

9150-3

6-25-2003

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

June 25, 2003

Eliot Harrison  
Lewis & Harrison, LLC  
122 C Street NW  
Suite 740  
Washington, DC 20001

Subject: International Dioxide, Inc.  
Carnebon 200 2% Aqueous Stabilized Chlorine Dioxide  
EPA Registration No. 9150-3  
Submission Dated: June 6, 2003  
Receipt Date: June 6, 2003

Dear Mr. Harrison:

This amendment responds to the Agency deficiency letter dated April 24, 2003 in which the Agency required that certain label changes be provided.

The following amendment, submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended, is accepted with comments.

- Update First Aid statements per PR Notice 2001-1
- Updated Precautionary statements
- Added Oxychlor e-generator to use directions.
- Revised the "To Disinfect Bench Tops, Biological Hoods, Incubators, Stainless Steel Equipment and Instruments" directions .
- Added claim for sanitization of drinking water
- Added claims against animal viruses

Comments

1. You must provide a Hotline telephone number under the First Aid statement as per PR Notice 2001-1.
2. Revise the "To Disinfect Bench Tops, Biological Hoods, Incubators, Stainless Steel Equipment and Instruments" directions for use application of activated use-solution to read "All contact surfaces must be thoroughly wetted for at least ten minutes."

CONCURRENCES

SYMBOL	7510C							
SURNAME	Mitchell							
DATE	6-25-03							

3. *The directions for use "To Sanitize the Drinking Water of Poultry, Swine, Cattle and Other Livestock" has been crossed out on the submitted label. This use cite has been added to the label without any reference to a substantially similar product.*
4. *Wherever, animal viruses appear on the label, add the strain to help accurately identify what particular strain of animal viruses (e.g. Rat Coronavirus ATCC VR-635) are represented.*


**General Comments**

*This response satisfies your submissions dated April 9, 2003, May 6, 2003 and May 11, 2003.*

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

*If you have any questions or comments concerning this letter, please contact Wanda Mitchell at (703) 308-6345.*

*Sincerely,*



*Robert S. Brennis  
Product Manager - Team 32  
Regulatory Management Branch II  
Antimicrobials Division (7510C)*

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.

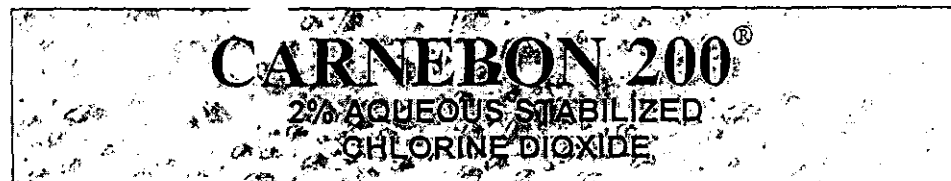
**STORAGE:** Do not store with easily oxidizable materials, acids, reducers, and combustible material. Avoid heat or freezing conditions. Store upright and do not stack drums over two high on pallets or partially filled drums. Use of a drum pump is suggested. Keep drum tightly closed when not withdrawing 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:** Triple rinse (or equivalent). 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.



Active Ingredient:	
Chlorine Dioxide.....	2.0%
Inert Ingredients.....	98.0%
	100%

KEEP OUT OF THE REACH OF CHILDREN  
**CAUTION**

SEE SIDE PANELS FOR ADDITIONAL PRECAUTIONARY STATEMENTS

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. Remove 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.

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For 24 hour emergency information on this product, call Chemtec at 1-800-424-9300 (US, Canada, Puerto Rico, Virgin Islands) 1-703-527-3887 (All Other Areas)

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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.

REG. NO. 9150-3

E.P.A. EST. NO. 9150-RI-01

NET WT. \_\_\_\_\_ LBS.

Manufactured by:



International Dioxide, Inc.  
554 Ten Rod Road  
North Kingstown, RI 02852

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

JUN 25 2003

ACCEPTED  
WITH COMMENTS  
EPA Letter Dated:

9150-3

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**DIRECTIONS FOR USE**

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

**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 should 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 one quart (0.95 liters) of Carnebon 200<sup>®</sup> per one thousand (1,000) gallons of 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 Carnebon 200<sup>®</sup> 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 are 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 one quart (0.95 liters) of Carnebon 200<sup>®</sup> and pour into a clean plastic container, pail or drum. To this Carnebon 200<sup>®</sup> 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 per quart (0.95 liters) of Carnebon 200<sup>®</sup>. Allow five (5) minutes reaction time for crystals to dissolve. Cooling or warming water systems may be batch loaded at start up using one quart (0.95 liters) 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 Carnebon 200<sup>®</sup> 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 Carnebon 200<sup>®</sup> 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 Dioxide representative.

