UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

OFFICE OF CHEMICAL SAFETY
AND POLLUTION PREVENTION

September 6, 2016

Scott C. Glynn
Chemist/Site Regulatory
International Dioxcide, Inc.
40 Whitecap Drive
North Kingstown, RI 02852

Subject: Notification per PRN 98-10 – Minor Label Changes
Product Name: Anthium Dioxcide
EPA Registration Number: 9150-2
Application Date: September 6, 2016
Decision Number: 521015

Dear Mr. Glynn:

The Agency is in receipt of your Application for Pesticide Notification under Pesticide Registration Notice (PRN) 98-10 for the above referenced product. The Antimicrobials Division (AD) has conducted a review of this request for its applicability under PRN 98-10 and finds that the action requested falls within the scope of PRN 98-10.

The label submitted with the application has been stamped "Notification" and will be placed in our records.

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

The alternate brand name "Anthium™ Dioxcide" has been added to the product record.

If you have any questions, you may contact Killian Swift at 703-308-6346 or via email at Swift.Killian@epa.gov.

Sincerely,

Demson Fuller, Product Manager 32
Regulatory Management Branch II
Antimicrobials Division (7510P)
Office of Pesticide Programs

Anthium™ Dioxcide

5% AQUEOUS STABILIZED CHLORINE DIOXIDE

Active Ingredient:	
Chlorine Dioxide	**5.0%**
Other Ingredients	**95.0%**
Total	**100.0%**

[Hospital Disinfectant]
[Food Contact Surface Sanitizer]
[Food Processing Water Sanitizer]
[Disinfectant]
[Sanitizer]
[Virucide]
[Tuberculocide]
[Hospital Use]
[Food Processing Water]
[No rinse Sanitizer Institutional Use]
[Non-Flammable]
[Eliminates Mold and Mildew]
[Mold and Mildew Control]
[Combats Mold and Mildew]
[Concentrated Broad Spectrum Biocide]
[Disinfect Animal Drinking Water Lines]
[Poultry Premise Sanitation]
[Animal Laboratory Disinfection]
[To Control Taste and Odor in the Water Supply System of Poultry, Swine, Cattle and Other Livestock]
[Disinfect water supply for poultry, swine, cattle, and other livestock]

NOTIFICATION
9150-2
The applicant has certified that no changes, other than those reported to the Agency have been made to the labeling. The Agency acknowledges this notification by letter dated:
09/06/2016

KEEP OUT OF REACH OF CHILDREN

CAUTION/PRECAUCIÓN

SEE SIDE PANELS FOR ADDITIONAL PRECAUTIONARY STATEMENTS
[See leaflet for additional directions for use]

First Aid
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. If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Removed contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice. If swallowed: Call 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 the 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 by mouth to mouth, if possible. Call a poison control center or doctor for further treatment advice
For 24 hour emergency information on this product call Chemtrec at 1-800-424-9300 (US, Canada, Puerto Rico, Virgin Islands) 1-703-527-3887 (All Other Areas) Medical Emergency 1-866-595-1473 (outside U.S. 302-773-2000)
[Hotline: You may also contact the National Poison Control Center at 1-800-222-1222 for Emergency Medical Advice.] Have the product container or label with you when calling a poison control center or doctor or going for treatment
Note to Physician: Probable mucosal damage may contraindicate the use of gastric lavage

E.P.A. REG. NO. 9150-2

E.P.A. EST. NO. XXXXXX-YY-ZZZ

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS

CAUTION: Causes moderate eye irritation. Harmful if swallowed or absorbed through the skin. Avoid contact with skin, eyes or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet.

ENVIRONMENTAL HAZARDS

This product is toxic to fish and aquatic organisms. 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.

CHEMICAL AND PHYSICAL HAZARDS

Chlorine dioxide is a strong oxidizing agent. Contamination with other materials such as acids, chlorine, organic chemicals, etc. may cause a chemical reaction resulting in evolution of chlorine dioxide and heat. Explosion and/or fire could result. Chlorine dioxide is a poisonous explosive gas. Keep all chemical and foreign materials away from this solution.

STORAGE AND DISPOSAL

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

PESTICIDE STORAGE: Do not store with easily oxidizable materials, acids, reducers, and combustible material. Avoid heat or freezing conditions. Store upright and do not stack drums over two high on pallets or partially filled drums. Use of a drum pump is suggested. Keep drum tightly closed when not withdrawing liquid. In case of spills, dilute with large quantities of water. Do not allow liquid to dry because this could present a fire hazard. Store only in the original container and take care to prevent cross-contamination with other pesticides, fertilizers, food and feed.

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

EMERGENCY HANDLING: In case of contamination or decomposition, do not reseal container. Isolate in open, well-ventilated area. Flood with large volumes of water. Cool unopened drums in vicinity by water spray.

NOTICE: Seller expressly warrants that the product conforms to its chemical description. There are no warranties associated with the sale of the product either express or implied, including but not limited to the warranties of fitness for a particular purpose or use.

KOSHER
Certified to NSF/ANSI
Max. Use Level 81 mg/L

Manufactured for:
INTERNATIONAL DIOXCIDE, INC.
40 Whitecap Drive, North Kingstown, RI 02852

USE INFORMATION

[Anthium™ Dioxcide is a specially designed formulation of chlorine dioxide and is a uniquely versatile biocide. It controls microbial contamination in animal research facilities, food-processing and industrial waters, pulp and papermaking processing waters and cutting oils†. It also disinfectants environmental surfaces in hospitals† and institutions and sanitizes food-contact surfaces†. Anthium™ Dioxcide is highly effective against mold† and mildew†.]

[Anthium™ Dioxcide delivers a non-corrosive disinfectant and cleaning performance in an economical concentrate.]

[Anthium™ Dioxcide meets AOAC efficacy standards for hospital disinfectants† and food-contact surface sanitizing solutions†.]

Anthium™ Dioxcide can be used in federally inspected meat and poultry plants as both a disinfectant and food-contact surface sanitizer†.

[The efficacy of **Anthium™ Dioxcide** depends on the degree of activation. Unactivated Anthium™ Dioxcide effectively controls microbes in processing waters and mold† and mildew†. For disinfection and sanitization, Anthium™ Dioxcide must be activated. Read the activation instructions carefully prior to using **Anthium™ Dioxcide**.]

[Anthium™ Dioxcide can be used to treat hard, non-porous surfaces and water systems in: hospitals†, medical and dental offices†, food processing facilities, bottling plants†, breweries†, meat-packing plants†, poultry-processing plants†, fish-processing plants†, food storage areas†, institutional kitchens†, dairy and poultry farms and production facilities, mushroom production facilities†, animal research facilities†, agricultural storage facilities (including containers†, trailers†, rail cars†, vessels and bins†), animal transport vehicles and equipment†, animal confinement and rearing facilities†, animal handling facilities, egg processing plants†, livestock facilities, hatcheries†, hotels, business and office buildings, institutional facilities, public facilities.]

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[Anthium™ Dioxcide is an effective disinfectant against the following bacteria at a 300 ppm activated use-solution of Anthium™ Dioxcide (~30 ppm free chlorine dioxide) in 10 minutes in the presence of 5% organic serum.

-Pseudomonas aeruginosa (Pseudomonas)
-Staphylococcus aureus (Staph)
-Salmonella enterica (Salmonella)]

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[Anthium™ Dioxcide is tuberculocidal† (effective against Mycobacterium bovis, BCG) at a 1200 ppm activated use-solution of Anthium™ Dioxcide (~200 ppm free chlorine dioxide) in 10 minutes at 20 deg C.]

[Anthium™ Dioxcide is an effective virucide† against the following viruses at a 800 ppm activated use-solution of Anthium™ Dioxcide (~100 ppm free chlorine dioxide) in 10 minutes, 15 minutes for Canine parvovirus ATCC VR-2017*.

- HIV-1 (AIDS Virus) HTLV-III_B *
- Canine parvovirus ATCC VR-2017*
- Rat coronavirus RCV-SDA-681 *
- Mouse hepatitis virus MHV-A59 *
- Minute virus of mice MVM-P *
- Parainfluenza virus, Type 1 ATCC VR-105 SENDAI/52*]

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[Anthium™ Dioxcide is an effective sanitizer† against Salmonella typhi at a 100-200 ppm activated use-solution of Anthium™ Dioxcide in 30 seconds.]

[An unactivated use-solution of 1000 ppm of **Anthium™ Dioxcide** effectively controls mold† and mildew† in 60 seconds.]

DIRECTIONS FOR USE

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling.

[† *Not approved for use in California*]

Preparation of Anthium™ Dioxcide Use-Solutions

[Disinfectant Use-Solution
Prepare an activated 300 ppm use-solution of Anthium™ Dioxcide by using one of the three procedures described below.

1. Add 1 part Anthium™ Dioxcide to 165 parts water and then adjust the pH of the diluted Anthium™ Dioxcide to 2.6 with acetic, citric, phosphoric, sulfuric, hydrochloric or other equivalent acid. Please contact your IDI or authorized representative regarding equivalent acids. Prepare in a well-ventilated area and avoid breathing any fumes which may be produced during activation.

Alternatively to minimize worker handling, an automated system can also be utilized that will safely activate the concentrate of Anthium™ Dioxcide with any of the various acids listed to deliver the proper pH and safety dilute the material to the 300 ppm working solutions.

2. Add 0.8 fl. oz. of Anthium™ Dioxcide to one (1) gallon of water into a clean plastic pail and add 1.2 grams of Activator C or 8.6 grams of Activator K. Allow 15 minutes reaction time and for the activator to completely dissolve. Prepare in a well-ventilated area and avoid breathing any fumes, which may be produced during activation.

3. An activated 300 ppm use-solution of Anthium™ Dioxcide can also be prepared electrolytically by adding Anthium™ Dioxcide directly to the OXYCHLOR® e-generator. For proper operation of the OXYCHLOR® e-generator, consult the OXYCHLOR® e-generator manual or your IDI or authorized representative.]

