product is compatible with many swimming pool chemicals and when used as directed it is not harmful to the metal paint, plastic or tile surfaces of the swimming pool.

This product when used as directed will help improve the appearance and cleanliness of the swimming pool water.

This product helps inhibit the growth of unsightly algae.

One gallon treats 50,000 gallons.

This product is efficient and stable in use dilution.

This product is compatible with most chemicals used in pool water and will not damage tile, concrete, metal or plastics.

This product keeps pool water free and sparkling, clear of visible green and blue-green algae, slime and green brown colors.

This product improves filter operation and reduces need for other chemicals.

This product imparts tone and a pleasant "feel" to swimming pool water.

This product is formulated to complement swimming pool water being treated with normal chlorine systems. It is especially effective against growth of algae and being non-volatile, aids in maintaining pool water clarity and sparkle. The residual effectiveness of this algacide tends to stabilize the total chemical treatment system.

This product is compatible with most chemicals normally used in swimming pool maintenance; however, in its concentrated form, this chemical must not come in contact with high concentrations of chlorine or any other oxidizer. **DO NOT MIX THIS PRODUCT AND CHLORINE OR ANY OTHER OXIDIZER TOGETHER** before adding to the pool. These chemicals must be handled separately.

This product was formulated to complement most swimming pool sanitizers. This product is not a stand alone product, it must be used with either halogen based or non-halogen based pool sanitizers. This product supports your overall pool chemical maintenance program, offering a residual effectiveness that protects your pool against algae formation while keeping your pool water sparkling clear. This product protects the unattended pool when you're away (refer to Vacation Treatment section in Directions For Use).

DIRECTIONS FOR USE

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling. Read entire label and use strictly in accordance with precautionary statements and directions.

Do not use water containing residues from use of this product to irrigate crops for food or feed.

Use of the product in either public/municipal or single or multiple family private/residential potable/drinking water systems is strictly prohibited. Use of the product in any cooling water system that discharges effluent within ¼ mile of either a public/municipal or single or multiple family private/residential potable/drinking water intake is strictly prohibited.

INDUSTRIAL WATER TREATMENT

This product aids in the control of bacterial, fungal and algal slimes in evaporative condensers, heat exchange water systems, industrial and commercial cooling towers, influent systems such as flow through filters and lagoons, industrial water scrubbing systems and brewery pasteurizers.

To control algae and bacterial slimes use this product as directed. For best results slug feed. The frequency of addition of microbiocide needed depends on many factors. To optimize your use of this product follow this procedure.

INDUSTRIAL AND/OR COMMERCIAL RECIRCULATING COOLING WATER TOWERS, RETORT WATER SYSTEMS

(Note: Retort Water Systems use site not applicable in California.)

1. **Dosing Location:** This product is to be applied at a point in the system where it will be uniformly mixed, such as at the sump.
2. **Dosing Conditions:** This product should be applied when the system is in jeopardy of being affected or after cleaning systems where efficiency is already impaired.
3. **Methods of Application:** Initially use 25.6 fluid ounces per 1,000 gallons of water to be treated (20 ppm active quaternary). Should the above dosage not give

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satisfactory results, use 45 fluid ounces per 1,000 gallons of water. Repeat the initial dose every seven days or increase the frequency if needed.

4. When the above treatment is successful, use 10 to 15 fluid ounces per 1,000 gallons of water to maximize efficiency. Repeat weekly as needed. Should slime develop again, go back to initial dosage.

Cooling towers that are inherently low in algae growth and bacteria count may be adequately controlled by the lower range of these dosages; slug fed every seven days. Dilute the appropriate amount of this product in 5 or 10 gallons of water, then add to the tower. **Note:** This product weighs 8.0 lbs. per gallon (at 20°C). Should tower be heavily fouled, a precleaning is required.

(OR)

INDUSTRIAL AND/OR COMMERCIAL RECIRCULATING COOLING WATER TOWERS, RETORT WATER SYSTEMS

(Note: Retort Water Systems use site not applicable in California.)

1. **Dosing Location:** This product is to be applied at a point in the system where it will be uniformly mixed, such as at the sump.
2. **Dosing Conditions:** This product must be applied when the system is in jeopardy of being affected or after cleaning systems where efficiency is already impaired.
3. **Method Of Application:**

a. INTERMITTENT OR SLUG METHOD

Initial Dose: When the system is noticeably fouled, apply 25.6 to 51.2 fluid ounces (20 to 40 ppm on an active quaternary basis) per 1000 gallons of water in the system. Repeat until control is achieved.

