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.

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.

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 top is suggested. Keep drum tightly closed when not withdrawing liquid. In case of spill, 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: Waste resulting from the use of this product may be disposed of on-site or at an approved waste disposal facility.

CONTAINER DISPOSAL: Nonrefillable container. Do not reuse or refill this container.

Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its 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.

USE INFORMATION

Anthium Dioxide® 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 disinfects environmental surfaces in hospitals and institutions and sanitizes food-contact surfaces. Anthium Dioxide® is highly effective against mold and mildew.

Anthium Dioxide® delivers a non-corrosive disinfectant and cleaning performance in an economical concentrate.

Anthium Dioxide® meets ADAC efficacy standards for hospital disinfectants and food-contact surface sanitizing solutions.

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

The efficacy of Anthium Dioxide® depends on the degree of activation. Unactivated Anthium Dioxide® effectively controls microbes in processing waters and mold and mildew. For disinfection and sanitation, Anthium Dioxide® must be activated. Read the activation instructions carefully prior to using Anthium Dioxide®.

Anthium Dioxide® 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

ANTHIMUM DIOXIDE®
5% AQUEOUS STABILIZED CHLORINE DIOXIDE


ACTIVE INGREDIENT: Chlorine Dioxide 5%
Other Ingredients 95%

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 advice.
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. 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. 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 and 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 1-800-424-5300 (US, Canada, Puerto Rico, Virgin Islands) 1-703-527-3887 (All Other Areas) Medical Emergency 1-800-441-3367 (Outside U.S. 302-771-1000)

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.

KEEP OUT OF REACH OF CHILDREN

CAUTION / CAUTION

SEE SIDE PANELS FOR ADDITIONAL PRECAUTIONARY STATEMENTS

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E.P.A. REG. NO. 10182-MI-01
confinement and rearing facilities, animal handling facilities, egg processing plants, livestock facilities, hatcheries, hotels, business and office buildings, institutional facilities, public facilities.

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

- *Pseudomonas aeruginosa* (Pseudomonas)
- *Staphylococcus aureus* (Staph)
- *Salmoneella enterica* (Salmoneella)

**Antimium Diocidos** is an effective virucide against *Mycobacterium brunensis, BCG* at a 1200 ppm activated-use solution of Antimium Diocidos (200 ppm free chlorine dioxide) in 10 minutes at 20 deg C.

**Antimium Diocidos** is an effective virucide against the following viruses at a 800 ppm activated-use solution of Antimium Diocidos (100 ppm free chlorine dioxide) in 10 minutes, 15 minutes for *Canine parvovirus ATCC VR-2077*, 15 minutes for *HIV-1 (AIDS Virus)* K1T28-II, 15 minutes for *Canine parvovirus ATCC VR-2077*, 15 minutes for *Mouse hepatitis virus MHV-A59*, 15 minutes for *Rat parvovirus RVD-987*, 15 minutes for *Parainfluenza virus, Type 1 ATCC VR-105 SENSE02*, 15 minutes for *Antimium Diocidos* in 30 minutes.

An unactivated-use solution of 100 ppm of Antimium Diocidos effectivly controls mold and mildew in 20 days.

**DIRECTIONS FOR USE**

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

**Preparation of Antimium Diocidos Use-Solutions**

**Disinfectant Use-Solution**

Prepare an activated 300 ppm use-solution of Antimium Diocidos by using one of the three procedures described below.

1. Add 1 part Antimium Diocidos to 105 parts water and then adjust the pH of the diluted Antimium Diocidos to 2.6 with acetic, citric, phosphoric, sulfuric, hydrochloric or other equivalent acid. Please contact your ID or authorized representative regarding equivalent acids. Prepare in a well-ventilated area and avoid breathing any fumes which may be produced during activation.

2. Add 0.8 fl. oz. of Antimium Diocidos to one (1) gallon of water into a clean plastic pail and add 1.2 grams of Activator C or 8.8 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 Antimium Diocidos can also be prepared electrolytically by adding Antimium Diocidos directly to the OXYCHLOR® e-generator. For proper operation of the OXYCHLOR® e-generator, consult the OXYCHLOR® e-generator manual or your ID or authorized representative.

**Tubercocidal Use-Solution**

Prepare an approximate 1200 ppm use-solution of Antimium Diocidos (200 ppm of free chlorine dioxide) by adding 1 part of Antimium Diocidos 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 ID 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 36 parts of water. Prepare in a well-ventilated area and avoid breathing any fumes that may be produced during activation.

**Food-Contact Surface Sanitizing Solution**

Prepare a 200 ppm activated-use solution of Antimium Diocidos by using one of the three procedures described below.