† **[Tuberculocidal Use-Solution**
Prepare an approximate 1200 ppm use-solution of Anthium™ Dioxcide (200 ppm of free chlorine dioxide)

by adding 1 part of Anthium™ Dioxcide into a clean, plastic pail and then add 5 parts of a 10% acid activator solution. The acid activator can be acetic, citric, phosphoric, sulfuric, hydrochloric, glycolic, or other equivalent acid. Please contact your IDI or authorized representative regarding equivalent acids. Allow 60 minutes for reaction time and for the activator to completely dissolve. Then dilute the activated solution with 36 parts of water. Prepare in a well-ventilated area and avoid breathing any fumes that may be produced during activation.]

† [**Virucidal Use-Solution***
Prepare an approximate 800 ppm use-solution of Anthium™ Dioxcide® (100 ppm of free chlorine dioxide) by adding 1 part of Anthium™ Dioxcide into a clean, plastic pail and then add 5 parts of the 10% acid activator solution. The acid activator can be acetic, citric, phosphoric, sulfuric, hydrochloric, glycolic, or other equivalent acid. Please contact your IDI or authorized representative regarding equivalent acids. Allow 15 minutes for reaction time and for the activator to completely dissolve. Then dilute the activated solution with 56 parts of water.]

† [**Food-Contact Surface Sanitizing Solution**
Prior to sanitization, remove all gross food particles and soil by use of a pre-flush, pre-scrape or pre-soak treatment.

Prepare a 200 ppm activated use-solution of Anthium™ Dioxcide by using one of the three procedures described below:

1. Add 1 part Anthium™ Dioxcide to 9 parts water and then activate by adding food-grade citric, phosphoric, acetic or other equivalent food-grade acid (of at least 99% purity) to a pH of 2.6. Please contact your IDI or authorized representative regarding equivalent acids. Agitate for 5 minutes and then allow to stand for 15 minutes. Then dilute 1 part of the activated solution with 24 parts of water.

Alternatively to minimize worker handling, an automated system can also be utilized that will safely activate the concentrate of Anthium™ Dioxcide with any of the various acids listed to deliver the proper pH and safety dilute the material to the 200 ppm working solutions.

2. Add 1 gallon of Anthium™ Dioxcide to 50 gallons of water followed by 780 grams (1.71 lbs.) of Activator K. Allow to stand for 15 minutes after agitation for 5 minutes and then dilute 1 part with 4 parts of water.

An electrolytically activated use-solution can be prepared by adding Anthium™ Dioxcide directly to the OXYCHLOR® e-generator. The activated use-solution prepared by the OXYCHLOR® e-generator must contain between 50-100 ppm of an activated use-solution of Anthium™ Dioxcide. For proper operation of the OXYCHLOR® e-generator, consult the OXYCHLOR® e-generator system manual or your IDI or authorized representative.]

† [**Non-Food Contact Surface Sanitizing Solution**
Prior to sanitization, remove all gross food particles and soil.

Prepare a 30 ppm activated use-solution of Anthium™ Dioxcide:
To 10 gallons of water add 0.76 oz. Anthium™ Dioxcide and 0.38 oz. sodium hypochlorite (6%) for a nominal 30 ppm solution. Adjust the pH to between 2.5 and 3.5 with acetic, citric, phosphoric, sulfuric, hydrochloric, glycolic or other suitable acid. Hold the solution for 15 minutes before applying. The efficiency of the conversion can be affected by the quality of the water. Conditions may be adjusted to accommodate the quality of the water.]

† [**Prepare a Non Food Contact Door Foam Sanitizer Solution:**
Using a dilution and delivery device, add Anthium™ Dioxcide at the rate of 0.76 oz. per 10 gallons of water, add sodium hypochlorite (6%) at the rate of 0.38 oz. per 10 gallons of water, followed by DuPont Foaming Activator at a rate of 0.38 oz. per 10 gallons of water. Hold the solution for 15 minutes before

spraying.]

† **[Mold & Mildew Use-Solution**
Prepare a 1000 ppm use-solution of Anthium™ Dioxcide, by placing 1 part Anthium™ Dioxcide per 50 parts working solution (1,000 ppm available chlorine dioxide) into a clean, plastic pail or drum. Dilute with clean, potable water.]

APPLICATION INSTRUCTIONS:

† [**FOOD PROCESSING PLANTS, FOOD-HANDLING ESTABLISHMENTS AND RESTAURANTS]**

† [Anthium™ Dioxcide can be used to:

- To control microbial contamination, slime and odor in food processing waters.
- To sanitize food processing equipment and surfaces in food processing and food-handling establishments.
- To sanitize food-contact surfaces and utensils in food-handling establishments.
- To disinfect non-food contact surfaces in food-processing plants, food handling establishments and restaurants.
- For use as a terminal food-contact surface sanitizer rinse conforming to 40 CFR 180.940 (b) and (c) Food Contact Surface Sanitizing Solutions.]

~~Dagger deleted~~ [**Specific Applications]**

† [Use Anthium™ Dioxcide to Extend Freshness and Shelf Life of Fruits and Vegetables
1. Before treatment, whole fruits and vegetables must be washed and thoroughly rinsed with clean, potable water.

2. In a one (1) gallon container, add 1/3 fl. oz. (10 ml) of Anthium™ Dioxcide and add 0.002 grams of Activator-C or adjust the pH to 2.6 with vinegar. Allow to stand for 15 minutes then add to 24 gallons of water.

3. Pretreatment for Uncut, Unpeeled Fruits and Vegetables: Dip uncut, unpeeled fruits and vegetables in treatment solution for about ten (10) to twenty (20) seconds, then follow with a potable water rinse.]

† [Use Anthium™ Dioxcide as a Terminal Sanitizing Rinse for Stainless Steel Tanks, Transfer Lines, On-line Equipment, Recirculating and Clean-in-Place (CIP) systems, Food-contact surfaces and similar surfaces, such as tables, trays, bins, etc., utensils and Food-Processing Equipment in Poultry, Meat, Fish & Meat Processing Plants, Dairies, Bottling Plants, Restaurants, Canneries and Breweries

1. Prior to sanitization, remove all gross food particles and soil by use of a pre-flush, pre-scrape or pre-soak treatment. Then clean all lines, tanks, or surfaces with a suitable detergent followed by a potable water rinse.

2. Prepare the Food-Contact Surface Sanitizing Solution as described above.

3. Fill, immerse, circulate, wipe or spray the target surface with the sanitizing solution making sure the surface area is thoroughly wet for at least one minute. Hard to reach in-place equipment, pipes, closed vessels, etc., must be filled with the sanitizing solution to ensure contact of all surfaces. Use suitable protective breathing apparatus when spraying the solution on external equipment.

4. Allow the sanitizing solution to drain from all treated surfaces and air dry. Do not rinse treated surface.

5. The above solution may not be reused for sanitizing but may be diluted to 1:5 with water and used for cleaning of walls, floors and drains of the plant.]

[Use Anthium™ Dioxcide in Food Processing Plants to Control the Build-Up of Odor and Slime Forming Bacteria in Stainless Steel Transfer Lines and On-Line Equipment Such as Hydrocoolers, 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 10 gallons of solution in lines and/or equipment, add 0.5 fl. oz. of Anthium™ Dioxcide (20 ppm available chlorine dioxide) 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.]

† [Use Anthium™ Dioxcide To Disinfect Non-Food Contact Surfaces (Walls, Ceilings, Drains and Floors) in Food Processing Plants and Food-Handling Establishments.

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. Prepare the Disinfectant Use-Solution as described above.

3. Apply the disinfectant use-solution to hard, non-porous surfaces, thoroughly wetting surfaces with a cloth, mop, sponge or sprayer, or by immersion. Treated surfaces must remain wet for 10 minutes. Wipe dry with a cloth, sponge or mop or allow to air dry. For heavily soiled surfaces, a pre-cleaning is recommended.

4. For sprayer applications, use a coarse spray device. Spray 6-8 inches from the surface rub with a brush, sponge or cloth. Do not breathe spray. Make sure that the area is thoroughly wet for at least ten (10) minutes. Active solutions may be irritating if inhaled; therefore, always use an applicable NIOSH/MSHA approved respirator appropriate for chlorine dioxide when spraying these solutions.

5. After application, allow to air dry. Treat as required. Always apply freshly made solutions. Never reuse activated solutions.]

† [Use Anthium™ Dioxcide To Control Mold & Mildew and Slime Forming Bacteria on Non-Food Contact Surfaces (Floors, Walls, Ceilings and Drains) in Food-Processing Plants and Food-Handling Establishments

1. Before treatment, all soil and gross filth must be removed from areas to be treated and cleaned with detergent followed by a potable water rinse.

2. Follow the directions for Mold & Mildew Use-Solution: as described above

3. Application: Drench or spray ~~or fog~~ solution on walls, floors, ceilings and surfaces using a suitable watering or spraying ~~or fogging~~ device and making sure all surface areas are wet. During application, area must be closed as tightly as possible and sealed. After spraying ~~or fogging,~~ the area must be opened and aired for one (1) hour before repopulating. Avoid breathing solution mist by use of an applicable NIOSH/MSHA respirator appropriate for chlorine dioxide. Avoid contact with food or food-contact surfaces. Allow to air dry.

4. Repeat application as needed.]

~~Dagger deleted~~ [SEAFOOD USE]

† [Use Anthium™ Dioxcide as a Bacteriostat for Treating Ice Used for Icing Fish in the Round

Anthium™ Dioxcide may be batch loaded or metered into makeup water used to produce ice for icing fish in the round. Prepare a non-activated working solution containing 20 ppm of available chlorine dioxide by adding 0.5 fl. oz. of Anthium™ Dioxcide to 10 gallons of water.]

[Use Anthium™ Dioxcide in Food Processing Plants to Control Odor and Slime Forming Bacteria in Cooling and Warming Waters Such as Canning Retort and Pasteurizer Cooling Water 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 must be thoroughly cleaned when possible, and completely rinsed using clean, potable water prior to treatment.

2. Preparation and Application of Use-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 13 fl. oz. Anthium™ Dioxcide per 1000 gallons potable water (5 ppm available chlorine dioxide). To maintain the 5 ppm available chlorine dioxide 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 Anthium™ Dioxcide solutions daily.