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

**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 should 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 ml) of Carnebon 200<sup>®</sup> per ten (10) 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 1/3 fl. oz. of Carnebon 200<sup>®</sup> per 10 (ten) gallons of potable water. Make up new Carnebon 200<sup>®</sup> 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 10 gallons of rinse water to be used, measure 1/3 fl. oz. (10 ml) of Carnebon 200<sup>®</sup> 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 or
  - 3) Adjusting the pH to 2.6 with acetic acid, citric acid, phosphoric acid, sulfuric acid or hydrochloric acid.

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Allow this solution to stand for 15 minutes and then add to 9 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 Carnebon 200® solution with 1/3 fl. oz. (10 ml) per ten (10) gallons of potable water (5 ppm available chlorine dioxide). 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 3 1/3 fl. oz. of activated Carnebon 200® solution per ten (10) gallons should be maintained. Make up fresh Carnebon 200® 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 Carnebon 200® 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.

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

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

- 1) Before treatment, whole fruits and vegetables should be washed and thoroughly rinsed with clean, potable water.
- 2) In a one (1) gallon container, add 1/3 fl. oz. (10 ml) of Carnebon 200® 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 9 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.

**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 ten (10) gallons of volume in lines and/or equipment, add 1.25 fl. oz. of Carnebon 200® (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.

**IN LABORATORIES, HOSPITALS, MORGUES, INSTITUTIONS, VETERINARY CLINICS, ANIMAL RESEARCH FACILITIES, CHILDCARE FACILITIES AND NURSERIES**

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, institutions, childcare facilities or nurseries.

**To Disinfect Hard, Non-Porous Surfaces Such as Tile Floors, Walls and Ceillngs 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) Preparation of Activated Use-Solution: Add 2 fl. oz. of Carnebon 200® to one (1) gallon of water into a clean, plastic pail and add 1.2 grams of Activator-C. This will yield a working solution containing 300 ppm of available chlorine dioxide. Prepare in a well-ventilated area and avoid breathing any fumes which may be produced during activation. Allow 15 minutes reaction time and for activator to dissolve completely. As an alternate activation method, add 2.0 fl. oz. of Carnebon 200® to one gallon of water and then adjust the pH of the diluted Carnebon 200® to 2.6 with acetic, citric, phosphoric, sulfuric or hydrochloric acid, or add 8.6 grams of Activator K. This will also yield a working solution containing 300 ppm of available chlorine dioxide.
- 3) Application of Activated Use-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 when breathed; therefore, always use an applicable NIOSH/MSHA approved respirator appropriate for chlorine dioxide when spraying these solutions. After application, allow to air dry. Treat as required. Always apply freshly made solutions. Never reuse activated solutions.