1. Add 1 part Antimium Diocidos to 9 parts water and then activate by adding food-grade citric, phosphoric, acetic or other equivalent food-grade acid (or at least 95% purity) to a pH of 2.6. Please contact your ID or authorized representative regarding equivalent acids. Agitate for 3 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 Antimium Diocidos with any of the various acids listed to deliver the proper pH and safely dilute the material to the 200 ppm working solutions.

2. Add 1 gallon of Antimium Diocidos to 50 gallons of water followed by 785 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.

3. An electrolytically activated use-solution can be prepared by adding Antimium Diocidos 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 Antimium Diocidos. For proper operation of the OXYCHLOR® e-generator, consult the OXYCHLOR® e-generator manual or your ID 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 Antimium Diocidos.

To 10 gallons of water add 0.76 oz. Antimium Diocidos and 0.38 oz. sodium hypochlorite (6%) for a nominal 30 ppm solution. Adjust the pH to between 2.5 and 2.6 with acetic, citric, phosphoric, sulfuric, hydrochloric, glycolic or other equivalent 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 Direct Foam Sanitizing Solution:

Using a dilution and delivery device, add Antimium Diocidos at the rate of 0.06 oz. per 10 gallons of water, add sodium hypochlorite (6%) at the rate of 0.30 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 Antimium Diocidos by placing 1 part Antimium Diocidos per 50 parts working solution (1,000 ppm available chlorine dioxide) into a clean, plastic pail or drum. Dilute with clean, potable water.

**APPLICATIONS INSTRUCTIONS:**

**FOOD PROCESSING PLANTS, FOOD-HANDLING ESTABLISHMENTS AND RESTAURANTS**

Antimium Diocidos 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 handing establishments and restaurants.
- For use as a terminal food-contact surface sanitizer rinse conforming to 40 CFR 190.140 (b) and (c) Food Contact Surface Sanitizing Solutions.

**Specific Applications**

**Use Antimium Diocidos to Extend Freshness and Shelf Life of Fruits and Vegetables**

1. Before treatment, while fruits and vegetables must be washed and thoroughly rinsed with clean, potable water.

2. In a one (1) gallon container, add 10/12 fl. oz. (110 ml) of Antimium Diocidos and add 0.002 grams of Activator C or adjust the pH to 2.5 with maple syrup. Allow to stand for 15 minutes and then add 24 gallons of water.

**Preparation for Fruits and Vegetables**

Drop uncut, unpeeled fruits and vegetables in treatment solution for about ten (10) to twenty (20) seconds, then follow with a potable water rinse.

**Use Antimium Diocidos as a Terminal Sanitizing Rinse for Stainless Steel Tanks, Transfer Lines, De-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 Products, Dairies, Bottling Plants, Restaurants, Canners and Breweries.**

1. Prior to sanitization, remove all gross food particles and soil by use of a pre-flush, pre-scape or pre-scrub 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.
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.

Antimicrobial® 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 walls, ceilings, and floors 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. Follow the directions for Mold and Mildew Central Use-Solution as described above.
4. Apply Disinfectant Use-Solution to disinfect environmental surfaces. All surfaces must be thoroughly wetted for at least ten (10) minutes. After application, allow to air dry.

**Special Instructions for Cleaning and Decontamination Against HIV 08 Surfaces:**

Objects Soiled With Blood/Bodily Fluids that involve healthcare settings or other settings in which there is an expected likelihood of soiling of inanimate surfaces/objects with blood or bodily 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 1 (HIV-1) (associated with AIDS). Antimicrobial® destroys HIV-1 (AIDS Virus) HTLV-I/III on preclinical environmental surfaces/objects previously soiled with blood or other body fluids in ten minutes.

**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 Antimicrobial®.

**Contact Time:** Allow Antimicrobial® 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 Central Use-Solution as described above.
3. Apply Disinfectant Use-Solution to soiled surfaces. All surfaces must be thoroughly wetted for at least ten (10) minutes. After application, allow to air dry.

**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. Apply Disinfectant Use-Solution to soiled surfaces. All surfaces must be thoroughly wetted for at least ten (10) minutes. After 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 commercially made solutions. Never reuse activated solutions.

**To Sanitize Non-Porous, Non Food Contact Hard Surfaces Such as Stainless Steel Tables:**

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. Apply 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 ten (10) minutes. After spraying 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 commercially made solutions. Never reuse activated solutions.