Subsequent Dose: When microbial control is evident, add 6.4 to 19.2 fluid ounces (5 to 15 ppm on an active quaternary basis) per 1000 gallons of water in the system twice weekly or as needed to maintain control. Badly fouled systems must be cleaned before treatment is begun.

b. MODIFIED INTERMITTENT METHOD

Initial Dose: When the system is noticeably fouled, apply 25.6 to 51.2 fluid ounces (20 to 40 ppm on an active quaternary basis) per 1000 gallons of water in the system. Apply half of this initial dose when half of the water in the system has been lost by blowdown.

Subsequent Dose: When control of microbial growth is evident, apply 6.4 to 19.2 fluid ounces (5 to 15 ppm on an active quaternary basis) per 1000 gallons of water in the system. Apply half of this subsequent dose when half of the water in the system has been lost by blowdown. Badly fouled systems must be cleaned before treatment is begun.

(OR)

INTERMITTENT OR SLUG METHOD

When this treatment is required, add this product at the rate of 25.6 to 51.2 ounces per 1000 gallons of water already in the system, or being added to the system, for 4 to 8 hours, 1 to 4 times per week or as needed to achieve the desired level of control. When control is obtained, add this product at the rate of 6.4 to 19.2 ounces per 1000 gallons of water in the system.

c. CONTINUOUS FEED METHOD

Initial Dose: When the system is noticeably fouled, apply 25.6 fluid ounces (20 ppm on an active quaternary basis) per 1000 gallons of water in the system.

Subsequent Dose: Maintain this treatment by starting a continuous feed of 6.4 fluid ounces (5 ppm on an active quaternary basis) per 1000 gallons of water lost by blowdown. Badly fouled systems must be cleaned before treatment is begun.

ONCE THROUGH FRESH WATER COOLING SYSTEM

1. **Dosing Location:** This product is to be applied at a point in the system where it will be uniformly mixed, such as at the sump.
2. **Dosing Conditions:** This product must be applied when the system is in jeopardy of being affected or after cleaning systems where efficiency is already impaired.
3. **Method Of Applications:**
 - a. Wear safety glasses, rubber gloves and impervious apron.
 - b. To reduce foaming, mix 10 parts of water to 1 part of this product.
 - c. Add product directly from drum or add the product at a point where it will be mixed uniformly.
 - d. Use 0.75 to 7.5 fluid ounces (0.6 to 6 ppm on an active quaternary basis) per thousand gallons.
 - e. Do not discharge without performing proper deactivation. To perform deactivation use Bentonite Clay. The minimum ratio to be used is 5 ppm of clay to 5 ppm of product.
 - f. Do not use product more than 4 times per year.
 - g. Treatment time cannot exceed 120 hours/application.
 - h. Avoid oxidizers and reducing agents. Product is cationic and must not be mixed with soap or anionic surfactants.

TO DEACTIVATE: Use bentonite clay at the minimum ratio of 5 ppm clay to 1 ppm product. Deactivation must occur prior to discharge of the NPDES outfall. Do not apply this product more than 4 times a year.

(OR)

ONCE THROUGH FRESH AND SEA WATER COOLING SYSTEM

1. **Dosing location:** This product is to be applied at a point in the system where it will be uniformly mixed, such as at the sump.
2. **Dosing conditions:** This product must be applied when the system is in jeopardy of being affected or after cleaning systems where efficiency is already impaired.
3. **Method of applications:**
 - a. Wear safety glasses, rubber gloves and impervious apron.
 - b. To reduce foaming, mix 10 parts of water to 1 part of this product.
 - c. Add product directly from drum or add the product at a point where it will be mixed uniformly.
 - d. Use 0.75 to 7.5 fluid ounces (0.6 to 6 ppm on an active quaternary basis) per thousand gallons.
 - e. Do not discharge without performing proper deactivation. To perform deactivation use Bentonite Clay. The minimum ratio to be used is 5 ppm of clay to 5 ppm of product.
 - f. Do not use product more than 4 times per year.
 - g. Treatment time cannot exceed 120 hours/application.
 - h. Avoid oxidizers and reducing agents. Product is cationic and must not be mixed with soap or anionic surfactants.