3. Preparation and Application of Optional Activated Use-Solution (acid activation): 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 the use-solution. Prepare the activated use-solution in a well-ventilated area and avoid breathing any fumes which may be produced while crystals are dissolving. For each one thousand (1,000) gallons of system water to be treated, measure 13 fl. oz. (0.4 liter) of Anthium™ Dioxcide and pour into a clean plastic container, pail or drum. To this Anthium™ Dioxcide amount, add food grade citric acid of no less than 99% purity, at the rate of 3.3 oz. (95 grams or 0.2 lbs.) of crystals 13 fl. oz. (0.4 liter) of Anthium™ Dioxcide. Allow five (5) minutes reaction time for crystals to dissolve. Cooling or warming water systems may be batch loaded at start up using 13 fl. oz. (0.4 liter) of the activated solution per one thousand (1,000) gallons of potable water (5 ppm available chlorine dioxide). Batch or timed additions of the activated solution can be made or an electronically controlled chemical feed pump or injector system can be used for additions of the activated solution to the process water to maintain 5 ppm available chlorine dioxide. Make up new Anthium™ Dioxcide solutions daily.

4. Preparation and Application of Optional Activated Use-Solution (Oxychlor® e-generator): An activated use-solution can also be prepared electrolytically by adding Anthium™ Dioxcide directly to the Oxychlor® e-generator. Add the activated use-solution prepared by the Oxychlor® e-generator to water systems, including cooling or warming tanks, or spray systems, tower lines and to all water containing parts of the system. Batch load these systems at start-up and maintain a concentration of 5 ppm available chlorine dioxide in the system. For proper operation of the Oxychlor® e-generator, consult the Oxychlor® e-generator system manual or your International Dioxcide representative.]

[Note: Chemical feed pumps and injectors must be chlorine resistant for best operation. Available chlorine dioxide levels must be confirmed using a chlorine dioxide test kit.]

† [Use Anthium™ Dioxcide To Sanitize Non-Food Contact Surfaces (Walls, Ceilings, Drains and Floors) in Food Processing Plants and Food-Handling Establishments.

1. Before sanitizing, all gross filth must be removed from areas to be sanitized and thoroughly cleaned with a suitable detergent.

2. Prepare the Non Food Contact Sanitizer Use-Solution as described above.

3. Apply the sanitizer use-solution to hard, non-porous surfaces, thoroughly wetting surfaces with a cloth, mop, sponge, or sprayer, or immersion. Treated surfaces must remain wet for one (1) minute. Wipe dry with a cloth, sponge or mop or allow to air dry. For heavily soiled surfaces, a pre-cleaning is

recommended.

4. For sprayer applications, use a coarse spray device. Spray 6-8 inches from the surface; rub with a brush, sponge or cloth. Do not breathe spray. Make sure that the area is thoroughly wet for at least one (1) minute. Active solutions may be irritating if inhaled; therefore, always use an applicable NIOSH/MSHA approved respirator appropriate for chlorine dioxide when spraying these solutions.

5. After application, allow to air dry. Treat as required. Always apply freshly made solutions. Never reuse activated solutions.]

† [Use Anthium™ Dioxcide to Control the Buildup of Odor and Slime Forming Bacteria in Process Waters for Vegetable Rinses and Associated Tanks, Flumes and Lines.

1. All tanks, flumes and lines must be thoroughly cleaned with a suitable detergent and completely rinsed using clean, potable water prior to treatment.

2. Preparation and Application of Use-Solution: Chill tanks or vegetable rinse tanks may be batch loaded at start- up with 1/3 fl. oz. (10 mls) Anthium™ Dioxcide per 25 gallons of potable water (5 ppm available chlorine dioxide). Make-up waters must be treated using a chemical feed pump or injector system and applied at the rate of 1/3 fl. oz. Anthium™ Dioxcide per 25 gallons potable water. Make up new Anthium™ Dioxcide solutions daily.

3. Preparation and Application of Optional Activated Use-Solution: If heavy use of rinse water is expected, or if slime buildup is extreme, an additional activation step may be used in preparation of solution. Prepare the activated use-solution in a well-ventilated area and avoid breathing any fumes which may be produced while crystals are dissolving. For each 1 gallons of rinse water to be used, measure 1/3 fl. oz. (10 ml) of Anthium™ Dioxcide and pour into a clean, plastic container containing 1 gallon of water. Activate this solution by:

3.1 Adding 0.002 grams of Activator-C or
3.2 Adding 2.2 grams of Activator K or
3.3 Adjusting the pH to 2.6 with acetic acid, citric acid, phosphoric acid, sulfuric acid or hydrochloric acid.

Allow this solution to stand for 15 minutes and then add to 24 gallons of water to give 5 ppm available chlorine dioxide. Chill tanks or vegetable rinse tanks may be batch loaded at start-up with the activated Anthium™ Dioxcide solution 1/3 fl. oz. (10 ml) per twenty-five (25) gallons of potable water (5 ppm available chlorine dioxide). Make-up waters must be treated using a chemical feed pump. In order to ensure accurate delivery, a 1 to 10 dilution of the active concentration must be made and the feed rate of 3 1/3 fl. oz. of activated Anthium™ Dioxcide solution per twenty-five (25) gallons must be maintained. Make up fresh Anthium™ Dioxcide solutions daily.

4. Preparation and Application of Optional Activated Use-Solution (Oxychlor® e-generator): An activated use-solution can also be prepared electrolytically by adding Anthium™ Dioxcide directly to the Oxychlor® e-generator. Add the activated use-solution prepared by the Oxychlor® e-generator to chill tanks or vegetable rinse tanks. Batch load these systems at start-up and maintain a concentration of 5 ppm available chlorine dioxide in the system. For proper operation of the Oxychlor® e-generator, consult the Oxychlor® e-generator system manual or your IDI representative.]

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[Note: Chemical feed pumps and injectors must be chlorine resistant for best operation. Available chlorine dioxide levels must be confirmed using a chlorine dioxide test kit.]

† [TRANSPORT VEHICLES

† To Disinfect Hard, Non-porous Surfaces in Vehicles Including Animal Transport Vehicles, Rail Cars, Trailers and Vessels. Active solutions may be irritating if inhaled; therefore, always use an applicable NIOSH/MSHA approved respirator appropriate for chlorine dioxide when spraying these solutions.

1. Prior to application of Anthium™ Dioxcide, clean all vehicles with high-pressure water and a suitable

detergent.

2. Follow directions for Disinfectant Use-Solution as described above.

3. Then apply the disinfectant use-solution to all surfaces to be treated. All treated surfaces must remain wet for at least 10 minutes.]

† [Use Anthium™ Dioxcide as a Non-Food Contact Door Foam Solution.

1. Prepare Non- Food Contact Door Foam Sanitizing Solution above.

2. Foam the generated solution on the surface to a depth of 1 inch minimum or onto the floor in the doorway to achieve complete wetting of equipment wheels.]

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† **[HOSPITALS, INSTITUTIONS, MEDICAL AND DENTAL CLINICS, and VETERINARY CLINICS.]**

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[Note: The Oxychlor® e-generator has not been tested against *Pseudomonas aeruginosa*. The Oxychlor® e-generator is not approved for use in hospitals, laboratories, morgues, and other institutions. This product is not to be used as a terminal sterilant/high level disinfectant on any surface or instrument that (1) is introduced directly into the human body, either into or in contact with the bloodstream or normally sterile areas of the body or (2) contacts intact mucous membranes but which does not ordinarily penetrate the blood barrier or otherwise enter normally sterile areas of the body. This product may be used to pre-clean or decontaminate critical or semi-critical medical devices prior to sterilization or high level disinfection.]

[Anthium™ Dioxcide can be used to:

- To disinfect environmental surfaces.
- To control mold and mildew on environmental surfaces.
- To control animal viruses on environmental surfaces.
- To control odor and slime forming bacteria.]

† [**Specific Applications]**

† [To Disinfect Walls, Ceilings and Floors and other Environmental Surfaces in Hospitals, Institutions Veterinary Clinics, and Animal Research Facilities

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. Prepare the Disinfectant Use-Solution as described above.

3. Apply the disinfectant use-solution to hard, non-porous surfaces, thoroughly wetting surfaces with a cloth, mop, sponge or sprayer, or by immersion. Treated surfaces must remain wet for 10 minutes. Wipe dry with a cloth, sponge or mop or allow to air dry. For heavily soiled surfaces, a pre-cleaning is recommended.

4. For sprayer applications, use a coarse spray device. Spray 6-8 inches from the surface rub with a brush, sponge or cloth. Do not breathe spray. Make sure that the area is thoroughly wet for at least ten (10) minutes. Active solutions may be irritating if inhaled; therefore, always use an applicable NIOSH/MSHA approved respirator appropriate for chlorine dioxide when spraying these solutions.

5. After application, allow to air dry. Treat as required. Always apply freshly made solutions. Never reuse activated solutions.]

[SPECIAL INSTRUCTIONS FOR CLEANING AND DECONTAMINATION AGAINST HIV OF SURFACES/ OBJECTS SOILED WITH BLOOD/BODY FLUIDS that involve healthcare settings or other settings in which there is an expected likelihood of soiling of inanimate surfaces/objects with blood or body fluids, and in which the surfaces/objects likely to be soiled with blood or body fluids can be associated with the potential for transmission of human immunodeficiency virus Type I (HIV-l) (associated with AIDS). Anthium™ Dioxcide destroys HIV-1 (AIDS Virus) HTLV-IIIB on precleaned environmental surfaces/objects previously soiled with blood or other body fluids in ten minutes contact

Personal Protection: The worker must wear protective equipment such as disposable latex or rubber gloves, gowns, masks and eye protection to prevent contamination from items soiled with blood or body fluids.

Cleaning Procedure: Blood and other body fluids must be thoroughly cleaned from surfaces and objects before application of Anthium™ Dioxcide.

Contact Time: Allow Anthium™ Dioxcide to contact treated items for 10 minutes to kill HIV-1. This time may not control other common types of viruses and bacteria.

Disposal of Infectious Material: Any blood and other body fluids must be autoclaved and disposed of according to federal, state and local regulations for infectious waste disposal.]