**For Use In Dental Offices and Laboratories as a Dental Pumice Disinfectant:**

1. Prepare a solution in a well-ventilated area. To make one (1) liter of solution, pour 1/2 oz. (approximately 10 ml.) of Antimicrobial® into a clean glass or plastic container. To this, add 2 1/2 gams (1/2 tablespoon) 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, dilute to one (1) liter with clean potable water, for a working solution of 250 ppm activated CIO3.
2. To apply: The working solution can be conveniently contained in one (1) liter plastic "squeeze" bottle for up to five days. Apply to dry pumice powdery exactly as water to produce the pumice slurry. Apply additional working solution as needed to reconstitute dried out slurry to appropriate viscosity. Antimicrobial® solutions must be made up fresh, preferably on Monday and discarded on Friday or 5 days after preparation.

As a Vircide to Kill Animal Viruses (Rotavirus: Bovine Polio, Mouse Hepatitis Virus MVH-AS5, Mouse Virus of Mice MVM-P and Canine Parvovirus ATCC VR-152) Paramyxovirus Type 1 ATCC VR-105; Sendai; HIV-1 RTLV-IgG as 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 Vircide 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-152). When spraying the virusicidal 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 sprayed, mopped or sponged 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.
4. Activated solutions of Antimicrobial®, stored in plastic squat bottles, may be held up to one (1) week before replacement with fresh solution. Soak solutions of Antimicrobial® must be changed daily.

**To Disinfect Surfaces of Water Bath Incubators:**

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 Surfaces of 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 Antimicrobial® in water bath incubators, always begin with a freshly cleaned and disinfected reservoir.
2. Application: Fill water with clean, potable water to near capacity. Add 0.1 1/3 oz. Antimicrobial® for each ten (10) gallons of water or 1.0 ml to 1 liter water (10 ppm available chlorine dioxide). When water becomes cloudy, discard water and repeat procedure.

**To Control Odor Resulting from the Sterilization of Spent Biologicals in Steam Autoclaves:**

1. To reduce autoclave odors of used biologicals, Antimicrobial® must be sprayed or poured directly into the stainless steel autoclave buckets.
2. Preparation of Use-Solution: Place 2 20 R oz. Antimicrobial® per 1 gallon working solution or 20 ml per liter (1,000 ppm available chlorine dioxide) into a clean glass or plastic container and mix.
3. Application: Spray or pour Antimicrobial® solution into or onto the autoclave buckets just prior to autoclaving.

**To Deodorize Animal Holding Rooms, Sick Rooms, Morgues and Work Rooms:**

1. Rooms to be deodorized should be in a clean condition prior to Antimicrobial® application.
2. Preparation of Use-Solution: Place 2 20 R oz. Antimicrobial® per 1 gallon working solution or 20 ml per liter (1,000 ppm available chlorine dioxide) into a clean glass or plastic container.
3. Application: Spray solution using a suitable spraying device onto walls, ceilings and floors, lightly dampening all surfaces. Avoid breathing mist of solutions by using a readily available 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 Disinfect Hard, Non-Porous Surfaces in Commercial Animal Confineement Facilities such as Poultry Houses, Swine Pens, Calf Barns andKennels and for use in Laboratory Animal Breeding and Research Facilities: Controlling Cross-Contamination of Microorganisms Infections to these Animals and Humans from Treated Surfaces.

1. Clean equipment or line thoroughly using a suitable detergent followed by a clean, potable water rinse before treatment.
2. Use Anthim Diazoxide® to Disinfect Non-Food Contact Surfaces (Walls, Ceilings, Drains and Floors) in Food Processing Plants and Food-Handling Establishments.
3. 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.
4. Prepare the Disinfectant Use Solution as described above.
5. Apply the disinfectant use solution to hard, non-porous surfaces, thoroughly wetting surfaces with a cloth, mop, sponge or spray, or by immersion. Treated surfaces must remain wet for at least 10 minutes. Wipe dry with a cloth, sponge or mop or allow to air dry thoroughly. A pre-cleaning is recommended.
6. For sprayer applications, use a coarse spray device. Spray 10-8 inches from the surface, rub with a brush, sponge or cloth. Do not breathe spray. Make sure that the area is thoroughly wetted for at least 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.
7. After application, allow to air dry. Treat as required. Always apply freshly made solutions.

Use Anthim Diazoxide® to Control Mold & Mildew and Slime Forming Bacteria in Non-Food Contact Surfaces (Floors, Walls, Ceilings and Drains) in Food-Processing Plants and Food-Handling Establishments.
1. Before disinfection, all 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: Direct, spray or fog solution on walls, floors, ceilings and surfaces using a suitable wetting, spraying or fogging device and making sure all surface areas are wet. During application, area must be closed tight as possible and sealed. After spraying or fogging, the area must be opened and aired for (1) hour immediately following. 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. Reapply application as needed.