TO DEACTIVATE: Use bentonite clay at the minimum ratio of 5 ppm clay to 1 ppm product. Deactivation must occur prior to discharge of the NPDES outfall. Do not apply this product more than 4 times a year.

(OR)

ONCE THROUGH FRESH AND SEA WATER COOLING SYSTEMS

1. **Dosing Location:** This product is to be applied at a point in the system where it will be uniformly mixed, such as at the sump.
2. **Dosing Conditions:** This product must be applied when the system is in jeopardy of being affected or after cleaning systems where efficacy is already impaired.
3. **Method Of Applications:**
 - a. **INTERMITTENT OR SLUG METHOD**

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Initial Dose: When the system is noticeably fouled, apply 0.75 to 7.5 fluid ounces (0.6 to 6 ppm on an active quaternary basis) per 1,000 gallons of water based on system flow rates. The minimum treatment is 6 to 24 hours. Repeat until control is achieved. Deactivation must be conducted prior to discharge from the system by using bentonite clay at a minimum ratio of 5 ppm clay to 1 ppm product.

Subsequent Dose: When microbial control is evident, add 3/8 to 3.75 fluid ounces (0.3 to 3 ppm on an active quaternary basis) per 1,000 gallons of water based upon system flow rates on a as needed basis to maintain control. Frequency of feed must be tied to an in-plant monitoring program for macro cowling growth. Deactivation must be conducted prior to discharge from the system by using bentonite clay at a minimum ratio of 5 ppm clay to 1 ppm product.

DEACTIVATION: Use bentonite clay at the minimum ratio of 5 ppm clay to 1 ppm product. This product must be deactivated prior to discharge of the NPDES outfall. Do not apply this product more than 4 times a year.

OIL FIELD & GAS PRODUCTION TREATMENT

Specific treatment requirements vary among oil and/or gas field sites and subsystem components. The Primary point of treatment will vary among oil and/or gas field operations depending on the site problems, water-flood treatment methods and equipment. This product must be added where it will disperse rapidly and uniformly to the desired area of treatment.

Additions of this product must be made with the proper type of metering pump equipment, suction (low pressure) side of pumping equipment or similar device. This product must be added to the system by slug, continuous or on an intermittent basis, depending on the degree of system fouling.

OR

Specific treatment requirements vary among oil and/or gas field sites and subsystem components. Oil field fluids and subsystems most commonly requiring microbial contamination control are raw water sources, spearators, ballast, storage and mixing tanks, screens, surface injection equipment, production equipment (such as injection and production piping casting, completion and valving) and the formation itself. The primary point of treatment will vary among oil and/or gas field operations depending on the site problems, water-flood treatment methods and equipment. This product must be added where it will disperse rapidly and uniformly to the desired area of treatment.

Additions of this product must be made with the proper type of metering pump equipment, suction (low pressure) side of pumping equipment or similar device. This product can be added to the system by slug, continuous or on an intermittent basis, depending on the degree of system found.

OIL FIELD WATER FLOOD OR SALT WATER DISPOSAL SYSTEMS AND FRACTURING FLUIDS

This product must be added to the water flood or salt water disposal system at a point of uniform mixing.

1. For the control of slime forming and sulfate reducing bacteria in oil field water flood or salt water disposal systems, add 5 - 10 ppm (active) of this product (4.7 - 9.5 gallons per 3,000 barrels of water) continuously. Levels for effective control will vary depending on conditions at the site.
2. For intermittent use, dose at rate of 5 - 20 ppm (active) of this product (4.7 - 18.9 gallons per 3,000 barrels of water) for 4 to 8 hours per day, one to four times a week as needed to maintain control.

3. For treatment of flow back return water (Post Hydraulic Fracturing - Dose at a rate of 5-20ppm active of this product (4.7 - 18.9 gallons per 3,000 barrels of water) for 4 to 8 hours per day, one to four times a week as needed to maintain control.

OILFIELD INJECTION AND WASTE WATER

This product must be added to the water handling system at a point of uniform mixing such as the area of addition of make up water to the holding tank.

