

9804-9

11/1/2012

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

OFFICE OF
PREVENTION, PESTICIDES
AND TOXIC SUBSTANCES

November 1, 2012

James P. Ringo
Director of Regulatory Affairs
Bio-Cide International, Inc.
P.O. box 722170
Norman, OK 73070-8644

Subject: **ProOxine®**
EPA Registration No. 9804-9
Application Date: October 04, 2012
Receipt Date: October 09, 2012

Dear Mr. Ringo:

This acknowledges receipt of your Notification submitted under the provision of PR Notice 98-10, and FIFRA section 12(a) (1) (c).

Proposed Notification:

Per PR Notice 98-10, Bio-Cide International, Inc. is adding the following to the Product label:

FOR GREENHOUSE AND HORTICULTURAL APPLICATION

1.) As an antimicrobial for water systems in horticultural applications.

- i) For horticulture applications, this product may be used to disinfect and control biofilm in irrigation and non-potable water at concentration between 0.25 and 2 ppm available chlorine dioxide. Concentrations and contact times are application specific.
- ii) To prepare 100 gallons of use concentration at 2 ppm, mix 1/2 fl oz. of ProOxine® with 3.8 grams of citric acid in a plastic container, wait 5 minutes for activation and then dilute with 100 gallons of water.

2.) General disinfectant, sanitizer, algacide, and fungicide for horticulture and greenhouse applications.

- i) For horticulture application, this product may be used to disinfect and sanitize hard, non-porous surfaces, to treat and prevent algae, fungus, bacteria, and biofilm at concentrations between 50 and 200 ppm available chlorine dioxide.
- ii) To prepare 10 gallons of 200 ppm disinfectant solution, place 5 1/3 fl. oz. of ProOxine® in a plastic container and mix with 40 grams of citric acid. Wait 5 minutes for activation and then dilute into 10 gallons of water.

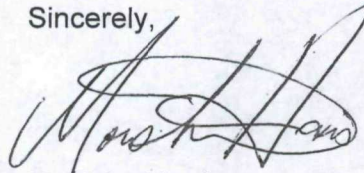
Alternatively, Bio-Cide international, Inc. automated activation equipment can be used. Concentration and contact time are application specific.

General Comment:

Based upon a review of the material submitted, the Notification is Acceptable. A copy of the Accepted Notification has been placed in your file (EPA Reg. No. 9804-9) for future reference.

Should you have any questions or comments concerning this letter, you may contact Glen McLeod by telephone at (703) 347-0181 or by e-mail at mcleod.glen@epa.gov. When submitting information or data in response to this letter, a copy of this letter should accompany the submission to facilitate processing.

Sincerely,



Monisha Harris
Product Manager (32)
Regulatory Management Branch II
Antimicrobials Division (7510P)



United States
Environmental Protection Agency
Washington, DC 20460

<input type="checkbox"/>	Registration
<input type="checkbox"/>	Amendment
<input checked="" type="checkbox"/>	Other

OPP Identifier Number

Application for Pesticide - Section I

1. Company/Product Number 9804/9804-9	2. EPA Product Manager Monisha Harris	3. Proposed Classification <input type="checkbox"/> None <input type="checkbox"/> Restricted
4. Company/Product (Name) Bio-Cide International, Inc. / ProOxine	PM# PM 32	
5. Name and Address of Applicant (Include ZIP Code) Bio-Cide International, Inc. PO Box 722170 Norman, OK 73070-8644 <input type="checkbox"/> Check if this is a new address	6. Expedited Review. In accordance with FIFRA Section 3(c)(3) (b)(i), my product is similar or identical in composition and labeling to: EPA Reg. No. _____ Product Name _____	

Section - II

<input type="checkbox"/> Amendment - Explain below.	<input type="checkbox"/> Final printed labels in response to Agency letter dated _____
<input type="checkbox"/> Resubmission in response to Agency letter dated _____	<input type="checkbox"/> "Me Too" Application.
<input checked="" type="checkbox"/> Notification - Explain below.	<input type="checkbox"/> Other - Explain below.

Explanation: Use additional page(s) if necessary. (For section I and Section II.)

- Notification of changes. See attachment.
- This notification is consistent with the provisions of PR Notice 98-10 and EPA regulations at 40 CFR 152.46, and no other changes have been made to the labeling or the confidential statement of formula of this product. I understand that it is a violation of 18 U.S.C. Sec. 1001 to willfully make any false statement to EPA. I further understand that if this notification is not consistent with the terms of PR Notice 98-10 and 40 CFR 152.46, this product may be in violation of FIFRA and I may be subject to enforcement action and penalties under sections 12 and 14 of FIFRA.