SEAFRUIT

Use Anthim Diazoxide® as a Bacteriostat for Treating Ice Used for Ice Fishing in the Round. Anthim Diazoxide® may be batch loaded or metered into makeup water used to produce ice for ice fishing in the round. Prepare a non-activated working solution containing 25 ppm of available chlorine dioxide by adding 0.5 fl. oz. of Anthim Diazoxide® to 10 gallons of water. Use Anthim Diazoxide® in Food Processing Plants to Control Odor and Slime Forming Bacteria in Cooling and Warming Waters Such as Canning Retort and Pasteurizing Cooling Water Used to Decrease or Increase Packaged Product Temperature By Immersion in or by Spraying with the Treated Process Water.
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. Use Anthim Diazoxide® to 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 Water.
3. 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. Anthim Diazoxide® per 1,000 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 Anthim Diazoxide® solutions daily.
5. An activated use-solution can also be prepared electrochemically by adding Anthim Diazoxide® to the Oxychlor e-generator. Add the electrochemically prepared solution to the process water to maintain 5 ppm available chlorine dioxide. Make up new Optimal Activated Anthim Diazoxide® solutions daily.

Note: Chemical feed pumps and injectors must be chlorine resistant for best operation. Available chlorine dioxide levels should be confirmed using an International Diazoxide chlorine dioxide test kit.

Use Anthim Diazoxide® 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. Use Anthim Diazoxide® to Food Processing Plants and Food-Handling Establishments.
3. Apply the sanitizer use solution to hard, non-porous surfaces, thoroughly wetting surfaces with a cloth, mop, sponge, or spray, 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 wetted 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.

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 disinfecting these vehicles.
1. Prior to application of Anthim Diazoxide®, clean all vehicles with high-pressure water and a suitable detergent.
2. Following 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 Anthim Diazoxide® to Control the Build-Up of Odor and Slime Forming Bacteria in Process Waters for Vegetable Rows 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 13 fl. oz. (10 lb.) Anthim Diazoxide® per 25 gallons of potable water (5 ppm available chlorine dioxide). Make-up waters should be treated using a chemical feed pump or injector system and applied at the rate of 13 fl. oz. Anthim Diazoxide® per 25 gallons potable water. Make up new Anthim Diazoxide® solutions daily.
3. Preparation and Application of Optimal 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.
4. For each 1 gallon of rinse water to be used, measure 1/2 fl. oz. (10 lb.) of Anthim Diazoxide® and pour into a clean, plastic container containing 1 gallon of water. Activate this solution by:
   1. Adding 0.002 grams of Activator-C or
   2. Adding 2.2 grams of Activator K.
   3. Adding the pH to 2.6 with acetic acid, citric acid, phosphoric acid, sulfuric acid or hydrochloric acid.

5. This Anthim Diazoxide® amount, added, food grade citric acid, is well below any harmful level, at the rate of 3.2 oz. (95 grams or 2 lb. 1 oz.) of crystals. Allow five (5) minutes reaction time for crystals to dissolve. Cooling or warming waters systems may be batch loaded at start-up using 13 fl. oz. (0.4 liter) of the activated solution per thousand (1,000) gallons of potable water. Make-up waters should be treated using a chemical feed pump. In order to ensure accurate delivery, a 1 to 10 dilution of the active concentration should be made and the feed rate of 1.0 fl. oz. of activated Anthim Diazoxide® solution per twenty-five (25) gallons should be maintained. Make up fresh Anthim Diazoxide® solutions daily.
6. Preparation and Application of Optimal Activated Use-Solution (Oxychlor e-generator): An activated use-solution can also be prepared electrochemically by adding Anthim Diazoxide® directly to the Oxychlor e-generator. Add the activated use-solution prepared by the Oxychlor e-generator to chill tanks or vegetable rinse tanks. Both load these solutions 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 ID representative.

Note: Chemical feed pumps and injectors must be chlorine resistant for best operation. Available chlorine dioxide levels should be confirmed using an International Diazoxide chlorine dioxide test kit.

Use Anthim Diazoxide® as a Non-Food Contact Door Foam Sanitizer 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 the surface.