Method of application:

1. **CONTINUOUS INJECTION:** Add this product at 30 ppm (22.5 fluid ounces per 1000 gallons of water) when system is noticeably fouled. When microbial control is evident, add this product at 15 ppm (20 fluid ounces per 1000 gallons of water) to maintain control.
2. **BATCH TREATMENT:** Add this product at 180 ppm (230 fluid ounces per 1000 gallons of water) over a period of 4 - 6 hours one or more times per week when the system is noticeably fouled. When microbial control is evident, add this product at 90 ppm (115 fluid ounces per 1000 gallons of water) over a period of 4 - 6 hours one or more time per week.

OR

For use in oil field and/or petrochemical water subsurface injection systems of secondary and/or tertiary oil recovery systems to reduce the number of anaerobic bacteria, aerobic bacteria, sulfate-reducing bacteria.

1. **DOSING LOCATION** (site of use): This product is to be applied at a point in the recovery system where it will be uniformly mixed, such as at the screens, storage tanks and other mixing device locations.
2. **DOSING CONDITIONS:** This product should be applied when the system is in jeopardy of being affected. Badly fouled systems must be cleaned before treatment is begun.
3. **EQUIPMENT USED:** Use the injection pump to apply the product.
4. **USE LIMITATIONS:** Dependent upon pH, temperature and salt content, adjust according to conditions found at the site as needed to maintain control.
5. **DOSAGE APPLICATIONS:**

a. SLUG METHOD

Initial Dose: When the system is noticeably fouled, apply 56.5 gallons (60 ppm active ingredient) of this product per 1000 gallons of water in the system. Apply for 3 to 8 hours daily until control is achieved.

Subsequent Dose: When microbial control is evident, add 28.25 gallons (30 ppm active ingredient) of this product per 1000 gallons of water in the system daily or as needed to maintain control.

b. INTERMITTENT DOSAGE

Initial Dose: When the system is noticeably fouled, apply 56.5 gallons (60 ppm active ingredient) of this product per 1000 gallons of water in the system. Apply for 3 to 8 hours daily until control is achieved.

Maintenance Dose: When control of microbial growth is evident, apply 28.25 gallons (30 ppm active ingredient) of this product per 1000 gallons of water in the system daily or as needed to maintain control.

c. CONTINUOUS FEED METHOD

Initial Dose: When the system is noticeably fouled, apply 3.75 ounces (15 ppm active ingredient) of this product per 1000 gallons of water in the system.

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Subsequent Dose: Maintain this treatment by starting a continuous feed of 3.75 ounces (15 ppm active ingredient) of this product per 1000 gallons of water daily or as needed to maintain control.

GAS PRODUCTION AND TRANSMISSION PIPELINES AND SYSTEMS

For the control of sulfate-reducing bacteria and slime forming bacteria, this product must be added to a gas production or transmission pipeline via direct injection at a point where uniform and maximum distribution will occur.

GAS STORAGE WELLS AND SYSTEMS

Treat individual injection wells with this product to produce effective concentration of 65-1000 ppm (active) of this product. Update treatment rate as needed. This product must be diluted by the water present in the formation. Injection may be repeated yearly or as needed to maintain control

PIPELINE PIGGING AND SCRAPING OPERATIONS

Add this product to slug of water immediately following the scraper (keep the water volume to a minimum and contained between the scraper and the following pig). Add an effective concentration to produce 75 – 500 ppm depending on the length of the pipeline and the severity of the biofouling.

DRILLING, COMPLETION AND WORKOVER FLUIDS SYSTEMS

Add to the fluid system at a point of uniform mixing such as circulating mud tank. Initial treatment: 65 – 1000 ppm (active) added to a freshly prepared fluid. Maintenance dosage: 65 – 1000 ppm so as to maintain control.

PACKER FLUIDS

Add to a packer fluid at a point of uniform mixing such as a circulating holding tank at a rate of 65 – 1000 ppm (active per 100 barrels of fluid) to a freshly prepared fluid depending on the severity of contamination. Seal the fresh packer fluid in the wall between the casing and the production tube.

HYDROTESTING

Treat water used to hydrotest pipelines or vessels at 65 – 1000 ppm active depending on the water quality and length of time the equipment will remain idle.