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**As a Virucide to Kill Animal Viruses (Rat Coronavirus, Mouse Hepatitis Virus, Minute Virus of Mice and Canine Parvovirus) on Non-Porous, Hard Surfaces Such as 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) **Preparation of Activated Use-Solution:** Prepare in a well-ventilated area and avoid breathing any fumes which may be produced during activation. Add 1 part of Carnebon 200 into a clean plastic pail and activate with 5 parts of an acid activator. The acid activator can be either citric, phosphoric, hydrochloric, glycolic or an equivalent acid. Allow fifteen (15) minutes for reaction time and for the activator to completely dissolve. Then dilute the activated solution with 20 parts of water. This yields an activated solution containing approximately 800 ppm of available chlorine dioxide.
- 4) **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). When spraying the virucidal solution, use an appropriate spraying device. Active solutions may be irritating when breathed; therefore, always use an applicable NIOSH/MSHA approved respirator appropriate for chlorine dioxide when spraying these solutions. After application, allow to air dry. Treat as required. 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) **Preparation of Activated Use-Solution:** Place 0.5 fl. oz. (15 ml) of Carnebon 200<sup>®</sup> into a clean, plastic pail and add 1 quart of potable water and 0.3 grams of Activator-C. Prepare in a well-ventilated area and avoid breathing any fumes which may be produced while reacting. Allow fifteen (15) minutes reaction time and for the activator to dissolve completely. This will yield a working solution containing 300 ppm available chlorine dioxide. As an alternate activation method, place 0.5 fl. oz. (15 ml) of Carnebon 200<sup>®</sup> into a clean, plastic pail and add 1 quart of potable water and then adjust the pH to 2.6 with acetic, citric, phosphoric, sulfuric or hydrochloric acid, or add 2.4 grams of Activator K.
- 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 damp for at least ten (10) minutes. Allow to air dry. Activated solutions of Carnebon 200<sup>®</sup>, stored in plastic squirt bottles, may be held up to one (1) week before replacement with fresh solution. Soak solutions of Carnebon 200<sup>®</sup> should 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) **Preparation of Activated Use-Solution:** Place 3/4 gallon (96 fl. oz) of Carnebon 200<sup>®</sup> into the bottom of the tub, add three (3) gallons of clean potable water and 2.2 grams of Activator-C. Allow to react for 15 minutes and for the activator to completely dissolve. Continue to fill the tub to the 50 gallon fill line. This will also yield an activated solution containing 300 ppm of available chlorine dioxide.
- 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) **Preparation of Activated Use-Solution:** Place 2.0 fl. oz. of Carnebon 200<sup>®</sup> into a clean glass or plastic container, add one (1) gallon of clean, potable water and add 0.3 grams of Activator-C. which yields a 300 ppm available chlorine dioxide solution). Prepare in a well-ventilated area and avoid breathing any fumes which may be produced during activation. Allow fifteen (15) minutes reaction time and for activator to dissolve completely. As an alternate activation method, place 2.0 fl. oz. of Carnebon 200<sup>®</sup> into a clean glass or plastic container, add one (1) gallon of clean, potable water and then adjust the pH to 2.6 with acetic, citric, phosphoric, sulfuric or hydrochloric acid, or add 8.6 grams of Activator K. This will also yield a working solution containing 300 ppm of available chlorine dioxide.
- 3) **To apply:** Activated solution should be poured into waterbath reservoir and allowed to stand one (1) hour at room temperature. Drain reservoir and fill with fresh water.

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**To Control Odor and Slime Forming Bacteria in Water Bath Incubators**

- 1) When using Carnebon 200® in waterbath incubators, always begin with a freshly cleaned and disinfected reservoir.
- 2) Application: Fill water bath with clean, potable water to near capacity. For each gallon of water add 1/3 oz. Carnebon 200® (50 ppm available chlorine dioxide) or 2.5 ml Carnebon 200® per liter of water. 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, Carnebon 200® should be sprayed or poured directly into the stainless steel autoclave buckets.
- 2) Preparation of Use-Solution: Place 6 1/2 fl. oz. of Carnebon 200® per gallon of working solutions (1,000 ppm available chlorine dioxide) or 50 ml Carnebon 200® per one (1) liter of water into a clean glass or plastic container and mix.
- 3) Application: Spray or pour Carnebon 200® 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 Carnebon 200® application.
- 2) Preparation of Use-Solution: Place 6 1/2 fl. oz. Carnebon 200® per one (1) gallon of working solution or 50 ml per one (1) liter working solution (1,000 ppm available chlorine dioxide) into a clean glass or plastic container. Dilute concentrate to one (1) gallon clean, potable waer for each 6 1/2 fl.oz. or to one (1) liter for each 50 ml of Carnebon 200.
- 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 an applicable NIOSH/MSHA approved respirator appropriate for chlorine dioxide. Allow to air dry, then ventilate the area. Treat as required.

**IN ANIMAL REARING & CONFINEMENT FACILITIES**

**To Sanitize the Drinking Water of Poultry, Swine, Cattle and Other Livestock**

Under normal conditions, dilute 1.0 part of Carnebon 200® to 4,000 parts (5 ppm of available chlorine dioxide) with water for use as animal drinking water. To prepare a stock solution for proportioning into animal drinking water, dilute 12.5 fl. oz. of Carnebon 200® to 3 gallons with water and add 1 oz. of this stock solution per gallon of drinking water.