Section - III

1. Material This Product Will Be Packaged In:				2. Type of Container	
Child-Resistant Packaging <input type="checkbox"/> Yes* <input checked="" type="checkbox"/> No	Unit Packaging <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Water Soluble Packaging <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		<input type="checkbox"/> Metal	<input checked="" type="checkbox"/> Plastic
* Certification must be submitted	If "Yes" Unit Packaging wgt.	No. per container	If "Yes" Package wgt.	<input type="checkbox"/> Glass	<input type="checkbox"/> Paper
				<input type="checkbox"/> Other (Specify) _____	
3. Location of Net Contents Information <input checked="" type="checkbox"/> Label <input type="checkbox"/> Container		4. Size(s) Retail Container 5, 30, 55, 330 gal		5. Location of Label Directions <input checked="" type="checkbox"/> On Label <input type="checkbox"/> On Labeling accompanying product	
6. Manner in Which Label is Affixed to Product <input checked="" type="checkbox"/> Lithograph <input type="checkbox"/> Paper glued <input type="checkbox"/> Stenciled				<input type="checkbox"/> Other _____	

Section - IV

1. Contact Point (Complete items directly below for identification of individual to be contacted, if necessary, to process this application.)		
Name James P. Ringo	Title Dir. of Regulatory Affairs	Telephone No. (Include Area Code) 405-329-5556
Certification I certify that the statements I have made on this form and all attachments thereto are true, accurate and complete. I acknowledge that any knowingly false or misleading statement may be punishable by fine or imprisonment or both under applicable law.		6. Date Application Received (Stamped)
2. Signature <i>James P. Ringo</i>	3. Title Director of Regulatory Affairs	
4. Typed Name James P. Ringo	5. Date Oct. 4, 2012	

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ProOxine® SANITIZER

Active ProOxine®

DISINFECTANT

FUNGICIDAL - BACTERICIDAL

FOOD PROCESSING PLANTS

BOTTLING PLANTS INDUSTRIAL USE

THIS PRODUCT CAN BE USED IN FEDERALLY INSPECTED MEAT
AND POULTRY FACILITIES

**KEEP OUT OF REACH OF CHILDREN
CAUTION**

SEE SIDE PANEL FOR ADDITIONAL
PRECAUTIONARY STATEMENTS

Active Ingredient:	
Chlorine Dioxide	5%
Other Ingredients	95%
Total	100%

NOTIFICATION
Date Reviewed: 11-1-12
Reviewed By: G. McLeod

STORE IN COOL DARK PLACE KEEP FROM FREEZING
E.P.A. Reg. No. 9804-9 E.P.A. Est. No. 9804-OK-1

Bio-Cide International, Inc.
P.O. Box 722170
Norman, Oklahoma 73070

Net Contents: 5 Gal. 30 Gal. 55 Gal. 330 Gal.

PROPER ACTIVATION OF ProOxine®

The active biocidal component of the ProOxine® system is free chlorine dioxide. Unactivated ProOxine® in the neutral to mildly alkaline pH range is bacteriostatic. For higher level microbial control, such as disinfection and sanitation, activation of ProOxine® is required to generate free chlorine dioxide. The use of citric acid as an activator is specified in most ProOxine® label applications. Alternatives to citric acid for activation include organic acids, such as acetic acid, and inorganic acids such as phosphoric, hydrochloric, and sulfuric acids. Activation equivalent to that of citric acid may be achieved by adjusting the ProOxine® solution to pH 2-3 with an alternative acid. The activated ProOxine® is then diluted to the required use concentration in accordance with label instructions. For food processing applications only food grade activator acids may be used. Bio-Cide International, Inc. or your ProOxine® distributor can guide you in proper activation techniques.

Activation and Dilution of ProOxine® Sanitizing Solutions

For each five (5) gallons of sanitizing solution measure the required volume of ProOxine® into a clean vessel in a well ventilated area. Add the required amount of activator acid, stir and allow to dissolve for five (5) minutes activation time for citric acid or two (2) minutes for phosphoric acid. Avoid breathing any fumes that may be produced. After the appropriate activation time, dilute with five (5) gallons of potable water.

<u>Concentration</u>	<u>Fluid Ounces of ProOxine® Per Five (5) gallons</u>	<u>Citric Acid Activator</u>
50 ppm	2/3 fl. oz.	1.0 tsp/5.0 grams
100 ppm	1 1/3 fl. oz.	2.0 tsp/10 grams
200 ppm	2 2/3 fl. oz.	4.0 tsp/20 grams

<u>Concentration</u>	<u>Fluid Ounces of ProOxine® Per Five (5) gallons</u>	<u>33% Phosphoric Activator</u>
50 ppm	2/3 fl. oz.	1/4 fl. oz/7.5 ml
100 ppm	1 1/3 fl. oz.	1/2 fl. oz/15 ml
200 ppm	2 2/3 fl. oz.	1.0 fl. oz/30 ml

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DIRECTIONS FOR USE:

IT IS A VIOLATION OF FEDERAL LAW TO USE THIS PRODUCT IN A MANNER INCONSISTENT WITH ITS LABELING.

IN FOOD PROCESSING PLANTS SUCH AS FISH, POULTRY, MEAT AND IN RESTAURANTS, DAIRIES, BOTTLING PLANTS AND BREWERIES:

AS A TERMINAL SANITIZING RINSE FOR STAINLESS STEEL AND OTHER HARD NONPOROUS FOOD CONTACT SURFACES SUCH AS TANKS, TRANSFER LINES, RECIRCULATION AND CLEAN IN PLACE (CIP) SYSTEMS AND OTHER FOOD PROCESSING EQUIPMENT IN ACCORDANCE WITH 40 CFR 180.940 (b) (c).