AUXILLARY SERVICE WATER AND WASTE WATER SYSTEM

This product is effective for the control of odor-forming and slime-forming bacterial, fungi and algae in auxillary service water systems such as fire protection systems and pump or screen bays, water waste systems such as storage tanks, storage piles, associated piping, settling ponds or lagoons, transport spillways or canals and disposed wells.

Add 5 – 180 ppm (active) of this product (0.95 - 34 gallons per 3,000 barrels of water) continuously. This product must be added to the system at a point of uniform mixing by slug or intermittent feed or by spraying onto a waste pile. The frequency of feed or spray and the duration of treatment will depend upon the severity of the contamination. Additions to water systems must be made during the pumping operation and as close to the pump as possible to ensure adequate mixing.

SWIMMING POOLS

Ensure all pool equipment is working properly. Backwash the filter system following manufacturer's directions. Adjust pH to between 7.2-7.6. In outdoor chlorine treated pools, add stabilizer to establish a minimum level of 40-50 ppm to reduce the degradative effects of sunlight upon the chlorine residual. Check for metals and if present add a stain and scale inhibitor to prevent staining of pool surface due to metal. Maintain sanitizer residual in accordance with label directions found on your sanitizer of

choice. When using other products as outlined in directions for this product, always follow directions on those products.

Allow filter to run for at least 6 hours after adding algacide. Add this product directly into pool by pouring around entire outside perimeter of pool. Wait 15 minutes before entering pool.

Initial Dose: Vacuum pool after 24 hours to remove algae debris. If visible algae are still present or reappear, repeat this treatment procedure as necessary. When pool is free of visible algae, use the recommended maintenance dose. Add 26.25 fluid ounces of this product to 10,000 gallons of pool water. Wait 15 minutes before entering pool.

Maintenance Dose: Maintenance dose should be added after a heavy or prolonged rainfall. If make-up is added at the rate of more than 10% per week of pool capacity, add 2.5 fluid ounces of this product for each 1,000 gallons of fresh make-up water added. Add 6.25 fluid ounces of this product to 10,000 gallons of pool water. If pool has a visible algae growth, treat with initial dose. Maintenance dose should be added weekly. If high temperatures prevail or pool has unusually heavy use, add maintenance dose more frequently. Wait 15 minutes before entering pool.

When swimming season is over, add maintenance dose prior to closing pool. This dose helps provide a measure of control of algae growth during the winter months. This treatment will also help the servicing of the pool before it is returned to use the following season. For persistent algae or slime producing microorganism growth, add 15-18.75 ounces of product per 5,000 gallons of water into the skimmer with the filter pump running. After one minute, shut off the pump and allow the system remain off over night. The following day, re-start the filter pump, and add 15-18.75 ounces of product per 5,000 gallons of water into the pool. Run the filter continuously for 24-48 hours, brushing the sides and bottom of pool frequently.

(OR)

This product requires no special equipment for treating swimming pool water. The correct use dilution may be added directly to the pool in any spot or added to the water-circulation equipment. This product works best when added by itself directly to the pool water.

INSTRUCTIONS FOR USE WITH HALOGEN BASED POOL SANITIZERS

This product is formulated to complement most swimming pool sanitizers. When using other products as outlined in Directions For Use on those products, always follow Directions For Use of those products. This product is effective against the growth of algae. This product is efficient and non-staining when used as directed. This product will not evaporate and its algae fighting abilities actually increase as pool water temperature increases.

Ensure all pool equipment is working properly. Backwash the filter system following manufacturer's directions. Adjust pH between 7.2-7.6. Adjust chlorine residual to 1-3 ppm. In a chlorine treated pool, add stabilizer to establish a minimum level of 40-50 ppm to reduce the degradative effects of sunlight upon the chlorine residual. Check for metals and if present add stain and scale inhibitor to prevent staining of pool surface due to metals. Check chlorine residual and adjust to 1-3 ppm. Maintain sanitizer residual in accordance with label directions found on your sanitizer of choice. When using other products as outlined in directions for this product, always follow directions on those products.

Add this product directly into pool by pouring around entire outside perimeter of pool. Allow the filter to run for at least six (6) hours after adding algacide. During this period, swimmers must not be allowed into the water.

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Initial Application For Swimming Pools:

(Note to reviewer: The term "to waste" is not for use in California.)