For heavily contaminated water, use 1 part of Carnebon 200® diluted to 1,600 parts (12.5 ppm of available chlorine dioxide) with water and use for animal drinking water for no longer than 3 days. After this period, revert to a 1:4,000 dilution of Carnebon 200® for animal drinking water. For proportioning systems, dilute 31.25 fl. oz. of Carnebon 200® to 3 gallons with water and add 1.0 fl. oz. of this stock solution per gallon of animal drinking water for no longer than 3 days

**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) Preparation of Activated Use-Solution: Place 2.0 fl. oz. of Carnebon 200® into a clean, plastic pail, add one (1) gallon of clean potable water and 1.2 grams of Activator-C. Prepare in a well-ventilated area. Avoid breathing any fumes which may be produced and allow fifteen (15) minutes reaction time and for activator to dissolve completely. This will yield a working solution containing approximately 300 ppm of available chlorine dioxide. As an alternate activation method, place 2.0 fl. oz. of Anthium Dioxide into a clean plastic pail, add one (1) gallon of clean potable water and then adjust the pH to 2.6 with acetic, citric, phosphoric, sulfuric or hydrochloric acid, or add 8.6 grams of Activator K.

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- 6) **Application:** Using a commercial sprayer, saturate all surfaces with the activated Carnebon 200® solution for a period of ten (10) minutes. Active solutions may be irritating when breathed; therefore, always use an applicable NIOSH/MSHA approved respirator appropriate for chlorine dioxide when spraying these solutions. Immerse all halters, ropes and other types of equipment used in handling and restraining animals as well as forks, shovels and scrapers used for removing litter and manure.
- 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, Mouse Hepatitis Virus, Minute Virus of Mice and Canine Parvovirus ) 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) **Preparation of Activated Use-Solution:** Prepare in a well-ventilated area and avoid breathing any fumes which may be produced during activation. Add 1 part of Carnebon 200 into a clean plastic pail and activate with 5 parts of an acid activator. The acid activator can be either citric, phosphoric, hydrochloric, glycolic or an equivalent acid. Allow fifteen (15) minutes reaction time and for the activator to completely dissolve. Then dilute the activated solution with 20 parts of water. This yields an activated solution containing approximately 800 ppm of available chlorine dioxide.
- 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). When spraying virucidal solution, use an appropriate spraying device. Active solutions may be irritating when breathed; therefore, always use an applicable NIOSH/MSHA approved respirator appropriate for chlorine dioxide when spraying these solutions. After application, allow to air dry. Treat as required. 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 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 6 1/2 fl. oz. Carnebon 200® per gallon of working solution (1,000 ppm available chlorine dioxide) into a clean, plastic pail. Dilute concentrate with one (1) gallon clean potable water for each 6 ½ fl. oz. Carnebon 200.
- 3) **Application:** Using a commercial sprayer; saturate all surfaces with the Carnebon 200® solution. When spraying Carnebon 200® solutions, always use an applicable NIOSH/MSHA approved respirator appropriate for chlorine dioxide to avoid breathing mist.

**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. of Carnebon 200® per 1 quart of water (625 ppm available chlorine dioxide). Add litter, sprinkle surface liberally with Carnebon 200® solution.
- 2) **For controlling odors in carpets:** Add either 3 oz. Carnebon 200® per gallon (500 ppm available chlorine dioxide) of rug shampoo mix or 3 1/4 oz. Carnebon 200® per each gallon of rinse water. Shampoo carpets. Allow to air dry. **NOTE:** Carnebon 200® 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 8 oz. of Carnebon 200® per gallon of water (1,250 ppm available chlorine dioxide). Mop or spray solution liberally onto floor. Allow to air dry.



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- 4) For animal baths: Wash animal well with appropriate pet shampoo; rinse with clean water. Prepare solution by adding 0.625 oz. Carnebon 200<sup>®</sup> 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 4 oz. of Carnebon 200<sup>®</sup> 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.