- 1) All gross food particles and soil should be removed prior to sanitizing by use of a pre-flush, pre-scrape or pre-soak treatment.
- 2) Clean tank, line or surface thoroughly using a suitable detergent and rinse with clean potable water before sanitizing.
- 3) Preparation of Sanitizing Solution. Prepare an activated working solution containing 50 to 200 ppm available chlorine dioxide according to the activation and dilution chart or by using automated activation equipment.
- 4) To apply: Fill, flush, immerse or spray tank, line, equipment or food contact surface with active solution making sure surface area is thoroughly wet for at least one (1) minute. After sanitizing, drain tank, line or equipment and allow to air dry. Fresh sanitizing solution should be made up daily or more often if solution becomes diluted or soiled.

FOR USE AS A SANITIZING SOLUTION ON FOOD BEVERAGE CONTAINERS

- 1) Preparation of Sanitizing Solution. Prepare an activated working solution containing 50 to 200 ppm available chlorine dioxide according to the activation and dilution chart or by using automated activation equipment.
- 2) To Apply: fill, flush, immerse, circulate, or spray sanitizing solution into the container and adequately drain before filling.

TO CONTROL THE BUILDUP OF ODOR AND SLIME FORMING BACTERIA IN PROCESS WATERS FOR VEGETABLE AND FRUIT RINSES AND ASSOCIATED TANKS, FLUMES AND LINES.

- 1) All tanks, flumes and lines etc., should be thoroughly cleaned when possible with a suitable detergent and completely rinsed using clean potable water prior to treatment.
- 2) Preparation of solution: Chill tanks, rinse tanks, flumes and lines may be batch loaded at start up; process waters should be treated by adding ProOxine[®] at five (5) ppm, available chlorine

dioxide to potable water (0.013 fl. oz. per gallon of process water). In order to insure accurate delivery a 1:25 dilution of the ProOxine® concentrate should be made and injected via a chemical feed pump or other injector at the feed rate of three and one quarter (3 ¼) fluid ounces per ten (10) gallons of process water maintained. Make up fresh solutions daily.

3) Optional activated solutions: If heavy use of process water is expected or if slime buildup is extreme, an activated solution of ProOxine® at five (5) ppm is recommended. Using Bio-Cide Activation Equipment activate ProOxine® to a dilute solution of less than 4000 ppm available chlorine dioxide and inject via a chemical feed pump or other injector at the feed rate of five (5) ppm per gallon of process water maintained. Make up fresh solution daily.

4) After treatment of fruits and vegetable follow with a potable water rinse.

NOTE: Chemical feed pumps and injectors must be chlorine dioxide resistant for best operation. Available chlorine dioxide levels should be confirmed using a Bio-Cide test kit or test strips, available from your local ProOxine® distributor.

FOR USE IN THE PREPARATION OF FRUITS AND VEGETABLES TO EXTEND FRESHNESS AND SHELF LIFE

PRE-TREATMENT FOR UNCUT, UNPEELED FRUITS AND VEGETABLES.

1) Before treatment, whole fruits and vegetables should be washed and thoroughly rinsed with clean potable water.

2) Preparation of solution: Chill tanks, rinse tanks, flumes and lines may be batch loaded at start up; process waters should be treated by adding ProOxine® at five (5) ppm, available chlorine dioxide to potable water (0.013 fl. oz. per gallon of process water). In order to insure accurate delivery a 1:25 dilution of the ProOxine® concentrate should be made and injected via a chemical feed pump or other injector at the feed rate of three and one quarter (3 ¼) fluid ounces per ten (10) gallons of process water maintained. Make up fresh solutions daily.

3) Dip product in treatment solution for about ten (10) to twenty (20) seconds, then follow with a potable water rinse.

4) Fruits and vegetables treated with chlorine dioxide must be blanched, cooked, or canned before consumption or distribution in commerce.

FOR USE AS A LUBE ADDITIVE TO CONTROL BACTERIAL SLIME AND ODOR ON MOVING CONVEYORS AND CHAINS IN FOOD PROCESSING FACILITIES.

1) Prior to beginning application of ProOxine® to the diluted lube mixture, all conveyors, lube lines, spray nozzle heads, conveyor surfaces, and other associated structures should be thoroughly cleaned and sanitized.

2) ProOxine® should be added to the water dilution step of the lube system just prior to its injection into the distribution system. Addition of ProOxine® into the lube/water mixture should

be at the rate of 0.25 fl. oz. to 0.50 fl. oz. per 10 gallons of diluted lube. This will result in a final ProOxine® concentration of between 10 and 20 ppm in the lube solution.

3) For best results use with natural (fatty acid, soap based) lubricant products. For advice on lube compatibility contact your BCI distributor.

TO DISINFECT WALLS, CEILINGS, AND FLOORS.

1) Before disinfection, all gross filth must be removed from areas to be disinfected and thoroughly cleaned with a suitable detergent followed by a clean, potable water rinse.