1. Backwash the filter thoroughly.
2. Vacuum algae debris to waste and thoroughly brush pool.
3. Add 1 gallon of this product to 50,000 gallons of water (26 ounces per 10,000 gallons) or ratio thereof.
4. Vacuum pool after 24 hours to remove dead algae.
5. If algae is still visible repeat dose (steps 3 & 4) as necessary until pool is free of visible algae.
6. Once algae are under control, clean filter and return to normal operation.
7. Recirculation accomplished by running the filter will assure rapid dispersion of product.

Maintenance Application

Add 1 quart of this product of 50,000 gallons of water every 3-5 days or as needed to maintain 0.5 ppm active. Quaternary Test Kits are available for this use.

If high temperatures prevail or pool has unusually heavy use, add maintenance dose more frequently.

Booster Application

Use one quart of this product in 50,000 gallons of water after a heavy or prolonged rainfall or when there is a heavy bathing load.

The above directions must be followed even when the pool is not in use.

If algae growth is noticeable, apply initial dose.

Vacation Treatment

When you are going to be away for one week or more, add 24 ounces of this product per 10,000 gallons of water for every week unattended. Pour product around the edges of the shallow end of the pool, if shock is also being applied in the deep end of pool.

OPTIONAL INSTRUCTIONS FOR USE WITH NON-HALOGEN BASED POOL SANITIZERS

This product is formulated to complement swimming pool water being treated with the BioGuard Softswim System, Bacquacil and other non-halogen systems. When using other products as outlined in Directions For Use for this product, always follow Directions For Use of those products. This product is efficient and non-staining when used as directed. This product will not evaporate and its algae fighting abilities actually increases as the pool water temperature increases. The residual effectiveness of this product tends to stabilize the total chemical treatment system.

Ensure all pool equipment is working properly. Backwash the filter system following manufacturers' directions. Adjust pH between 7.2-7.6. Check for metals and if present add satin and scale inhibitor to prevent staining of pool surface due to metals.

Add this product directly into pool by pouring around entire outside perimeter of pool. Allow the filter to run for at least six (6) hours after adding algacide. During this period, do not allow swimmers in the water.

Initial Application For Swimming Pools

(Note to reviewer: The term "to waste" is not for use in California.)

1. Backwash the filter thoroughly.
2. Vacuum algae debris (to waste) and thoroughly brush pool.
3. Add 1 gallon of this product to each 50,000 gallons of water (26 ounces per 10,000 gallons) or ratio thereof.
4. Vacuum pool after 24 hours to remove dead algae.
5. If algae is still visible repeat dose (steps 3 & 4) as necessary until pool is free of visible algae.

6. Once algae are under control, clean filter and return to normal operation.

Maintenance Application

Add one quart of this product in 50,000 gallons of water every 3-5 days or as needed.

Booster Application

Add one quart of this product in 50,000 gallons of water after a heavy or prolonged rainfall or when there is a heavy bathing load.

The above directions must be followed even when the pool is not in use.

If algae growth is noticeable, apply initial dose.

Vacation Treatment

When you are going to be away for one week or more add 24 ounces of this product per 10,000 gallons of water for every week unattended. Pour product around the edges of the shallow end of the pool, if shock is also being applied in the deep end of pool.

WINTERIZING TREATMENT (Not applicable in California)

When swimming pool season is over, add 1 gallon of this product to 50,000 gallons of water left in pool. This dose helps provide a measure of control of algae growth during the winter months.

For persistent algae or slime producing organisms add 1 quart of this product in to the skimmer with the filter pump running. After one minute shut off pump and allow the system to remain off overnight. The following day, restart the filter pump and add 1 quart of this product to the pool. Run filter continuously for 24-48 hours brushing the sides and bottom of the pool frequently.

(Usage chart for one-gallon containers)

Swimming Pool Capacity Gallon of Water	Initial Treatment	Maintenance Dose Booster Dose
5,000	12.8 ounces	3.2 ounces
10,000	25.6 ounces	6.4 ounces
20,000	51.2 ounces	12.8 ounces
25,000	64.0 ounces	16.0 ounces
30,000	76.8 ounces	19.2 ounces
40,000	102.4 ounces	25.6 ounces
50,000	128.0 ounces	32.0 ounces

(OR)

(Usage chart for one-quart containers)

Swimming Pool Capacity Gallon of Water	Initial Treatment	Maintenance Dose Booster Dose
5,000	12.8 ounces	3.2 ounces
10,000	25.6 ounces	6.4 ounces

ALTERNATE WINTERIZATION METHOD (not applicable in California)

This product may be used with the following pool chemicals to form a winterization "package".