† [To Control Mold & Mildew and Slime Forming Bacteria on Walls, Floors, Ceilings, and Surfaces and other Environmental Surfaces

1. Before treatment, all soil and gross filth must be removed from areas to be treated and cleaned with detergent followed by a potable water rinse.

2. Follow the directions for Mold & Mildew Control Use-Solution as described above

3. Application: Drench or spray ~~or fog~~ solution on walls, floors, ceilings and surfaces using a suitable watering or spraying ~~or fogging~~ device and making sure all surface areas are wet. During application, area must be closed as tightly as possible and sealed. After spraying ~~or fogging,~~ the area must be opened and aired for one (1) hour before repopulating. Avoid breathing solution mist by use of an applicable NIOSH/MSHA respirator appropriate for chlorine dioxide. Avoid contact with food or food-contact surfaces. Allow to air dry.

4. Repeat application as needed.]

† [To Disinfect Non-Porous, Hard Surfaces Such as Glazed Tile Floors, Walls and Ceilings and Stainless Steel Cold Rooms and Walk-In Incubators

1. Clean all surfaces thoroughly with a suitable detergent and rinse with water prior to disinfection.

2. Follow the directions for Disinfectant Use-Solution as described above.

3. Application of Activated Disinfection-Solution: Activated solutions may be sprayed, mopped or sponged onto surfaces to be disinfected. All surfaces must be thoroughly wetted for at least ten (10) minutes. When spraying disinfectant solutions, use an appropriate spraying device. Active solutions may be irritating if inhaled; 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. Always apply freshly made solutions. Never reuse activated solutions.]

† [To Sanitize Non-Porous, Non Food Contact Hard Surfaces Such as Glazed Tile Floors, Walls and Ceilings and Stainless Steel Cold Rooms and Walk-In Incubators

1. Clean all surfaces thoroughly with a suitable detergent and rinse with water prior to sanitizing.

2. Follow the directions for Non Food Contact Sanitizer Use-Solution as described above.

3. Application of Activated Sanitizer-Solution: Activated solutions may be sprayed, mopped or sponged onto surfaces to be sanitized. All surfaces must be thoroughly wetted for at least one (1) minutes. When spraying sanitizer solutions, use an appropriate spraying device. Active solutions may be irritating if inhaled; 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. Always apply freshly made solutions. Never reuse activated solutions.]

† [For Use In Dental Offices and Laboratories as a Dental Pumice Disinfectant

1. Prepare solution in a well-ventilated area. To make one (1) liter of solution, pour 1/3 fl. oz. (approximately 10 mls.) of Anthium™ Dioxcide into a clean glass or plastic container. To this, add 2 ½ grams (1/2 teaspoon) of citric acid crystals (included) and mix slightly, allowing 5 minutes reaction time and for crystals to dissolve completely. Avoid breathing any fumes which may be produced during activation. Once solution has yellowed, diluted to one (1) liter with clean potable water, for a working solution of 500 ppm activated ClO2.

2. To apply: The working solution can be conveniently contained in a one (1) liter plastic "squeeze" bottle for up to five days. Apply to dry pumice powder exactly as water to produce the pumice slurry. Apply additional working solution as needed to reconstitute dried out slurry to appropriate viscosity. Anthium™ Dioxcide solutions must be made up fresh, preferably on Monday and discarded on Friday or 5 days after preparation.]

† [As a Virucide to Kill Animal Viruses (Rat Coronavirus RCV-SDA-681, Mouse Hepatitis Virus MHV-A59, Minute Virus of Mice MVM-P and Canine Parvovirus ATCC VR-2017) Parainfluenza Virus Type 1 ATCC VR-105 SENDAI/52, HIV-1 HTLV-IIIB) on Non-Porous, Hard Surfaces Such as Glazed Tile Floors, Walls and Ceilings and Stainless Steel Cold Rooms and Walk-In Incubators.

1. Clean all surfaces thoroughly with a suitable detergent and rinse with water prior to disinfection.

2. Follow the directions for Virucidal Use-Solution as described above.

3. Application of Activated Use-Solution: Activated solutions may be sprayed, mopped or sponged onto surfaces to be treated. All surfaces must be thoroughly wetted for at least ten (10) minutes (15 minutes contact time for canine parvovirus ATCC VR-2017). When spraying the virucidal solution, use an appropriate spraying device. Active solutions may be irritating if inhaled; 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. Always apply freshly made solutions. Never reuse activated solutions.]

† [To Disinfect Bench Tops, Biological Hoods, Incubators, Stainless Steel Equipment and Instruments.

1. Clean all surfaces thoroughly with a suitable detergent and rinse with water prior to disinfection.
2. Follow the directions for Disinfectant Use-Solution as described above
3. Application of Activated Use-Solution: Activated solutions may be squirted directly onto surfaces from a plastic squeeze bottle or may be used as a soak solution. All contact surfaces must be thoroughly wetted for at least ten (10) minutes. Allow to air dry. Activated solutions of Anthium™ Dioxcide, stored in plastic squirt bottles, may be held up to one (1) week before replacement with fresh solution. Soak solutions of Anthium™ Dioxcide must be changed daily.]

† [To Disinfect Surfaces of Water Baths and Tubs
1. Prior to disinfection, thoroughly clean the bath or tub with a suitable detergent and rinse with clean water.
2. Follow the directions for Disinfectant Use-Solution as described above.

3. To apply: Turn circulating motor on and allow the water to circulate for at least (10) minutes. Drain tub completely. After the draining is finished, tub is ready for use.]

† [To Disinfect Water Bath Incubators

1. Prior to disinfection, thoroughly clean the reservoir with a suitable detergent and rinse with clean water.

2. Follow the directions for Disinfectant Use-Solution as described above.

3. To apply: Activated solution must be poured into water bath reservoir and allowed to stand one (1) hour at room temperature. Drain reservoir and fill with fresh water.]

† [To Control Odor and Slime Forming Bacteria in Water Bath Incubators

1. When using Anthium™ Dioxcide in water bath incubators, always begin with a freshly cleaned and disinfected reservoir.

2. Application: Fill water bath with clean, potable water to near capacity. Add 0.13 fl. oz. Anthium™ Dioxcide for each ten (10) gallons of water or 1.0 ml to 1 liter water (50 ppm available chlorine dioxide). When water becomes cloudy, discard water and repeat procedure.]

† [To Control Odors Resulting from the Sterilization of Spent Biologicals in Steam Autoclaves

1. To reduce autoclave odors of used biologicals, Anthium™ Dioxcide must be sprayed or poured directly into the stainless steel autoclave buckets.

2. Preparation of Use-Solution: Place 2 2/3 fl. oz. Anthium™ Dioxcide per 1 gallon working solutions or 20 ml per 1 liter (1,000 ppm available chlorine dioxide) into a clean glass or plastic container and mix

3. Application: Spray or pour Anthium™ Dioxcide solution into or onto the autoclave buckets just prior to autoclaving.]

† [To Deodorize Animal Holding Rooms, Sick Rooms, Morgues and Work Rooms
Rooms to be deodorized must be in a clean condition prior to Anthium™ Dioxcide application.

1. Preparation of Use-Solution Place 2 2/3 fl. oz. Anthium™ Dioxcide per 1 gallon working solution or 20 ml per 1 liter (1,000 ppm available chlorine dioxide) into a clean glass or plastic container.

2. Application: Spray solution using a suitable spraying device onto walls, ceilings and floors, lightly dampening all surfaces. Avoid breathing mist of solutions by using an applicable NIOSH/MSHA approved respirator appropriate for chlorine dioxide. Allow to air dry, and then ventilate the area. Treat as required.]

[IN ANIMAL REARING & CONFINEMENT FACILITIES]

† [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 Use-Solution: Place 2 2/3 fl. oz. Anthium™ Dioxcide per 1 gallon working solution (1,000 ppm available chlorine dioxide) into a clean, plastic pail.

3. Application: Using a commercial sprayer; saturate all surfaces with the Anthium™ Dioxcide solution. When spraying Anthium™ Dioxcide solutions, always use an applicable NIOSH/MSHA approved respirator appropriate for chlorine dioxide to avoid breathing mist.]

[To Disinfect Hard, Non-Porous Surfaces In Commercial Animal Confinement Facilities such as Poultry Houses, Swine Pens, Calf Barns and Kennels and for use in Laboratory Animal Breeding and Research Quarters for Controlling Cross-Contamination of Microorganisms Infectious to these Animals and Humans from Treated Surfaces

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 and detergent and rinse with water.

5. Prepare an activated 300-400 ppm use-solution of Anthium™ Dioxcide: Add one ounce of Anthium Dioxcide® to one gallon of water. Once the Anthium™ Dioxcide has been diluted, add 0.5-1.0 oz. "DuPont™ AcidEdge™" per one gallon of solution OR 0.5-1.0oz "DuPont™ Acidic Cleaner – low foaming formula" per gallon of solution. Prepare in a well-ventilated area and avoid breathing any fumes which may be produced during activation.

5.1 One ounce of Anthium™ Dioxcide

5.2 One gallon of Water

5.3a To the solution of step 5.2. add 0.5 - 1oz. "DuPont™ AcidEdge™"

OR

5.3b 0.5 - 1.0oz "DuPont™ Acidic Cleaner – low foaming formula"

Always add Anthium™ Dioxcide to water. Followed by acidic cleaner.

6. Application: Using a commercial sprayer, saturate all surfaces with the activated Anthium Dioxcide® solution for a period of ten (10) minutes. Active solutions may be irritating if inhaled; 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.

7. After treatment, ventilate buildings, coops or other enclosed spaces and allow to air dry. Repopulate when solution has dried.

8. Thoroughly scrub treated feed racks, troughs, automatic feeders, fountains and waterers with soap or detergent and rinse with potable water before use.]

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† [To Control Animal Odors on Pets and in Litter Boxes, Carpets and Concrete Floors

1. For litter boxes: Wash out litter boxes with suitable detergent and rinse with clean, potable water. Soak overnight in solution of one (1) oz. Anthium™ Dioxcide per 2 ½ quarts of water (625 ppm available chlorine dioxide). Add litter, sprinkle surface liberally with Anthium™ Dioxcide solution.