HOSPITALS, INSTITUTIONS, MEDICAL AND DENTAL CLINICS, AND VETERINARY CLINICS

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 sterilization level disinfectant on any surface or instrument that 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.
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 apparatus.
4. Thoroughly clean all surfaces with soap and detergent and rinse with water.
5. Prepare an activated 300-400 ppm use-solution of Anthim Dioxide®. Add one ounce of Anthim Dioxide® to one gallon of water. Once the Anthim Dioxide® has been diluted, add 0.5 - 1.0 oz “DuPont™ AccidEdge™” per one gallon of solution OR 0.5 - 1.0 oz “DuPont™ AccidMate 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.
6. One ounce of Anthim Dioxide®
7. One gallon of Water
8. To the solution of step b add 0.5 - 1.0 oz “DuPont™ AccidEdge™” OR 0.5 - 1.0 oz “DuPont™ AccidMate Cleaner - low foaming formula”
9. Always add Anthim Dioxide® to water. Followed by acidic cleaner.
10. Application: Using a commercial sprayer, saturate all surfaces with the activated Anthim Dioxide® 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 hallers, 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.
11. After treatment, ventilate buildings, coops or other enclosed spaces and allow to air dry. Repopulate when solution has dried.
12. Thoroughly scrub treated feed racks, troughs, automatic feeders, fountains and waterers with soap or detergent and rinse with potable water before use.

To Sanitize Hard, Non-Porous Surfaces in Commercial Animal Confineation Facilities such as Poultry Houses, Swine Pens, Calf Barns and Kennels and for use in Laboratory Animal Breeding and Research Quarters for Controlling Cross-Contaminations 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 apparatus.
4. Thoroughly clean all surfaces with soap and detergent and rinse with water.
5. Prepare a 30 ppm activated use-solution of Anthim Dioxide®. To 10 gallons of water add 0.76 oz Anthim Dioxide® and 0.38 oz sodium hypochlorite (NaOCl) for a nominal 30 ppm solution. Adjust pH to between 2.5 and 3.5 with acetic, citric, phosphoric, sulfuric, hydrochloric, hydroxide or other suitable acid. Hold the solution for 15 minutes before spraying. Alternately, the following cleaners can be used instead of acid and 0.5 - 1.0 oz “DuPont™ AccidEdge™” per gallon of solution or 0.5 - 1.0 oz “DuPont™ AccidMate 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 Anthim Dioxide® 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 hallers, 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 Vincidate to Kill Animal Viruses (Rev Crcovirus RCV-SDA-681, Mouse Hepatitis Virus MHB-A59, Minute Virus of Mice VMV-P and Canine Parvovirus ATCC VR-237) on Non- Porous, Hard Surfaces in Centrals Animal Confineation 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 apparatus.
4. Thoroughly clean all surfaces with soap and detergent and rinse with water.
5. Follow the directions for Vincidate Use-Solution as described above.
6. Application: Using a commercial sprayer, saturated 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-237). When spraying solutional product, use an active solution and avoid breathing the fumes, which 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 the Build-Up of Odor and Slime Forming Bacteria in Animal Confineation Areas.
1. Remove all litter and manure from floors, walls and surfaces of barns, pens, stalls, chutes, cages and other facilities and fixtures occupied or traversed by animals. Thoroughly clean all surfaces with soap or detergent and rinse with potable clean water.
2. Preparation of Use-Solution: Place 2.0% oz Anthim Dioxide® per 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 Anthim Dioxide® solution. When spraying Anthim Dioxide® solutions, always use an applicable NIOSH/MSHA approved respirator appropriate for chlorine dioxide to avoid breathing risks.

To Control Animal Odors on Pets in and in Litter Boxes, Carpets and Concrete Floors.
1. For litter boxes: Wash out litter boxes with suitable deterrent and rinse with clean, potable water. Soak overnight in solution of one (1) oz Anthim Dioxide® per 2/1 quarts of water (500 ppm available chlorine dioxide). Add litter, sprinkle surface liberally with Anthim Dioxide® solution.
2. For controlling odors in carpets: Add 1 oz. Anthim Dioxide® per 1 gallon (500 ppm available chlorine dioxide) of rug shampoo mix. Shampoo carpets. Allow to air dry. NOTE: Anthim Dioxide® 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 oz. of Anthim Dioxide® per gallon of water (1,200 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 3 oz. Anthim Dioxide® per gallon of water (1000 ppm available chlorine dioxide). Rinse animal thoroughly with prepared solution. Allow to air dry. Avoid 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 20 oz. Anthim Dioxide® into a clean, plastic container. To this concentrate, add one 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.

To Control Mold & Mildew and Slimo Forming Bacteria on Walls, Floors, Ceilings, Blinds, Boxes, Pews, 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, spray or fog solution on walls, floors, ceilings and surfaces using a suitable watering, spreading or fogging device and make sure all surface areas are wet. During application, area must be closed as tightly as possible and sealed. After spraying or fogging, the area should be opened and aired for one (1) hour before repopulating.
5. Avoid breathing solution mist by use of an applicable NIOSH/MSHA respirator appropriate for chlorine dioxide. Avoid contact with food or food-contact surfaces.
6. Follow treatment with a potable water rinse.
7. Repeat application as needed.