Directions:

1. Add a maintenance dose of chloride or oxygen shock.
2. Top up BioGuard Softswim System, Bacquacil or other non-halogen systems to 50 ppm.
3. Add 32 ounces per 4,000 gallons (or ratio there of) of water left in pool. This dose helps provide a measure of control of algae growth during the winter months. This treatment will also help the servicing of the pool before it is returned to use the following season.

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4. Allow filter to run for several hours after chemical additions for good mixing.

Note: Before using chlorine or oxygen shock, read the Directions for Use and Precautionary Statements specific to that product.

TO DETERMINE POOL CAPACITY

Rectangular Pools: Length (times) width (times) average depth (in feet) (times) 7.5 (equals) gallons.

Round and Oval Pools: Long diameter (times) short diameter (times) average depth (in feet) (times) 5.9 (equals) gallons.

OTHER

DIRECTIONS FOR USE IN (OUTSIDE) SPAS/WHIRLPOOLS/HOT TUBS

("Outside" description not for use in California)

Initial Dose: Add 5.1 fluid ounces of this product per 2000 gallons of pool water. Initial dose is used upon filling of spa/whirlpool/hot tub bath.

Maintenance Dose: Add 1.3 fluid ounces of this product per 2000 gallons of water. Maintenance dose must be added at 3-5 day intervals. If high temperatures prevail or spa/whirlpool/hot tub bath has unusually heavy use, add maintenance dose more frequently. Drain and clean spa/whirlpool/hot tub bath at least once a month or as needed depending on bather load.

CONTROLLING ALGAE GROWTH

BIRD BATHS: Do not use with fish. Clean to remove algae growth prior to filling birdbath. Then spray all exposed surfaces with a solution of 1 ounce of this product per gallon of water. Allow to air dry and brush off dead algae.

(Or)

INSTRUCTIONS FOR BIRD BATHS

This product is toxic to fish. **DO NOT** use this product when fish are present.

Initial Dose:

1. Drain Bird Bath.
2. Wipe, mop or spray all exposed surfaces using 1 ounce of this product per gallon of water. Spray device must be a mechanical coarse spray device. When applied with spray device, surfaces must be sprayed until thoroughly wetted. Do not rinse.
3. Allow to air dry and brush off dead algae. Repeat, if necessary, until no algae is visible.
4. Refill Bird Bath with fresh water.

Maintenance Dose: Repeat initial treatment when algae growth returns.

ALGAE CONTROL ON WALKWAYS: For heavy infestations, spray or swab a solution of 1 ounce of this product per gallon of water. Let stand for an hour or more then brush and wash away dead algae. Soak area again with the solution. Do not rinse. Allow to (air) dry on the surface and repeat application when algae growth returns.

INSTRUCTIONS FOR (CONTAINERIZED) DECORATIVE FOUNTAINS AND POOLS

(Note to Reviewer: "Containerized" description must be used in California.)

This product is not to be used in open water ways connected to larger watersheds or in waters that serve as natural habitats for aquatic and amphibious organisms. **DO NOT** use when fish or other wildlife (for example, amphibians) are present. This product is toxic to fish. **DO NOT** use this product when fish are present.

Initial Dose:

1. Remove floating algae by raking, dragging with cable or chain or any other suitable method. It is more economical to remove floating type algae (if possible) before the water is treated.
2. Add this product at any point that is convenient, such as the bowl, pool, or sump.

3. Add 32 ounces per 12,500 gallons or ratio thereof.

Weekly Maintenance Dose: Add one quart of this product to each 50,000 gallons of water every 3-5 days or as to maintain 0.5 ppm active.

Each month drain and clean bowl. Refill with fresh water and repeat initial treatment. Draining removes airborne dirt, dust, contamination and alkali buildup.