2) Preparation of active disinfecting solution (500 ppm ClO₂): Place 1 1/3 fl. oz. of ProOxine® concentrate per gallon of working solution into a clean, plastic pail and add 10 grams (2 teaspoons) of Bio-Cide Activator Crystals or food grade citric acid of no less than 99% purity. Prepare in a well ventilated area; avoid breathing any fumes which may be produced while crystals are dissolving. Allow five (5) minutes reaction time for crystals to dissolve completely. To this solution, add one (1) gallon of clean, potable water. This will yield a working solution containing 500 ppm of available chlorine dioxide.

3) To apply: Spray or fog disinfectant solution onto surface to be disinfected using a suitable spraying device and making sure that the area is thoroughly wet for at least ten (10) minutes. Active solutions may be irritating when breathed; therefore, always use an applicable NIOSH/MSHA approved respirator appropriate for chlorine dioxide when spraying or fogging these solutions. People must vacate the premises during fogging treatments; a one-hour restricted entry interval (REI) is required. After application, allow to air dry. Treat as required. Always apply freshly made solutions. Never reuse activated solutions.

Fogging is to be used as an adjunct to acceptable manual cleaning and disinfecting for room and environmental surfaces.

TO DISINFECT WALLS, CEILINGS AND FLOORS OF POULTRY PROCESSING PLANTS.

SPECIAL INSTRUCTIONS FOR INACTIVATING AVIAN INFLUENZA A.

KILLS AVIAN INFLUENZA A ON PRE-CLEANED ENVIRONMENTAL SURFACES.

1) Before disinfection, all gross filth must be removed from areas to be disinfected and thoroughly cleaned with a suitable detergent followed by a clean, potable water rinse.

2) Preparation of active disinfecting solution (500 ppm ClO₂): Place 1 1/3 fl. oz. of ProOxine® concentrate per gallon of working solution into a clean, plastic pail and add ten (10) grams (2 teaspoons) of Bio-Cide Activator Crystals or food grade citric acid of no less than 99% purity. Prepare in a well ventilated area; avoid breathing any fumes which may be produced while crystals are dissolving. Allow five (5) minutes reaction time for crystals to dissolve completely. To this solution, add one (1) gallon of clean, potable water. This will yield a working solution containing 500 ppm of available chlorine dioxide.

3) To apply: Spray disinfectant solution onto surface to be disinfected, using a suitable spraying device and making sure that the area is thoroughly wet for at least ten (10) minutes. Active solutions may be irritating when breathed, therefore, always use an applicable NIOSH/MSHA approved respirator appropriate for chlorine dioxide when spraying these solutions. After application allow to air dry. Treat as required. Never reuse activated solutions.

To sanitize clean shell eggs intended for food or food products.

1) Preparation of sanitizing solution: Prepare an activated working solution containing 100-200 ppm available chlorine dioxide according to the activation chart.

2) Spray eggs thoroughly with activated solution making sure surface area is thoroughly wet for at least one (1) minute and allow to drain. Solution must be equal to or warmer than the eggs, but not to exceed 130°F.

3) Eggs that have been sanitized with this chlorine dioxide compound may be broken in the manufacture of egg products without a prior potable water rinse. Eggs must be reasonably dry before casing or breaking. Never reuse activated solutions.

TO CONTROL THE BUILD-UP OF ODOR AND SLIME FORMING BACTERIA IN ICE MAKING PLANTS AND MACHINERY.

1) Ice making machinery should be disassembled and thoroughly cleaned using a suitable detergent followed by a potable water rinse.

2) Preparation and application of solution: The ProOxine[®] solution should be applied to the incoming water line of the ice machine via a chemical feed pump or injector system and proportioned at the rate of 6 fl. oz. per 100 gallons of potable water (20 ppm available ClO₂)

TO CONTROL ODOR AND SLIME FORMING BACTERIA IN COOLING AND WARMING WATERS, SUCH AS CANNING RETORT AND PASTEURIZER COOLING WATERS, USED TO DECREASE OR INCREASE PACKAGED PRODUCT TEMPERATURE BY IMMERSION IN OR BY SPRAYING WITH THE TREATED PROCESS WATERS.

1) All tanks, tunnels, conveyor chains, heat exchangers, heat exchange towers, lines, spray bars and nozzles should be thoroughly cleaned, when possible, and completely rinsed using clean, potable water prior to treatment.

2) Preparation of solution: Water systems including the cooling or warming tanks or spray systems, towers, lines and all water containing parts of the system may be batch loaded at start up with 12.8 fl. oz. ProOxine[®] per one thousand (1000) gallons of potable water (5.0 ppm available ClO₂). To maintain the 5.0 ppm available ClO₂ in the water system a timed or electronically controlled chemical feed pump or injector system can be used for additions to the system or for treating the make-up water. Make up new ProOxine[®] solutions daily. Optional activated solution: If heavy use of cooling or warming water, or introduction of additional bacteria loads is expected or if slime buildup is heavy, an additional activation step may be used in preparation of solution.