ANIMAL TRAVEL 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 Anthim Dioxide®, 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.

TREATMENT OF WATER STORAGE SYSTEMS AND POTABLE WATER
To Treat 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 chlorine 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 waste-
water and sewage applications, residual chlorine dioxide concentrations up to 5.0 ppm are
generally acceptable.
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. Four 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 should be treated at a rate of 1 fl. oz. of Anthium Dioxide® 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 an International 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 Dioxide® must be injected into the incoming water main using a chemical
proportioning pump, or injector, at a rate of one 1 fl. oz. Anthium Dioxide® per 250 gallons
water (1 ppm available chlorine dioxide).
2. Confirm pump or injector accuracy using an International Dioxide test kit and adjust
accordingly.
3. Anthium Dioxide® levels must be checked weekly.

INDUSTRIAL WATER SYSTEMS AND INDUSTRIAL DIOXIDE USE
TO INHIBIT BACTERIAL SLIME FORMING BACTERIAL BUILDUP IN COMMERCIAL WATER
filtration systems, sand beds, gravel beds, carbon 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 Dioxide® 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 Dioxide® 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 Dioxide® 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.

<table>
<thead>
<tr>
<th>Desired Concentration - Available Chlorine Dioxide - Cooling Water</th>
<th>Feed Solution - Available Chlorine Dioxide (ppm)</th>
<th>Dilution - Activated Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 ppm</td>
<td>70</td>
<td>1:14</td>
</tr>
<tr>
<td>10 ppm</td>
<td>140</td>
<td>1:7</td>
</tr>
<tr>
<td>20 ppm</td>
<td>280</td>
<td>1:17</td>
</tr>
</tbody>
</table>

4. Alternatively, an activated use-solution can be prepared electrolytically by adding
Anthium Dioxide® 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 Dioxide, Inc. representative.

TO INHIBIT THE GROWTH OF SLIME AND ODOR CAUSING BACTERIA IN WATER BASED
CUTTING OILS
1. Batch Method – Add 32 oz. of Anthium Dioxide® per thousand gallons to fresh system and
repeat weekly or on first indication of increased bacterial contamination (odor, slime, bacterial count).
2. Continuous Method – Fraction in 2 gallons of Anthium Dioxide® per million gallons per
day injected into the system. Alkaline systems may require higher concentration of Anthium
Dioxide®
3. Rapidly Contaminated Systems – Slug dose system with 10 gallons of Anthium Dioxide®
per million gallons of cutting oil. Then start the continuous procedure described above.

AS A SLIMECIDE IN PAPER MILLS TO PREVENT SLIME, TAN 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 % of Anthium Dioxide® per
hundred tons of paper produced.
2. If the pH of the white water is above 7.0, then add 1% of 5% sodium hypochlorite as
an activator with each 4/125 gallons of Anthium Dioxide®
Continuous proportioning of the Anthium Dioxide® 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 Dioxide® 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
(30 - 40) 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 Dioxide® 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.
SLUDGE 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 Dioxide® can be used in mushroom facilities such as mushroom production, spawn
production, mushroom processing and canning 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 Dioxide® 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 whitening product growing in plastic or stainless steel vessels.

As An Area Deodorizer
Dilute 1 part Anthium Dioxide® 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 needed for each 1000 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.
Specific Applications
To Disinfect Wells, Cellings 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 disinfected 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 a chlorine solution.

Use Anthem Dioxide® 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 should be removed prior to sanitizing by use of a pre-flush, pre-scrub or pre-soak treatment.
2. Clean picking baskets, line equipment or other food contact surfaces thoroughly using a suitable detergent and rinse 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 electrochemically by adding Anthem Dioxide 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 (ID) representative.

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 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 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 1/2 fl. oz. Anthem Dioxide® 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: French, spray or fog solution on walls, floors, ceilings and post-crop mushroom growing surfaces using a suitable watering, 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 recommended respirator for chlorine dioxide. Avoid contact with food or food-contact surfaces. Allow to air dry.
4. Repeat application as needed.

POULTRY

To Treat Poultry Chiller Water

A. Anthem Dioxide® Plus Chlorine

In order to control the microorganism population in poultry chiller water, treat the addition of available chlorine dioxide at 20-40 ppm level so that a residual of 3.0 ppm is measured in the exiting chilled water.

This is easily accomplished by activating Anthem Dioxide®, a mixture of oxchlorine species capable of generating up to 90% 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 Anthem Dioxide®.