Decorative Fountain or Pools Capacity in gallons of water	Initial Treatment	Maintenance Dose Booster Dose
12,500	32 ounces	8 ounces
6,250	16 ounces	4 ounces
3,125	8 ounces	2 ounces
1,562	4 ounces	1 ounce
781	2 ounces	½ ounce, (1 Tablespoon)
390	1 ounce	¼ ounce
195	½ ounce, (1 Tablespoon)	0.125 ounces

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(For Swimming Pool Use and Decorative Fountains and Pools 1 gallon or less)

STORAGE AND DISPOSAL

Do not contaminate water, food, or feed by storage and disposal. **PESTICIDE STORAGE:** Store in original containers and place in locked storage area. Keep from freezing. Do not contaminate water, food, or feed by storage or disposal. **SPILL OR LEAK PROCEDURES:** Small spills may be mopped up or flushed away with water or absorbed on some absorbent material and incinerated. **PESTICIDE DISPOSAL:** Securely wrap original container in several layers of newspaper and discard in trash. **CONTAINER DISPOSAL:** Do not reuse container (bottle, cans, jars). Triple rinse (or equivalent). Then dispose of in a sanitary landfill or by other procedures approved by state and local authorities.

(For Industrial Water Treatment Use, Industrial and /or Commercial Recirculating Cooling Water Towers and Recirculating Cooling Water Systems, Auxiliary water and waste water systems and water cooling systems, once through fresh water cooling systems, sap stains, wood preservatives and all containers less than five gallons.)

STORAGE AND DISPOSAL

Do not contaminate water, food, or feed by storage and disposal. **PESTICIDE STORAGE:** Store in original containers and place in locked storage area. Keep from freezing. **SPILL OR LEAK PROCEDURES:** Small spills may be mopped up or flushed away with water or absorbed on some absorbent material and incinerated. Large spills should be contained, the material then moved into containers and disposed of by approved methods for hazardous wastes. **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. **Nonrefillable container:** Do not refill or reuse container. Triple rinse as follows: Fill container ¼ full with water and recap. Shake for 10 seconds. Follow Pesticide Disposal instructions for rinsate disposal. Drain for 10 seconds after the flow begins to drip. Repeat procedure two more times. Then offer for recycling or reconditioning. If not available, puncture and dispose of in a sanitary landfill.

(Note to reviewer: The title and first statement of this section must appear on every label, followed by the appropriate Storage and Disposal section.)

STORAGE AND DISPOSAL

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

(FOR USE ON NON-REFILLABLE CONTAINERS WITH

INSTITUTIONAL/COMMERCIAL/INDUSTRIAL NON-PUBLIC HEALTH USES ONLY)

PESTICIDE STORAGE: Open dumping is prohibited. Store only in original container. Do not reuse empty container. If a leaky container must be contained within another, mark the outer container to identify the contents. Store pesticides away from food, pet food, feed, seed, fertilizers, and veterinary supplies. Keep this product under locked storage sufficient to make it inaccessible to children or persons unfamiliar with its proper use.

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 HANDLING: Non-refillable container. Do not reuse this container to hold materials other than pesticides or diluted pesticides (rinsate). Triple rinse (or equivalent). After emptying and cleaning, it may be allowable to temporarily hold rinsate or other pesticide-related materials in the container. Contact your state regulatory agency to determine allowable practices in your state. Offer for recycling if available or puncture

and dispose in a sanitary landfill, or by other procedures approved by state and local authorities. If rinsate cannot be used, follow pesticide disposal instructions. If not triple rinsed, these containers are acute hazardous wastes and must be disposed in accordance with local, state and federal regulations.

RESIDUE REMOVAL INSTRUCTIONS (For containers less than 5 gallons): 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 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.

RESIDUE REMOVAL INSTRUCTIONS (For containers greater than 5 gallons): Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty 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 for rinsate later use or disposal. Repeat this procedure two more times.

BATCH CODE: (Can be placed on container or label)

FOR USE ON REFILLABLE CONTAINERS

(For containers greater than 5 gallons)

PESTICIDE STORAGE: Open dumping is prohibited. Store only in original container. If a leaky container must be contained within another, mark the outer container to identify the contents. Store pesticides away from food, pet food, feed, seed, fertilizers, and veterinary supplies. Keep this product under locked storage sufficient to make it inaccessible to children or persons unfamiliar with its proper use.

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 HANDLING DISPOSAL: Triple rinse (or equivalent). Refill this container with this product only. Do not reuse this container for any other purpose.

RESIDUE REMOVAL INSTRUCTIONS: 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 a mix tank. Fill the container ¼ 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.

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