3) Preparation of activated solution: Prepare in a well ventilated area, avoid breathing any fumes which may be produced while crystals are dissolving. For each one thousand (1000) gallons of system water to be treated, measure out 12.8 fl. oz. of ProOxine[®] and pour into a clean plastic container, pail or drum. To this ProOxine[®] amount, add Bio-Cide Activator Crystals or food grade citric acid of no less than 99% purity, at the rate of 3.3 ounce (95 grams) crystals per 12.8 fl. oz. of ProOxine[®]. Allow five (5) minutes reaction time for crystals to dissolve. Cooling or warming water systems may be batch loaded at start up using 12.8 fl. oz. of the prepared solution per one thousand (1000) gallons of potable water (5.0 ppm available ClO₂). Batch or timed additions of the prepared solution can be made or an electronically controlled chemical feed pump or injector system can be used for additions of the prepared solution to the process water to maintain 5.0 ppm available ClO₂. Make up new ProOxine[®] solutions daily.

TO CONTROL ODOR AND SLIME FORMING BACTERIA BUILD-UP IN COMMERCIAL WATER FILTRATION SYSTEMS, SAND BEDS, GRAVEL BEDS AND CHARCOAL FILTERS WITH ACCESSIBLE SERVICE HATCHES.

1) Drain all existing water from sand and carbon filters and rinse once with clean, potable water. Fill sand filter with potable water and adjust pH of water to 6.0 using citric acid or equivalent pH adjuster.

2) To prepare solution: Measure out eight (8) fl. oz., of ProOxine[®] concentrate for each ten (10) gallons of filter system volume (300 PPM available ClO₂) and add to the sand filter through access hatch. Fill system with clean, potable water and circulate system 30 minutes. Allow system to soak two (2) to three (3) hours. After treatment, drain system and rinse with clean, potable water until residue is no longer detectable using the Bio-Cide test kit and when pH is normal.

TO CONTROL THE BUILD-UP OF ODOR AND SLIME FORMING BACTERIA IN STAINLESS STEEL TRANSFER LINES AND ON-LINE EQUIPMENT SUCH AS HYDRO-COOLERS, PASTEURIZERS AND THE LIKE OVERNIGHT AND OVER WEEKENDS.

1) Clean equipment or line thoroughly using a suitable detergent followed by a clean, potable water rinse before treatment.

2) Preparation and application of solution: For each ten (10) gallons of volume in lines and/or equipment, add 1/2 oz. of ProOxine[®] (20 PPM available ClO₂) to potable make up water. Mix and fill lines and equipment overnight. Drain and allow to air dry just prior to next run start-up.

FOR GREENHOUSE AND HORTICULTURAL APPLICATIONS

1) As an antimicrobial for water systems in horticultural applications.

i) For horticulture applications, this product may be used to disinfect and control biofilm in irrigation and non-potable water at concentrations between 0.25 and 2 ppm available chlorine dioxide. Concentrations and contact times are application specific.

ii) To prepare 100 gallons of use concentration at 2 ppm, mix 1/2 fl oz. of ProOxine[®] with 3.8 grams of citric acid in a plastic container, wait 5 minutes for activation and then dilute with 100 gallons of water.

2) General disinfectant, sanitizer, algacide, and fungicide for horticulture and greenhouse applications.

i) For horticulture applications, this product may be used to disinfect and sanitize hard, non-porous surfaces, to treat and prevent algae, fungus, bacteria, and biofilm at concentrations between 50 to 200 ppm available chlorine dioxide.

ii) To prepare 10 gallons of 200 ppm disinfectant solution, place 5 1/3 fl. oz. of ProOxine[®] in a plastic container and mix with 40 grams of citric acid. Wait 5 minutes for activation and then dilute into 10 gallons of water.

Alternatively, Bio-Cide International, Inc. automated activation equipment can also be used. Concentration and contact times are application specific. ~~See Product Bulletin for detailed directions and other application specifics.~~

FOR USE AS A SLIMICIDE IN PULP AND PAPER WHITEWATER SYSTEMS.

1) For initial start-up or for severe slime contamination ProOxine[®] should be prepared by the addition of one pound of citric acid activator per 50 gallons of ProOxine[®] or by addition of other suitable acid to adjust the ProOxine[®] solution to approximately pH 7.0.

2) The activated ProOxine[®] solution should then be proportioned into the whitewater system by means of a suitable metering pump at a continuous rate to produce an in-stream concentration of 1.25 - 5.0 ppm. This concentration is obtained by proportioning the

ProOxine[®] into the system at a rate of 3.2 -12.8 fluid ounces per 1,000 gallons of process water. The system should be monitored by use of a Bio-Cide International, Inc. Test Kit, or other suitable means and feed rate adjustments made accordingly. After slime control is established the ProOxine[®] feed rates may be lowered to maintain the desired level of slime control.

FOR ENCLOSED AND RECIRCULATING COOLING WATER SYSTEMS

1) Severely fouled systems should be cleaned prior to treatment.

2) For initial start-up or heavy microbial contamination ProOxine[®] should be added to the cooling water system at a rate of one gallon of ProOxine[®] per 10,000 gallons of system water.

This is equivalent to 5.0 ppm as available chlorine dioxide. Dosage should be repeated daily until microbial control is achieved.

3) When microbial contamination is under control the concentration and frequency of treatment may be reduced to levels adequate to maintain the desired level of microbial control.