<table>
<thead>
<tr>
<th>ppm CIB</th>
<th>ANTHEM DIOXIDE® FEED RATE</th>
<th>CL FEED RATE</th>
<th>Cl ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>0.4 gal/100 gal H2O</td>
<td>0.016</td>
<td>10</td>
</tr>
<tr>
<td>32</td>
<td>0.8 gal/100 gal H2O</td>
<td>0.013</td>
<td>15</td>
</tr>
<tr>
<td>40</td>
<td>0.8 gal/100 gal H2O</td>
<td>0.016</td>
<td>20</td>
</tr>
</tbody>
</table>

B. Anthem Dioxide® Plus Acid

This antisporal agent may be used as a component of (A) a carcass spray or dip solution prior to immersion of the carcass in a rechlorifier or chiller tank or (B) in a prechlorifier or chiller solution.

1. When used as a carcass spray or dip solution, dilute 1 gallon of Anthem Dioxide® to 70 gallons with water. The solution is then acidified to a pH between 2.5 and 2.8 with an acid selected from the following acids: phosphoric, citric, acetic, hydrochloric, lactic, malic or sulfuric acid.
2. When used in a prechlorifier or chiller tank, Anthem Dioxide® is diluted 1:300 i.e. 1 gallon of Anthem Dioxide® diluted to 300 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 at 70 ppm for use in the prechlorifier. For proper operation of the Oxychlor e-generator, consult the Oxychlor e-generator manual or your (ID) representative.

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 Anthem Dioxide® 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 Anthem Dioxide® to each 10,000 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 Anthem Dioxide® per 100,000 parts of water) to 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 Anthem Dioxide® per 33,333 parts of water).

ANIMAL REARING AND CONFINEMENT FACILITIES

To Disinfect Waterlines and Assorted Fixtures in Animal Confined 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 Anthem Dioxide® by:
   A. Injecting Anthemic Equipment in Anthem Dioxide® at the rate of 1 part to 105 parts water. Once the Anthem Dioxide® has been injected: inject 0.5 – 1.0 oz. per gallon “DuPont® AcidEdge” or 0.5 – 1.0 oz. per gallon “DuPont® Acid Cleaner” - low foaming formula.
   B. Header Tank: Add 0.8 ounces of Anthem Dioxide® 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® Acid 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 Anthem Dioxide® per 10,000 parts of water (1:10,000 dilution) (11 oz. Anthem Dioxide® to each 75 gallons). Allow 15 minutes before delivery to livestock or poultry.
2. If the water supply test heavy contamination prepare a solution of 11 ppm available chlorine dioxide by adding 1 part of Anthem Dioxide® per 454 parts of water (a 1:454 dilution) (1 fl. oz. Anthem Dioxide® 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 Anthem Dioxide® 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 Anthem Dioxide® 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.

To Disinfect Drinking Water Supply for Poultry, Swine, Cattle and Other Livestock.

Use Anthem Dioxide® with a chlorine dioxide generator to generate an aqueous chlorine dioxide solution. Alternatively, Anthem Dioxide® can be mixed manually to generate an aqueous chlorine dioxide solution. The chlorine dioxide generator and manual mixing methods react Anthem Dioxide® 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 Anthem Dioxide® 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. For a 5 ppm chlorine dioxide solution add 1 part Anthem Dioxide® to 10,000 parts water, approximately 1.0 fl. oz. Anthem Dioxide® per 60 gallons of water. Use more water for lower chlorine dioxide concentrations.
   B. Add 2-5 ppm sodium hypochlorite, 3 – 8 parts of 12.5% bleach to 10,000 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 lines.
   E. After 24 hours, the addition rate can be reduced to 1 ppm of available chlorine dioxide by adding 1.0 fl. oz. of Anthem Dioxide® to approximately 400 gallons of animal drinking water as long as terminal concentration at the end of the waterline is less than 0.5 ppm.

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A. Add 1 part Anthium Dioxide® 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 with 1,000 to 5,000 parts water for a
   1 to 5 ppm chlorine dioxide solution.