2. For controlling odors in carpets: Add 1 ¼ oz. Anthium™ Dioxcide per 1 gallon (500 ppm available chlorine dioxide) of rug shampoo mix. Shampoo carpets. Allow to air dry. NOTE: Anthium™ Dioxcide may bleach some carpets and fabrics, especially if applied on top of another chemical agent. Do not apply until a sample test has been tried and observed for at least 24 hours.

3. For concrete floors: Clean floor thoroughly using a suitable detergent; rinse with clean water. Prepare solution by adding 3 ¼ oz. of Anthium™ Dioxcide per gallon of water (1,250 ppm available chlorine dioxide). Mop or spray solution liberally onto floor. Allow to air dry.

4. For animal baths: Wash animal well with appropriate pet shampoo; rinse with clean water. Prepare solution by adding ¼ oz. Anthium™ Dioxcide per gallon of water (100 ppm available chlorine dioxide). Rinse animal thoroughly with prepared solution. Allow to air dry. Avoid direct contact with animal's eyes, nose and ears.

5. For treating animal odors with high levels of ammonia: Wash area thoroughly with suitable detergent and rinse with clean water. Preparation of solution: For each gallon of solution place 1 2/3 oz. Anthium™ Dioxcide into a clean, plastic container. To this concentrate, add 1 tablespoon household bleach and allow to react for five (5) minutes. Dilute with 1 gallon of clean, potable water. Apply by mopping or spraying solution liberally onto area. Allow to air dry. Additional applications may be necessary.]

[~~removed dagger~~ To Sanitize Hard, Non-Porous Surfaces in Commercial Animal Confinement Facilities such as Poultry Houses, Swine Pens, Calf Barns and Kennels and for use in Laboratory Animal Breeding and Research Quarters for Controlling Cross-Contamination of Microorganisms Infectious to these Animals and Humans from Treated Surfaces.

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 and detergent and rinse with water.

5. Prepare a 30 ppm activated use-solution of Anthium™ Dioxcide: To 10 gallons of water add 0.76 oz. Anthium™ Dioxcide and 0.38 oz. sodium hypochlorite (6%) for a nominal 30 ppm solution. Adjust pH to between 2.5 and 3.5 with acetic, citric, phosphoric, sulfuric, hydrochloric, glycolic or other suitable acid. Hold the solution for 15 minutes before applying. Alternatively, the following cleaners can be used instead of acid: add 0.5 – 1.0 oz. "DuPont™ AcidEdge™" per gallon of solution or 0.5 – 1.0 oz. "DuPont™ Acidic Cleaner – low foaming formula" per gallon of solution. The efficiency of the conversion can be affected by the quality of water. Conditions may be adjusted to accommodate the quality of the water.

6. Application: Using a commercial sprayer, saturate all surfaces with the activated Anthium™ Dioxcide solution for a period of one (1) minute. Active solutions may be irritating if inhaled; 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.

7. After treatment, ventilate buildings, coops or other enclosed spaces and allow to air dry. Repopulate when solution has dried.
8. Thoroughly scrub treated feed racks, troughs, automatic feeders, fountains and waterers with soap or detergent and rinse with potable water before use.]

† [As a Virucide to Kill Animal Viruses (Rat Coronavirus RCV-SDA-681, Mouse Hepatitis Virus MHV-A59, Minute Virus of Mice MVM-P and Canine Parvovirus ATCC VR-2017) on Non-Porous, Hard Surfaces in Commercial Animal Confinement Facilities Such as Poultry Houses, Swine Pens, Calf Barns, and Kennels and in Laboratory Animal and Research Quarters

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 traversed by animals.
3. Empty all troughs, racks and other feeding and watering appliances.
4. Thoroughly clean all surfaces with soap and detergent and rinse with water.
5. Follow the directions for Virucidal Use-Solution as described above.
6. Application of Activated Use-Solution: Activated solutions may be sprayed, mopped or sponged onto surfaces to be treated. All surfaces must be thoroughly wetted for at least ten (10) minutes (15 minutes contact time for canine parvovirus ATCC VR-2017). When spraying virucidal solution, use an appropriate spraying device. Active solutions may be irritating if inhaled; 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. Always apply freshly made solutions. Never reuse activated solutions.
7. After treatment, ventilate buildings, coops or other enclosed spaces and allow to air dry. Repopulate when solution has dried.

8. Thoroughly scrub treated feed racks, troughs, automatic feeders, fountains and waterers with soap or detergent and rinse with potable water before use.]

.

† [To Control Mold & Mildew and Slime Forming Bacteria on Walls, Floors, Ceilings, Bins, Boxes, Pens, Barns, Kennels and other Animal Health Surfaces

1. Remove animals and feed from area to be treated

2. Before treatment, all soil and gross filth must be removed from areas to be treated and cleaned with detergent followed by a potable water rinse.

3. Follow the directions for Mold & Mildew Use-Solution as described above

4. Application: Drench or spray ~~or fog~~ solution on walls, floors, ceilings and surfaces using a suitable watering or spraying ~~or fogging~~ device and making sure all surface areas are wet. During application, area must be closed as tightly as possible and sealed. After spraying ~~or fogging,~~ the area must be opened and aired for one (1) hour before repopulating. Avoid breathing solution mist by use of an applicable NIOSH/MSHA respirator appropriate for chlorine dioxide. Avoid contact with food or food-contact surfaces.

5. Follow treatment with a potable water rinse

6. Repeat application as needed.]

† [**ANIMAL TRANSPORT VEHICLES]**

† [To Disinfect Hard, Non-Porous Surfaces in Vehicles Including Animal Transport Vehicles, Rail Cars, Trailers and Vessels. Active solutions may be irritating if inhaled; therefore, always use an applicable NIOSH/MSHA approved respirator appropriate for chlorine dioxide when spraying these solutions.

1. Prior to application of Anthium™ Dioxcide, clean all vehicles with high-pressure water and a suitable detergent.

2. Follow directions for Disinfectant Use-Solution as described above.

3. Then apply the disinfectant use-solution to all surfaces to be treated. All treated surfaces must remain wet for at least 10 minutes.]

~~Dagger deleted~~ [**TREATMENT OF WATER STORAGE SYSTEMS AND POTABLE WATER]**

† [To Disinfect Potable Water

For most municipal and other potable water systems, a chlorine dioxide residual concentration up to 2.0 ppm is sufficient to provide adequate disinfection. Typically, the target residual concentrations range from 0.20 – 0.75 ppm. Monitor the distribution system to ensure that the chlorite concentration does not exceed its maximum contaminant level (MCL) of 1 mg/L and that chlorine dioxide does not exceed its maximum residual disinfection level (MRDL) of 0.8 mg/L. For wastewater and sewage applications, residual chlorine dioxide concentrations up to 5.0 ppm are generally adequate.]

† [To Disinfect Water Storage Systems Aboard Aircraft, Trains, Buses, Boats, RV's, Off-Shore Oil Rigs, etc.

1. Prior to disinfection, tanks must be cleaned using a suitable detergent and thoroughly flushed with clean, potable water.

2. Follow the directions for Disinfectant Use-Solution as described above.

3. Pour activated solution into tank, filling the tank completely. Bleed air out of lines and allow to stand at least ten (10) minutes. Drain tank and lines and flush with potable water.]

† [To Control Build-Up of Slime and Odor Causing Bacteria and Enhance the Taste of Stored Potable Water

1. Prior to treatment of potable water, thoroughly clean and disinfect the water storage system to ensure a sanitary condition. Thoroughly rinse with clean, potable water.

2. Potable water must be treated at a rate of 1 fl. oz. of Anthium™ Dioxcide per 75 gallons potable water (5 ppm available chlorine dioxide) and may be injected or batch treated.

3. Water storage tank must be sufficiently sealed to prevent outside contamination and direct sunlight.]

† [Using a chlorine dioxide test kit, confirm the chlorine dioxide to be 5 ppm and check to see this level does not fall below 1 ppm.]

† [To Help Remove Off-Odors and Tastes from Municipal Well Waters

1. Anthium Dioxcide® must be injected into the incoming water main using a chemical proportioning pump, or injector, at a rate of one 1 fl. oz. Anthium™ Dioxcide per 375 gallons water (1 ppm available chlorine dioxide).
2. Confirm pump or injector accuracy using a chlorine dioxide test kit and adjust accordingly.

3. Anthium Dioxcide® levels must be checked weekly.]

† [**INDUSTRIAL WATER SYSTEMS AND INDUSTRIAL BIOCIDE USE]**

† [TO INHIBIT THE GROWTH OF SLIME AND ODOR CAUSING BACTERIA IN WATER BASED CUTTING OILS

1. Batch Method - Add 32 oz. of Anthium™ Dioxcide per thousand gallons to fresh system and repeat weekly or on first indication of increased bacterial contamination (odor, slime, bacterial count). Alkaline systems may require higher concentration of Anthium™ Dioxcide.

2. Continuous Method - Proportion in 2 gallons of Anthium™ Dioxcide per million gallons per day used in the system. Alkaline systems may require higher concentration.

3. Badly Contaminated Systems - Slug dose system with 10 gallons of Anthium Dioxcide® per million gallons of cutting oil. Then start the continuous procedure described above.]

† [TO INHIBIT BACTERIAL SLIME FORMING BACTERIAL BUILDUP IN COMMERCIAL WATER FILTRATION SYSTEMS, SAND BEDS, GRAVEL BEDS, CHARCOAL FILTERS AND COOLING WATER SYSTEMS.
Filters:

1. Carefully back-flush filters with potable water, where possible, to remove any accumulated solid residue and contamination.

2. Fill system with potable water and adjust pH to 6.0 with citric acid, phosphoric acid, or acetic acid (vinegar) or equivalent.

3. Add 0.8 fl. oz. of Anthium™ Dioxcide per 1 gallon of (300 ppm of available chlorine dioxide) of filter system volume to the access hatch and circulate the system for 1 hour. Check the pH and bring back to 6.0 if it has drifted. Bring the available chlorine dioxide concentration back to 300 ppm.

4. Circulate the solution for 1 additional hour, discharge and then water wash for 30 minutes with potable water to remove the chlorine dioxide.]