FOR MICROBIAL CONTROL IN SWEETWATER COOLING SYSTEMS.

1) ProOxine[®] may be batch loaded or metered into sweetwater cooling systems at the rate of 13 fluid ounces per 1,000 gallons of sweetwater to produce an in stream concentration of 5.0 ppm

2) ProOxine[®] concentrations should be monitored using a Bio-Cide test kit to maintain a 5.0 ppm concentration.

IN ANIMAL REARING AND CONFINEMENT FACILITIES

TO DISINFECT COMMERCIAL ANIMAL CONFINEMENT FACILITIES SUCH AS POULTRY HOUSES, SWINE PENS, CALF BARNES AND KENNELS

1) Remove all animals and feed from premises, vehicles, enclosures, coops and crates.

2) Remove all litter and manure from floors, walls and surfaces of barns, pens, stalls, chutes and other facilities and fixtures occupied or traversed by animals.

3) Empty all troughs, racks and other feeding and watering appliances.

4) Thoroughly clean all surfaces with soap or detergent and rinse with water.

5) Preparation of active disinfecting solution (500 ppm ClO₂): Place 1 1/3 fl. oz. of ProOxine[®] concentrate per gallon of working solution into a clean, plastic pail and add ten (10) grams (2 teaspoons) of Bio-Cide Activator Crystals or food grade citric acid of no less than 99% purity. Prepare in a well ventilated area; avoid breathing any fumes which may be produced while crystals are dissolving. Allow five (5) minutes reaction time for crystals to dissolve completely. To this solution, add one (1) gallon of clean, potable water. This will yield a working solution containing 500 ppm of available chlorine dioxide.

6) To apply: Using commercial sprayer, saturate all surfaces with the activated ProOxine[®] solution for a period of ten (10) minutes. Active solutions may be irritating when breathed, therefore, always use an applicable NIOSH/MSHA approved respirator appropriate for chlorine dioxide when spraying these solutions. Immerse all halters, ropes, and other types of equipment used in handling and restraining animals as well as forks, shovels and scrapers used for removing litter and manure. After treatment, ventilate buildings, coops, or other enclosed spaces and allow to air dry. Repopulate only when solution has dried. Thoroughly scrub treated feed racks, troughs, automatic feeders, fountains and waterers with soap or detergent and rinse with potable water before use.

TO DISINFECT POULTRY HOUSES

Special Instructions for Inactivating Avian Influenza A.

Kills Avian Influenza A on pre-cleaned environmental surfaces.

- 1) Remove all poultry and feed from premises, vehicles, enclosures, coops and crates.
- 2) Remove all litter and droppings from floors, walls and surfaces of facilities and fixtures occupied or traversed by poultry.
- 3) Empty all troughs, racks and other feeding and watering appliances.
- 4) Thoroughly clean all surfaces with soap or detergent and rinse with water.
- 5) Preparation of active disinfecting solution (500 ppm ClO₂): Place 1 1/3 fl. oz. of ProOxine[®] concentrate per gallon of working solution into a clean, plastic pail and add ten (10) grams (2 teaspoons) of Bio-Cide Activator Crystals or food grade citric acid of no less than 99% purity. Prepare in a well ventilated area; avoid breathing any fumes which may be produced while crystals are dissolving. Allow five (5) minutes reaction time for crystals to dissolve completely. To this solution, add one (1) gallon of clean, potable water. This will yield a working solution containing 500 ppm of available chlorine dioxide.
- 6) To apply: Using commercial sprayer, saturate all surfaces with the activated ProOxine[®] solution for a period of ten (10) minutes. Active solutions may be irritating when breathed, therefore, always use an applicable NIOSH/MSHA approved respirator appropriate for chlorine dioxide when spraying these solutions. Immerse all equipment used in handling and restraining animals as well as forks, shovels and scrapers used for removing litter and droppings. After treatment, ventilate buildings, coops, or other enclosed spaces and allow to air dry. Repopulate only when solution has dried. Thoroughly scrub treated feed racks, troughs, automatic feeders, fountains and waterers with soap or detergent and rinse with potable water before use.

TO CONTROL THE BUILD-UP OF ODOR AND SLIME FORMING BACTERIA IN ANIMAL CONFINEMENT AREAS.

- 1) Remove all litter and manure from floors, walls and surfaces of barns, pens, stalls, chutes, cases and other facilities and fixtures occupied or traversed by animals. Thoroughly clean all surfaces with soap or detergent and rinse with clean water.
- 2) Preparation of solution: Place 2.6 fl. oz. ProOxine[®] concentrate into a clean, plastic container. Dilute concentrate with one (1) gallon clean, potable water.
- 3) To apply: Using a commercial sprayer, saturate all surfaces with the ProOxine[®] solution.

TO CONTROL THE BUILD UP OF SLIME AND ODOR CAUSING BACTERIA IN FEED WATERS.

- 1) Feed water should be treated at the rate of 0.4 fl. oz. ProOxine® per 30 gallons of water (5 ppm available chlorine dioxide) and may be injected or batch loaded.
- 2) Feed water storage tanks should be sufficiently sealed to prevent outside contamination and direct sunlight.