To Prevent Cross Contamination From Area to Area in Animal Areas and Storage Areas of Food Plants, Dip Pre-Washed (Plastic, Lotion 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 Dioxide® diluted to 1,000 gallons water) to remove gross filth or heavy soil.
2. Spray down for 5 minutes with a Tri-Jet Fogmaster (or equivalent) with a 1,000 ppm solution of available chlorine dioxide (1 gallon Anthium Dioxide® diluted to 50 gallons of water) allowing to dry on the floor.
3. A shoe or boot bath of 1,000 ppm of available chlorine dioxide (1 gallon Anthium Dioxide® per 50 gallons water) is placed at the entrance to the egg room. Doors to the room should be kept closed at all times.
4. A glove dip, or rinse tank or basin, containing 50 ppm of available chlorine dioxide (1 gallon Anthium Dioxide® per 1,000 gallons water) is used on entering and exiting the room.
Both the shoe and boot dip and glove dip should be replaced daily (soon after traffic is heavy).
5. Humidification water is treated with 40 ppm of available chlorine dioxide (0.8 gallons of Anthium Dioxide® per 1,000 gallons water) to prevent the build-up and airborne spread of odor-causing microorganisms.
6. Provide 20 ppm of available chlorine dioxide (0.4 gallon Anthium Dioxide® 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 Seating Room
1. Remove all poultry and foods 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 area for 5 minutes with a 1,000 ppm solution of available chlorine dioxide (1 gallon Anthium Dioxide® diluted to 50 gallons 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 and treat 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 should use a hand dip or rinse containing 50 ppm of available chlorine dioxide (1 gallon Anthium Dioxide® diluted to 100 gallons 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 Dioxide® diluted to 50 gallons water) on hands, wrist and mesh in empty chick boxes to control contamination and odors from litter.
11. To clean the floor by mopping daily, use a solution containing 300 ppm of available chlorine dioxide (1 gallon Anthium Dioxide® per gallon water). Allow to air dry.

To Control Bacteria and Odor in the Hatching Area
1. As soon as chicks are separated from Hatch, remove all trash containers with eggshells, clumps, etc., from the hatching area.
2. Remove all poultry and foods 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 Dioxide® diluted to 50 gallons 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 and treat 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 Dioxide® diluted to 100 gallons water).

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 Dioxide® diluted to 50 gallons of water), after removing gross filth or soil with a high pressure water wash. Wet all surfaces and allow to dry.
2. The floor should be mopped daily with a solution containing 300 ppm of available chlorine dioxide (1 oz. of Anthium Dioxide® diluted to 1 gallon Anthium Dioxide® diluted to 50 gallons of water) to prevent the areas from the incubator room.
3. A shoe and boot bath containing 1,000 ppm of available chlorine dioxide (1 gallon Anthium Dioxide® diluted to 50 gallons of water) should be placed at all entrances to the incubator room.
4. A 50 ppm of available chlorine dioxide (0.4 gallon Anthium Dioxide® diluted to 1,000 gallons 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 Dioxide® diluted to 1 gallon water) to reduce airborne bacterial contamination.
5. Each time the eggs are removed from the incubator, a spray nozzle dipping 50 ppm solution of available chlorine dioxide (1 gallon Anthium Dioxide® diluted to 1000 gallons water) is recommended, followed by a spray of 1,000 ppm solution of available chlorine dioxide (1 gallon Anthium Dioxide® diluted to 50 gallons water) on the eggs from a spray bottle.
6. Where containers are used to discard bad eggs, 2 oz. of Anthium Dioxide® per quart of water (5.12 ppm of available chlorine dioxide) will control odorous and bacterial contamination.

The doors to the area should 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 prevent contamination of other hatchery operations. Discard all cloth down with industry and discard or wash all 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 gallons of Anthium Dioxide® diluted to 1,000 gallons water) in high pressure water. Allow the trays, carriers and other working equipment to air dry.
4. The walls, floors and carrying stands must also be sanitized with the same solution.
5. Allow the equipment to air dry for 1 hour before being returned to a closed area for reuse.
6. 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 Dioxide® diluted to 50 gallons water). The rinse must be at least 1 inch deep and should be charged daily until traffic is heavy.
7. 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 Anthium Dioxide® diluted to 50 gallons water). They are then sprayed with a 1,000 ppm solution of available chlorine dioxide (1 gallon Anthium Dioxide® diluted to 50 gallons of water) and stored.

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.
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 ducts to be treated must be mechanically sound and free of air leaks.
2. Preparation of Activated Use-Solution: Add 1 part Anthium Dioxide® to 100 parts water then adjust the pH of the diluted Anthium Dioxide® to 2.6 with acetic, citric, phosphoric, sulfuric, hydrochloric or other equivalent acid. Please consult your 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. 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 access panels or access plates and access panels. The selected spray equipment must provide a consistent particle size (0-20 microns) and a uniform spray pattern using a 0.011" spray tip. 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 fog generators. All preexisting or treatment created access panels must be properly sealed or replaced in accordance with industry standards. After the spraying or fogging 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 irritates if inhaled. After application, allow to air dry. Treat as required.
Always apply freshly made solutions. Never reuse activated solutions.