† [For Enclosed And Recirculating Cooling Water Systems
1. Add 1 – 4 gallons of Anthium™ Dioxcide per 10,000 gallons of cooling water (5-20 ppm of available chlorine dioxide) every week.
2. Depending on the degree and type of contamination, addition frequency may be reduced to every 2-3 weeks when contamination is under control.
3. For very high levels of microbial contamination of the cooling water, add an activated solution to the cooling water. First, dilute one part Anthium™ Dioxcide with 9 parts of water and follow with acidification to a pH of 2.6 with phosphoric, citric or acetic acid. This forms an activated solution of 5,000 ppm available chlorine dioxide. Dilute the 5,000 ppm activated solution to the indicated feed solution ppm in the table below by selecting the desired concentration in cooling water. Then add the feed solution to cooling water at a rate of 1 part of feed solution to 13 parts of cooling water.

Desired Concentration – Available Chlorine Dioxide – Cooling Water	Feed Solution – Available Chlorine Dioxide (ppm)	Dilution – Activated Solution
5 ppm	70	1:70
10 ppm	140	1:35
15 ppm	210	1:23
20 ppm	280	1:17

4. Alternatively, an activated use-solution can be prepared electrolytically by adding Anthium™ Dioxcide directly to the Oxychlor® e- generator. Add the activated use-solution to the cooling water system so that a concentration of 5-20 ppm available chlorine dioxide is achieved. For proper operation of the Oxychlor® e- generator, consult the Oxychlor® e- generator manual or your International Dioxcide, Inc. representative.]

† [AS A SLIMICIDE IN PAPER MILLS TO PREVENT SLIME, TAR SPOTS, AND PITCH SPOTS IN WHITE WATER SYSTEMS
By maintaining a chlorine dioxide concentration in the white water, the microorganisms cannot produce the nodules which result in slime.

1. If the pH of the white water is below 7.0, add 4 ½ gallons of Anthium™ Dioxcide per hundred tons of paper produced.

2. If the pH of the white water is above 7.0, then add ½ gallon of 5% sodium hypochlorite as an activator with each 4 1/2 gallons of Anthium™ Dioxcide.

Continuous proportioning of the Anthium™ Dioxcide feed is recommended for best results. In many cases, the amount can be reduced after the system is clean.]

† [TO PREVENT CORROSION AND SLIME BACTERIA IN OIL WELLS DURING SECONDARY RECOVERY OPERATIONS

1. Prepare a working solution of 5,000 ppm of available chlorine dioxide by diluting each gallon of Anthium™ Dioxcide used to 10 gallons of solution with the injection water.

2. Proportion 1 part of the above solution into each 150 parts of reinjected acidified (3.0 - 4.0 pH) water.

3. Monitor microbial content of the water and increase or decrease the addition rate of the working solution as necessary.]

† [FOR CONTROL OF MOLLUSKS IN ONCE THROUGH WATER COOLING SYSTEMS AND INTAKES

1. Add 4 gallons of Anthium™ Dioxcide to 100 gallons of water and add 1 lb. of Activator-C (or 6.9 lbs. of Activator K) to the solution with mild stirring for 15 minutes. This produces an activated solution containing 2,000 ppm available chlorine dioxide. (Use respirator approved for chlorine dioxide).

2. As an alternate activation method, reduce the pH of the above solution to 3.0 with a mineral or organic acid and allow to slowly stir for ½ hour before use.

SLUG DOSE: Add between 2.5 gallons and 12.5 gallons of the above solution per 1,000 gallons of water (5-25 ppm of available chlorine dioxide).

CONTINUOUS DOSE: Add between 0.125 gallons and 1 gallon of the above solution per 1,000 gallons of water (0.25 to 2.0 ppm of available chlorine dioxide).]

† [MUSHROOM FACILITIES
Anthium™ Dioxcide can be used in mushroom facilities such as mushroom production, spawn production, mushroom processing and cannery operations:

- As a food-contact surface sanitizer.
- To disinfect non-food contact surfaces.
- To sanitize non-food contact surfaces.
- To control mold and mildew on environmental surfaces.]

† [Irrigation Water
Dilute 1 part Anthium™ Dioxcide with 1000 parts water to obtain optimum deodorizing and whitening effects in irrigation water. This solution is designed to be added to irrigation water to control odors and whiten product growing in plastic or stainless steel vessels.]

† [As An Area Deodorizer
Dilute 1 part Anthium™ Dioxcide with 20 parts water to obtain optimum deodorizing effects. To eliminate gaseous malodors, spray or mist until odor disappears. Three (3) seconds of spraying ~~or fogging~~ is need for each 1500 cu. feet. ~~Where a fogging is used in very large areas, set device to run 1-2 minutes each hour or less as area is cleared of malodors.~~ Avoid breathing solution mist by use of an applicable NIOSH/MSHA respirator appropriate for chlorine dioxide.

† For Deodorizing Sludge Waste Pile or Land Areas
Spray until surface is well saturated. Repeat daily or upon reoccurrence of odor.]

~~Removed dagger~~ [**Specific Applications]**

† [Use Anthium™ Dioxcide as a Terminal Sanitizing Rinse for Stainless Steel Tanks, Transfer Lines, On-line Equipment, Picking Baskets, Picking Utensils and Other Food Contact Surfaces

1. All gross food particles and soil must be removed prior to sanitizing by use of a pre-flush, pre-scrape or pre-soak treatment.

2. Clean picking baskets, line equipment or other surfaces thoroughly using a suitable detergent and rinse with water before sanitizing.

3. Follow instructions for Food-Contact Surface Sanitizing Solution as described above.

4. Application: Flush picking baskets, line equipment or other food-contact surfaces with the sanitizing solution making sure surface area is thoroughly wet for at least one (1) minute. After sanitizing, drain baskets or equipment and allow to air dry. Treat after each use or production run. Discard solution after each use.

5. Optional Activated Use-Solution (Oxychlor® e-generator) An activated use-solution can also be prepared electrolytically by adding Anthium™ Dioxcide directly to the Oxychlor® e-generator. The activated use-solution prepared by the Oxychlor® e-generator must contain between 50-100 ppm of total

available chlorine dioxide. For proper operation of the Oxychlor® e-generator, consult the Oxychlor® e-generator system manual or your IDI representative.]

† [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. Follow the directions for Disinfectant Use-Solution as described above.
3. Application: Spray disinfectant solution onto surface 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 if inhaled; 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. Always apply freshly made solutions. Never reuse activated solutions.]

† [To Sanitize Walls, Ceilings and Floors

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

2. Follow the directions for Sanitizer Use-Solution as described above.

3. Application: Spray sanitizer solution onto surface 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 if inhaled; 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. Always apply freshly made solutions. Never reuse activated solutions.]

† [To Control Mold and Slime Forming Bacteria on Walls, Floors, Ceilings, and Post-Crop Mushroom Growing Surfaces

1. Before treatment, all soil and gross filth must be removed from areas to be treated and cleaned with detergent followed by a potable water rinse.

2. Preparation of Use-Solution: Place 2 2/3 fl. oz. Anthium™ Dioxcide per 1 gallon working solution (1,000 ppm available chlorine dioxide) into a clean, plastic pail or drum and dilute with clean, potable water.

3. Application: Drench or spray ~~or fog~~ solution on walls, floors, ceilings and post-crop mushroom growing surfaces using a suitable watering or spraying ~~or fogging~~ device and making sure all surface areas are wet.
During application, area must be closed as tightly as possible and sealed. After spraying ~~or fogging~~, the area must be opened and aired for one (1) hour before repopulating. Avoid breathing solution mist by use of an applicable NIOSH/MSHA respirator appropriate for chlorine dioxide. Avoid contact with food or food-contact surfaces. Allow to air dry.

4. Repeat application as needed.]

~~Removed dagger~~ **[POULTRY]**

† [**To Treat Poultry Chiller Water]**

† [To Control Bacteria, Taste and Odor in the Water Supply System

1. If the water supply is badly fouled with biofilm, then add 5 ppm of available chlorine dioxide to the water supply by adding 1 gallon of Anthium™ Dioxcide to each 10,000 gallons of poultry drinking water.

2. After 24 hours, the addition rate can be reduced to 1 ppm of available chlorine dioxide by adding 1 gallon Anthium™ Dioxcide to each 50,000 gallons of poultry drinking or cooling comfort water.

3. If the microbiological content of the water is eliminated by this rate of addition, the concentration of available chlorine dioxide can be reduced to 0.5 ppm (1 gallon of Anthium™ Dioxcide per 100,000 gallons of water); if the microbiological control is not adequate at 1 ppm available chlorine dioxide, then add 1.5 ppm of available chlorine dioxide to the poultry drinking or cooling comfort water (1 gallon of Anthium™ Dioxcide per 33,333 gallons of water).]

A. † [Anthium™ Dioxcide Plus Chlorine

In order to control the microorganism population in poultry chiller water, target the addition of available chlorine dioxide at 20-40 ppm level so that a residual of 0.5-3 ppm is measured in the exiting chilled water.

This is easily accomplished by activating Anthium™ Dioxcide, a mixture of oxychlorine species capable of generating 95%+ of chlorine dioxide, with chlorine which is already available in all poultry chiller water systems. The feed rates of the various streams are set forth below for the reactants, chlorine and Anthium™ Dioxcide.

PPM ClO_2	ANTHIUM™ DIOXCIDE FEED RATE	Cl_2 FEED RATE LBS./GAL	Cl_2 PPM
20	0.4 gal/1000 gal H_2O	0.0083	10
30	0.6 gal/1000 gal H_2O	0.01245	15
40	0.8 gal/1000 gal H_2O	0.0166	20

]

b. † [Anthium™ Dioxcide Plus Acid

This antimicrobial agent may be used as a component of (1) a carcass spray or dip solution prior to immersion of the carcass in a rechiller or chiller tank or (2) in a prechiller or chiller solution.

1. When used as a carcass sprays or dip solution, dilute 1 gallon of Anthium™ Dioxcide to 70 gallons with water. The solution is then acidified to a pH between 2.5 and 2.9 with an acid selected from the following acids: phosphoric, citric, acetic, hydrochloric, lactic, malic or sulfuric.