TO DISINFECT DRINKING WATER SUPPLY FOR POULTRY, SWINE, CATTLE AND OTHER LIVESTOCK:

i) Use Bio-Cide International, Inc. automated activation equipment to generate an aqueous chlorine dioxide solution. Alternatively, ProOxine® may be manually activated to generate an aqueous chlorine dioxide solution. The activated ProOxine® solution can be either batch loaded or metered into the poultry and drinking water supply at a point in the system which insures uniform mixing and distribution of up to 5 ppm chlorine dioxide

ii) **Automated Activation Equipment Method:** Bio-Cide International, Inc. automated activation equipment may be used to generate an aqueous chlorine dioxide solution for metering into the water supply to treat at 3 to 5 ppm activated ProOxine® concentration.

iii) **Manual Activation Method:** Activated ProOxine® concentrate may be prepared by manual mixing and subsequent dilution for treatment of the water supply at 3 to 5 ppm according to the activation and dilution charts.

For example, to manually prepare activated ProOxine® to treat 1,000 gallons of water at 3 ppm activated ProOxine®:

- 1. Preparation of active solution: Place 8 fl. oz of ProOxine® concentrate into a plastic container and add 60 grams of citric acid. Prepare in a well ventilated area. Avoid breathing any fumes while crystals are dissolving. Gently stir until citric acid crystals are completely dissolved. Allow five minutes reaction time.
- 2. The activated concentrate may then be added to 1,000 gallons of water. Allow ten minutes before delivery to livestock water lines.

FOR SANITIZING BEVERAGE, INDUSTRIAL AND ASSOCIATED TRANSFER LINES, TANKS, HEAT EXCHANGERS AND OTHER PROCESSING EQUIPMENT:

- 1) All equipment surfaces should be pre-cleaned prior to sanitizing.
- 2) Preparation of sanitizing solution. Prepare an activated working solution containing 50 to 250 ppm available chlorine dioxide according to the activation and dilution chart or by using automated activation equipment.
- 3) To apply: Fill, flush, immerse, or spray the, associated lines, and equipment with active solution making sure that surface is thoroughly wet for at least one (1) minute. After sanitizing the equipment should be drained prior to use.

TO CONTROL BACTERIA AND SLIME IN OIL WELLS AND PETROLEUM PRODUCING SYSTEMS

Prepare ProOxine® in a well ventilated area and avoid breathing any fumes which may be produced during activation.

- 1) Prepare a working solution of 5,000 ppm by diluting each gallon of ProOxine® to be used with nine (9) gallons of fresh water.
- 2) Reduce the pH of the working solutions to pH 2-3 with an inorganic acid such as phosphoric, hydrochloric, sulfuric or other equivalent acid to activate.
- 3) Proportion one (1) part of the above activated solution into each 150 parts of injection water.
- 4) Monitor microbial content of the water and increase or decrease the addition rate of the working solution as necessary.

**TO CONTROL THE SPREAD OF LATE BLIGHT, SOFT ROT, DRY ROT, SILVER SCURF, RING ROT, PINK ROT, BLACK SCURF AND OTHER TUBER DISEASE CAUSING ORGANISMS IN POTATO STORAGE SHEDS:
DO NOT DILUTE IF USING BIO-CIDE'S AUTOMATIC ACTIVATION NON-ELECTRIC (AANE) SYSTEM**

Dilution of ProOxine® to 2% Solution

For all potato applications, the 5% ProOxine® solution must be diluted to 2% solution prior to activation. Dilute 2 parts of ProOxine® with 3 parts of water to obtain a 2% solution. 2 gallons of ProOxine® + 3 gallons of water = 2% solution.

Activation of 2% Solution

Prior to application, the 2% solution must be activated by addition of a food grade acid in order to generate free chlorine dioxide. See below for directions on activation.

FOR THE TREATMENT OF WATER USED TO SPRAY OR RINSE POTATOES PRIOR TO STORAGE.

- 1) Activation:
For piling applications, activate 5 gallons of 2% solution with 25 oz. (1.6 lbs.) of citric acid (99% fine granular), or 7.5 fl. oz. of 75% phosphoric acid. Wait 30 minutes.
- 2) Dilution:
Dilute activated 2% solution to 400 ppm. 5 gallons of 2% solution + 250 gallons of water = 400 ppm solution.

- 3) Apply 400 ppm solution directly on tubers going into storage using any appropriate means such as spraying or misting. For small volume applications, refer to the Technical Data Sheet.

FOR THE TREATMENT OF HUMIDIFICATION WATER TO CONTROL TUBER DISEASE CAUSING ORGANISMS ON STORED POTATOES.

1) Activation:

For humidification applications, activate 5 gallons of 2% solution with 7.5 oz. (0.47 lbs.) of citric acid (99% fine granular), or 2.5 fl. oz. of 75% phosphoric acid. Wait 30 minutes.

2) Dilution:

Dilute activated 2% solution to 200 ppm. 5 gallons of 2% solution + 500 gallons of water = 200 ppm solution.

3) For continual treatment of high risk storage, an initial treatment up to 200 ppm may be added to the humidification as either a mist into the air stream, or as a fog directly into the plenums.