2. When used in a prechiller or chiller tank, Anthium™ Dioxcide is diluted 1:700 (i.e. 1 gallon of Anthium™ Dioxcide diluted to 700 gallons with water). This solution is activated by addition of an acid such as phosphoric, citric, acetic, hydrochloric, lactic, malic or sulfuric to a pH of between 2.8 to 3.2.

3. As an alternate activation method, the Oxychlor® e- system may be used to generate 700 ppm available chlorine dioxide solution for a carcass spray or dip solution or 70 ppm for use in the prechiller. For proper operation of the Oxychlor® e-generator, consult the Oxychlor® e-generator manual or your IDI representative.]

[ANIMAL REARING AND CONFINEMENT FACILITIES

To Disinfect Waterlines and Associated Fixtures in Animal Confinement Facilities such as Poultry Houses, Swine Pens, Calf Barns and Kennels When Animals are not Present

1. Remove all animals from premises.

2. Drain Waterlines and watering appliances.

3. Prepare an activated 300 ppm use-solution of Anthium™ Dioxcide by:

3.A. Injection Using Metering Equipment: Add Anthium™ Dioxcide at the rate of 1 part to 165 parts water. Once the Anthium™ Dioxcide has been diluted; inject 0.5 – 1.0 oz. per gallon "DuPont™ AcidEdge™" or 0.5 – 1.0 oz. per gallon "DuPont™ Acidic Cleaner – low foaming formula".

3.B. Header Tank: Add 0.8 ounces of Anthium™ Dioxcide per gallon of water in a clean plastic header tank sufficient to refill water lines to deliver 300 ppm. Thoroughly mix solution, and then add 0.5 – 1.0 oz. per gallon "DuPont™ AcidEdge™" or 0.5 – 1.0 oz. per gallon "DuPont™ Acidic Cleaner – low foaming formula". Trigger each nipple drinker to ensure contact with solution.

4. Turn on water supply or open filling valve to fill entire drinking water supply. Allow solution to remain in water lines for 4-8 hours.

5. Drain waterlines and flush with clean water]

[DRINKING WATER FOR POULTRY, SWINE, CATTLE, AND OTHER LIVESTOCK.

To Control Taste and Odor in the Water Supply System

1. Prepare a solution with 5 ppm available chlorine dioxide by adding 1 part of Anthium™ Dioxcide per 10,000 parts of water (a 1:10,000 dilution) (1 fl. oz. Anthium™ Dioxcide to each 75 gallons). Allow 15 minutes before delivery to livestock or poultry.

2. If the water supply has heavy contamination prepare a solution of 11 ppm available chlorine dioxide by adding 1 part of Anthium™ Dioxcide per 4545 parts of water (a 1:4545 dilution) (1 fl. oz. Anthium™ Dioxcide to each 35.5 gallons). Allow 15 minutes before delivery to livestock or poultry.

3. After 24 hours, the addition rate can be reduced to 1 ppm of available chlorine dioxide by adding 1 gallon of Anthium™ Dioxcide to each 50,000 gallons of animal drinking water as long as terminal concentration at end of waterline is not less than 0.5 ppm.

4. Treat water continuously from day one. Remove Anthium™ Dioxcide from drinking water 24 hours prior to vaccination, then resume treatment 24 hours after vaccinations. Note: This product is not intended for use in human drinking water and treated water must not be made available for human consumption.]

[Anthium™ Dioxcide has proven effectiveness as an animal drinking water disinfectant, at 2 ppm chlorine dioxide, using AOAC Method 965.13 against the following pathogens:

Salmonella enterica serovar Enteritidis [ATCC #13076], in 30 seconds
Campylobacter jejuni [ATCC # 29428], in 15 seconds
Clostridium perfringens (vegetative cells) [ATCC # 13124], in 30 seconds
E. coli (APEC, avian pathogenic E. coli group) [ATCC # 8739], in 30 seconds]

† [**To Disinfect Drinking Water Supply for Poultry, Swine, Cattle and Other Livestock**
Use Anthium™ Dioxcide with a chlorine dioxide generator to generate an aqueous chlorine dioxide solution. The chlorine dioxide generator reacts Anthium™ Dioxcide with either a chlorine solution and acid or an acid. The generated chlorine dioxide solution can be added at a point in the system which ensures uniform mixing and distribution of up to 5 ppm of chlorine dioxide.

Follow all instructions for the chlorine dioxide generator carefully. Always prepare and use chlorine dioxide solutions in a well-ventilated area. Treat water continuously from day one. Remove Anthium™ Dioxcide from drinking water 24 hours prior to vaccination, then resume treatment 24 hours after vaccinations.

Chlorine Dioxide Treatment Rate	Parts Anthium™ Dioxcide stabilized chlorine dioxide solution (volume)	Parts of 12.5% bleach-sodium hypochlorite solution (volume)	Parts Dilution Water (volume)
5 ppm	1 (1 oz.)	3 to 8 (3 to 8 oz.)	10,000 (80 gallons)
2 ppm	1 (1 oz.)	3 to 8 (3 to 8 oz.)	30,000 (240 gallons)

1 ppm	1 (1 oz.)	3 to 8 (3 to 8 oz.)	50,000 (400 gallons)

Use the table immediately above to determine the required quantity of Anthium™ Dioxcide, co-feed chemicals, and final dilution volume.

Note: This is not intended for use in human drinking water and treated water must not be made available for human consumption.]

[To Disinfect Drinking Water Supply for Poultry, Swine, Cattle and Other Livestock
Use Anthium™ Dioxcide with a chlorine dioxide generator to generate an aqueous chlorine dioxide solution. Alternatively, Anthium™ Dioxcide can be mixed manually to generate an aqueous chlorine dioxide solution. The chlorine dioxide generator and manual mixing methods react Anthium™ Dioxcide with either a chlorine solution and acid or an acid. The generated chlorine dioxide solution can be added at a point in the system which ensures uniform mixing and distribution of up to 5 ppm of chlorine dioxide.

Follow all instructions for the chlorine dioxide generator carefully. Always prepare and use chlorine dioxide solutions in a well-ventilated area. Treat water continuously from day one. Remove Anthium™ Dioxcide from drinking water 24 hours prior to vaccination, then resume treatment 24 hours after vaccinations.

Note: This is not intended for use in human drinking water and treated water must not be made available for human consumption.]

[1. Manual Mixing Method A

A. Add 1 part Anthium™ Dioxcide to 9 parts water.
B. Activate by adding phosphoric, hydrochloric, acetic or other food grade acid to a pH of 2.5-3.5.
C. Mix and allow to stand for at least 15 minutes before delivery to livestock water lines.
D. Then dilute 1 part of the activated solution (from preceding step “C”) with 1,000 to 5,000 parts water for a 1 to 5 ppm chlorine dioxide solution.

Chlorine Dioxide Treatment Rate	Parts Dilution Water (volume)
5 ppm	1000 (8 gallons)
2 ppm	3000 (24 gallons)
1 ppm	5000 (40 gallons)

]

[2. Manual Mixing Method B

Chlorine Dioxide Treatment Rate	Parts Anthium™ Dioxcide stabilized chlorine dioxide solution (volume)	Parts of 12.5% bleach-sodium hypochlorite solution (volume)	Parts Dilution Water (volume)
5 ppm	1 (1 oz.)	3 to 8 (3 to 8 oz.)	10,000 (80 gallons)
2 ppm	1 (1 oz.)	3 to 8 (3 to 8 oz.)	30,000 (240 gallons)
1 ppm	1 (1 oz.)	3 to 8 (3 to 8 oz.)	50,000 (400 gallons)

Use the table immediately above to determine the required quantity of Anthium Dioxcide®, co-feed chemicals, and final dilution volume.

A. Dilute the Anthium™ Dioxcide into water.
B. Add 2-5 ppm sodium hypochlorite; 3 – 8 parts of 12.5% bleach followed by final dilution into 10,000 to 50,000 parts water.
C. Using an appropriate acid, add sufficient acid to lower solution pH to 5.0 to 6.5
D. Allow 15 minutes before delivery to livestock water supply

E. After 24 hours, the addition rate can be reduced to 1 ppm chlorine dioxide as long as terminal concentration at the end of the water supply is not less than 0.5 ppm.]

† [**To Disinfect Water Supply for Human Potable Water plus Poultry, Swine, Cattle and Other Livestock – *Not For Public Water Supply Systems***

Use Anthium™ Dioxcide with a chlorine dioxide generator to generate an aqueous chlorine dioxide solution. The chlorine dioxide generator reacts Anthium™ Dioxcide with a chlorine solution and acid. The generated chlorine dioxide solution can be added at a point in the system which ensures uniform mixing.

Daily monitoring for chlorine dioxide at point of addition is required. Water must be in contact with the chlorine dioxide for a minimum of 5 minutes in order to achieve satisfactory disinfection.

The user of the Anthium™ Dioxcide must also consult and contact State, local or primary human drinking water program authorities to determine the specific monitoring, compliance, reporting, and record keeping requirements in order to avoid adverse human health effects and/or non-compliance with such regulations.

Monitor the distribution system to ensure that the chlorite concentration does not exceed its maximum contaminant level (MCL) of 1.0 mg/L and that chlorine dioxide does not exceed its maximum residual disinfectant level (MRDL) of 0.8 mg/L.

For a 1 ppm chlorine dioxide solution:

1. Add 1 part Anthium™ Dioxcide to 50,000 parts water; approximately 1.0 fl. oz. Anthium Dioxcide® per 400 gallons of water. Use more water for lower chlorine dioxide concentrations.
2. Add 2-5 ppm sodium hypochlorite; 3 – 8 parts of 12.5% bleach to 10,000 parts water.
3. Using an appropriate acid add sufficient acid to lower solution pH to 5.0 to 6.5.
4. Allow 15 minutes before delivery to livestock water lines.
5. After 24 hours, the addition rate can be reduced to 1 ppm of available chlorine dioxide by adding 1.0 fl. oz. of Anthium™ Dioxcide to approximately 400 gallons of animal drinking water as long as terminal concentration at the end of the water line is not less than 0.5 ppm.]

† [To Prevent Cross Contamination From Area to Area in Animal Areas and Storage Areas of Food Plants, Dip Pre-Washed (Plastic, Latex or Other Synthetic Rubber) Non-Porous Gloved Hands in a Suitable Clean Container That Has Enough Freshly-Made Sanitizing Solution to the Gloved Area.]

† [To Control Bacteria and Odor in the Egg Room

1. Wash down the entire egg room with high pressure water containing 20 ppm of available chlorine dioxide (0.4 gallons Anthium™ Dioxcide diluted to 1,000 gallons with water) to remove gross filth or heavy soil.

~~2. Spray the entire area for 5 minutes with a Tri-Jet Fogmaster (or equivalent) with a 1,000 ppm solution of available chlorine dioxide (1 gallon Anthium™ Dioxcide diluted to 50 gallons with water), being sure to cover walls, ceiling, floors, work tables and benches. Allow to dry for 1 hour or if possible overnight before resuming operations.~~

The washing ~~and fogging~~ operations must be conducted once per week (or more frequently in cases of heavy contamination during operations).

3. If it is necessary to clean the floors by mopping, then use 390 ppm of available chlorine dioxide (1 oz. Anthium™ Dioxcide per gallon water). Allow to dry on the floor.

4. A shoe or boot bath of 1,000 ppm of available chlorine dioxide (1 gallon Anthium™ Dioxcide per 50 gallons water) is placed at the entrance to the egg room. Doors to the room must be kept closed at all times.

5. A glove dip, or rinse tank or basin, containing 50 ppm of available chlorine dioxide (1 gallon Anthium™ Dioxcide per 1000 gallons water) is used on entering and exiting the room.

Both the shoe and boot bath and glove dip must be replaced daily (sooner if traffic is heavy).

6. Humidification water is treated with 40 ppm of available chlorine dioxide (0.8 gallon of Anthium™ Dioxcide per 1000 gallons water) to prevent the build-up and airborne spread of odor-causing microorganisms.

7. Provide 20 ppm of available chlorine dioxide (0.4 gallon Anthium™ Dioxcide per 1,000 gallons water) to the water supply in the egg washing machine.]

† [To Control Odor and Bacteria when Separating Chicks in the Chick Room, Chick Grading Box and Sexing Room

1. Remove all poultry and feeds from premises, trucks, coops and crates.

2. Remove all litter and droppings from floors, walls and surfaces of facilities 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. Spray ~~or fog~~ the entire area for 5 minutes with a 1,000 ppm solution of available chlorine dioxide (1 gallon Anthium™ Dioxcide to 50 gallons with water)~~, using a Tri-Jet Fogmaster (or equivalent)~~. Allow a 10 minute contact time.

6. Ventilate buildings, coops and other closed spaces. Do not house poultry or employ equipment until treatment has been absorbed, set or dried.

7. Thoroughly scrub treated feed racks, troughs, automatic feeders, fountains and waterers with soap or detergent, and rinse with potable water before reuse.

8. All workers in this area must use a hand dip or rinse containing 50 ppm of available chlorine dioxide (1 gallon Anthium™ Dioxcide diluted to 1000 gallons with water).

9. After use, wash area with high-pressure water to remove gross filth and soil.

10. Use a spray bottle containing a solution of 1,000 ppm of available chlorine dioxide (1 gallon Anthium™ Dioxcide diluted to 50 gallons with water), on hands, wire mesh and in empty chick boxes to control contamination and odors from litter.

11. To clean the floor by mopping daily, use a solution containing 390 ppm of available chlorine dioxide (1 oz. Anthium™ Dioxcide per gallon water). Allow to air dry.]

† [To Control Bacteria and Odor in the Incubator Room

1. The area is sprayed ~~or fogged~~ at least once per week for 5 minutes with a 1,000 ppm solution of available chlorine dioxide (1 gallon Anthium™ Dioxcide diluted to 50 gallons with water), after removing gross filth or soil with a high pressure water wash. Wet all surfaces and allow to dry.

2. The floor must be mopped daily with a solution containing 390 ppm of available chlorine dioxide (1 oz. of Anthium™ Dioxcide diluted to 1 gallon with water).

3. A shoe and boot bath containing 1,000 ppm of available chlorine dioxide (1 gallon Anthium™ Dioxcide diluted to 50 gallons with water) must be placed at all entrances to the incubator room.

4. 20 ppm of available chlorine dioxide (0.4 gallon Anthium™ Dioxcide diluted to 1,000 gallons with water) is added to water in the humidification system or the air filters are sprayed with a 100 ppm solution of available chlorine dioxide (1 gallon Anthium™ Dioxcide diluted to 500 gallons with water) to reduce

airborne bacterial contamination.

5. Each time the eggs are removed from the incubator, a prior glove dip at 50 ppm solution of available chlorine dioxide (1 gallon Anthium™ Dioxcide diluted to 1000 gallons with water) is recommended, followed by a spray of 1,000 ppm solution of available chlorine dioxide (1 gallon Anthium™ Dioxcide diluted to 50 gallons with water) on the eggs from a spray bottle.

6. Where containers are used to discard bad eggs, 2 oz. of Anthium™ Dioxcide per quart of water (3,125 ppm of available chlorine dioxide) will control obnoxious odors and bacterial contamination.

The doors to the area must be kept closed as much as possible to avoid airborne contamination.]

† [To Prevent Airborne and Surface Contamination of the Hatchery from the Tray Washing Room and Loading Platform

1. Close all doors in the tray washing room to avoid contamination of other hatchery operations. Discard all chick downs, egg shells, and cast-off chicks into the trash barrels and transfer the covered containers to the loading platform for disposal.

2. Wash the trays, carriages and other working equipment in a tray washing machine with 300-500 psi water to remove gross filth and soil.

3. As a final rinse in the tray washing machine, use a solution containing 20 ppm of available chlorine dioxide (0.4 gallon of Anthium™ Dioxcide diluted to 1,000gallons with water) in high pressure water. Allow the trays, carriers and other working equipment to air dry. The walls, floors and carrying stands must also be sanitized with the same solution. Allow the equipment to air dry. Hold the sanitized equipment in a closed area for reuse.

4. Entrance and exit from the tray washing room must be through a foot rinse containing a solution of 1,000 ppm of available chlorine dioxide (1 gallon Anthium™ Dioxcide diluted to 50 gallons with water). The rinse must be at least ½ inch deep and must be changed daily unless traffic is heavy.

5. After use, the tray washing room is washed with high pressure water to remove gross filth and soil. It is then decontaminated by spraying ~~or fogging~~ with a solution containing 1,000 ppm of available chlorine dioxide (1 gallon of Anthium™ Dioxcide diluted to 50 gallons with water) for 15 minutes and allowed to air dry. This treatment is repeated after each use of the tray wash room.

6. The Loading Platform is washed from time to time to remove gross filth and soil. The trash containers are washed after discarding the contents to remove gross filth and soil. They are then sprayed with a 1,000 ppm solution of available chlorine dioxide (1 gallon Anthium™ Dioxcide diluted to 50 gallons with water) and stored.]

† [To Control Bacteria and Odor in the Hatching Area

1. As soon as chicks are separated from Hatch, remove all trash containers with eggshells, down, etc. from the hatching area.

2. Remove all poultry and feeds from premises, trucks, coops and crates.

3. Remove all litter and droppings from floors, walls and surfaces of facilities occupied or traversed by poultry.

4. Empty all troughs, racks and other feeding and watering appliances.

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

6. Spray ~~or fog~~ the entire area for 5 minutes with a 1,000 ppm solution of available chlorine dioxide (1

gallon Anthium™ Dioxcide to 50 gallons with water)~~, using a Tri-Jet Fogmaster (or equivalent)~~. Allow a 10 minute contact time.

7. Ventilate buildings, coops, and other closed spaces. Do not house poultry or employ equipment until treatment has been absorbed, set or dried.

8. Thoroughly scrub treated feed racks, troughs, automatic feeders, fountains and waterers with soap or detergent, and rinse with potable water before reuse.

9.All workers in this area must use a hand dip or rinse containing 50 ppm of available chlorine dioxide (1 gallon Anthium™ Dioxcide diluted to 1000 gallons with water).]

† [Ventilation Systems
To treat non-porous hard surfaces for odor causing bacteria associated with ventilation and air conditioning duct work in residential, commercial, and institutional situations. Prior to inspecting, cleaning, treating or working on a ventilation system of its components, the system must be turned off or disconnected from any part of the system not isolated.

1. Mechanically clean, vacuum, or blow free of dirt, dust, mold and debris all duct work using a commercial duct cleaning system or service prior to treatment. The air ducts to be treated must be mechanically sound and free of air leaks.

2. Preparation of Activated Use-Solution: Add 1 part Anthium™ Dioxcide to 100 parts water then adjust the pH of the diluted Anthium™ Dioxcide to 2.6 with acetic, citric, phosphoric, sulfuric, hydrochloric or other equivalent acid. Please contact your IDI or authorized representative regarding equivalent acids. Prepare in a well-ventilated area and avoid breathing any fumes which may be produced during activation. Always use an applicable NIOSH/MSHA approved respirator appropriate for chlorine dioxide when spraying ~~or fogging~~ these solutions. After application, allow to air dry. Protective eyewear is recommended.

3. Application of Activated Solution: Activated solutions may be sprayed ~~or fogged~~ into duct work. All surfaces must be thoroughly wetted for at least ten (10) minutes. When spraying ~~or fogging~~, use an appropriate spraying ~~or fogging~~ device. Spray application is the preferred method on large surfaces that are easily accessed by removing entry plates or access panels. The selected spray equipment must provide a consistent particle size (1-300 microns) and a uniform spray pattern using a 0.011" spray lip. Avoid excess wetting but be certain coverage is complete on the tops, sides and bottoms of the unlined sheet metal air ducts. ~~Fogging application is preferable to areas of the air ducts that are less accessible. Equipment capable of generating 15 to 60 microns will generally treat an area 8 feet away from fogging generator. Avoid using thermal type fog generators.~~ All preexisting or treatment created access panels must be properly resealed or replaced in accordance with Industry Standards after servicing. During application, area must be closed as tightly as possible and sealed. After spraying ~~or fogging~~, the area must be opened and aired for one (1) hour before re-entry. Active solutions may be irritating if inhaled. Treat as required. Always apply freshly made solutions. Never reuse activated solutions.]