4) For the periodic treatment of storage with unknown risk, a treatment up to 200 ppm may be applied as either a mist into the air stream, or as a fog directly into the plenums.

5) To reduce the amount of water added to the storage during fogging treatments, concentrations of up to 400 ppm of activated product may be applied to the air streams.

Owners/operators of potato storage facilities must ensure adequate protection of workers and handlers, according to the following guidance.

PERSONAL PROTECTIVE EQUIPMENT

Personal protective equipment (PPE) that must be worn during mixer/loader task associated with pre-storage applications of ProOxine[®] includes: chemical-resistant gloves, goggles/face shield, and NIOSH approved canister/cartridge respirator rated for chlorine/acid gas vapors or specified for chlorine dioxide.

Chemical resistant gloves must be worn for all other handler activities in which the worker is placed in direct contact with either the wet treated potatoes (e.g., during inspection/disease monitoring in the storage shed) or the humidification water system/process water tank (during equipment cleaning/maintenance.)

RESTRICTIONS

Do not allow unprotected workers in the area to be exposed above the permissible exposure limit (PEL) of 0.1 ppm for an 8 hour time weighted average (TWA), or 0.3 ppm for any 15 minute short term exposure limit (STEL).

Avoid storing product under conditions in which it could evaporate to a crystalline salt.

All potatoes treated must have a potable rinse applied before further processing.

Avoid accidental contact with acids, chlorine compounds, hypochlorite (bleach), sulfur and sulfite compounds, phosphorus, organic solvents, and combustible/flammable materials. Exposure to acids or chlorine compounds can produce uncontrolled generation of chlorine dioxide. Do not allow chlorine dioxide to accumulate in confined spaces.

Waste water containing residual chlorine dioxide and its breakdown products like chlorite, chlorate, or chloride ions will not be transferred to public water ways but kept in an open pond or reservoir to go through aeration (which helps in the dissociation of chlorine dioxide) in the confines of the treatment facility and only discarded after the levels of these pesticides are equal to or lower than the ones recommended by EPA's Office of Water.

PRECAUTIONARY STATEMENTS

Hazards to Humans & Domestic Animals: CAUTION: Harmful if swallowed. Harmful if inhaled. Avoid breathing vapor or spray mist. Causes moderate eye irritation. Remove contaminated clothing and wash clothing before reuse. Wash thoroughly with soap and water after handling and before eating, drinking, and chewing gum, using tobacco or going to the restroom. Handlers applying chlorine dioxide in an occupational setting must wear gloves.

ENVIRONMENTAL HAZARDS

This pesticide is toxic to fish and aquatic invertebrates, oysters and shrimp. Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans or public 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 sewage treatment plant authority. For guidance, contact your State Water Board or Regional Office of the EPA.

NOTE: Chemical feed pumps and injectors must be chlorine resistant for best operation. Available ClO₂ levels should be confirmed using a Bio-Cide Test Kit, available from your local ProOxine[®] distributor.

STORAGE AND DISPOSAL

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

Storage: Store in a cool dark area in original container. Avoid storage in direct sunlight. In case of spill, flood with water before discarding to drain.

Pesticide Disposal: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

CONTAINER DISPOSAL: Nonrefillable Container.

{Text for nonrefillable containers that are 5 gallons or smaller}

Do not reuse or refill this container. Offer for recycling if available. Offer for reconditioning if appropriate. Triple rinse container, or equivalent, promptly after emptying.

Triple rinse as follows: Empty the remaining contents into applications equipment or a mix tank and drain for ten seconds after the flow begins to drip. Fill the container ¼ full with water and recap. 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 process two more times.

CONTAINER DISPOSAL: Nonrefillable Container.

{Text for nonrefillable containers that are larger than 5 gallons.}

Do not reuse or refill this container. Offer for recycling if available. Offer for reconditioning if appropriate. Triple rinse container, or equivalent, promptly after emptying.

Triple rinse as follows: Empty remaining contents into application equipment or mix tank. Fill the container ¼ full with water. Replace and tighten closures. Tip the container on its side and roll it back and forth, ensuring at least one complete revolution for 30 seconds. 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 process two more times.

CONTAINER DISPOSAL: Refillable Container.

{Text for refillable liquid containers}

Refill this container with [ProOxine®] [Supplemental distributor brand name] 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 the application equipment or mix tank. Fill the 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 this procedure two more times

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FIRST AID	
If inhaled	<ul style="list-style-type: none">- 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.
If on skin or clothing	<ul style="list-style-type: none">- 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 eyes	<ul style="list-style-type: none">- Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lens, if present, after the first 5 minutes, then continue rinsing eye.- Call a poison control center or doctor for treatment advice.
If swallowed	<ul style="list-style-type: none">- Call a poison control center or doctor immediately for treatment advice.- Have a 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.
	Have the product container or label with you when calling a poison control center or doctor or going for treatment. For 24 hour emergency information on this product call NPIC at 1-800-858-7378
	For 24 hour transportation emergency information on this product call Chemtrec at 1-800-424-9300 (U.S., Canada, Puerto Rico, Virgin Islands) 1-703-527-3887 (all other areas)