## **IN WATER TREATMENT AND WATER STORAGE SYSTEMS**

### **To Disinfect Water Storage Systems Aboard Aircraft, Boats, RV's, Off-Shore Oil Rigs, etc.**

- 1) Prior to disinfection, tanks should be cleaned using a suitable detergent and thoroughly flushed with clean, potable water.
- 2) Preparation of Activated Use-Solution: Place 2.0 fl. oz. of Carnebon 200<sup>®</sup> per gallon of working solution (300 ppm available chlorine dioxide) into a container dilute with clean potable water and add 1.2 grams of Activator-C. Prepare in a well-ventilated area and avoid breathing any fumes which may be produced while activator is dissolving. Allow fifteen (15) minutes reaction time and for activator to dissolve completely. As an alternate activation method, place 2.0 fl. oz. of Anthium Dioxide into a container and dilute with one (1) gallon of water and then adjust the pH to 2.6 with acetic, citric, phosphoric, sulfuric or hydrochloric acid, or add 8.6 grams of Activator K. 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 should be treated at a rate of one (1) fl. oz. of Carnebon 200<sup>®</sup> per 30 gallons potable water (5 ppm available chlorine dioxide) and may be injected or batch treated.
- 3) Water storage tank should 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) Carnebon 200<sup>®</sup> should be injected into the incoming water main using a chemical proportioning pump, or injector, at a rate of one (1) fl. oz. Carnebon 200<sup>®</sup> per 150 gallons water (1 ppm available chlorine dioxide).
- 2) Confirm pump or injector accuracy using an International Dioxide test kit and adjust accordingly.
- 3) Carnebon 200<sup>®</sup> levels should be checked weekly.

## **IN MUSHROOM FACILITIES. SUCH AS MUSHROOM PRODUCTION, SPAWN PRODUCTION, MUSHROOM PROCESSING, AND CANNERY OPERATIONS**

### **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-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) Preparation of Activated Sanitizing Use-Solution: Prepare an activated solution containing 1,000 ppm of total available chlorine dioxide by adding 2.5 gallons of Carnebon 200<sup>®</sup> per 50 gallons of water followed by 1.7 lbs. of Activator K per 50 gallons of solution. Allow to stand for 15 minutes after agitation for 5 minutes and then dilute in water 1:4 to give a 200 ppm use-solution of available chlorine dioxide. Alternatively, an activated solution (5,000 ppm of total available chlorine dioxide) can be prepared by adding 2.5 gallons of Carnebon 200<sup>®</sup> to 7.5 gallons of water followed by food-grade citric acid, phosphoric acid or acetic acid (vinegar) to a pH of 2.6. Allow to stand for 15 minutes after agitation for 5 minutes. Then prepare the use-solution by diluting one part of the 5000 ppm activated solution with 24 parts of water to give 200 ppm of total available chlorine dioxide.

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- 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 and adequately drain. 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 Carnebon 200 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) Preparation of Activated Use-Solution: Place 2.0 oz. of Carnebon 200® per gallon of working solution (300 ppm available chlorine dioxide) into a clean, plastic pail. Add one gallon of clean, potable water and add 1.2 grams of Activator-C. Prepare in well-ventilated area and avoid breathing any fumes which may be produced while activator is dissolving. Allow fifteen (15) minutes reaction time for activator to dissolve completely. This will yield a working solution containing 300 ppm of available chlorine dioxide. As an alternate activation method, place 2.0 fl. oz. of Carnebon 200 into a clean, plastic pail, add one (1) gallon of potable water and then adjust the pH to 2.6 with acetic, citric, phosphoric, sulfuric or hydrochloric acid, or add 8.6 grams of Activator K.
- 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 when breathed; therefore, always use an applicable NIOSH/MSHA approved respirator appropriate for chlorine dioxide when spraying these solutions. After application, allow to air dry. Treat as required. 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 6 1/2 fl. oz. of Carnebon 200® per gallon of working solution (1,000 ppm available chlorine dioxide) into a clean, plastic pail or drum and dilute with clean, potable water.
- 3) Application: Drench, 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 should 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 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 2.0 fl. oz. of Carnebon 200® per gallon (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.

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**For Enclosed And Recirculating Cooling Water Systems**

- 1) Add 2.5-10 gallons of Carnebon 200® 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.

**IN INDUSTRIAL APPLICATION - TO INHIBIT THE GROWTH OF SLIME AND ODOR CAUSING BACTERIA IN WATER BASED CUTTING OILS**

- 1) *Batch Method* - Add 80 oz. of Carnebon 200® 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 Carnebon 200®.
- 2) *Continuous Method* - Proportion in 5 gallons of Carnebon 200® per million gallons per day used in the system. Alkaline systems may require higher concentration.
- 3) *Badly Contaminated Systems* - Slug dose system with 25 gallons of Carnebon 200® per million gallons of cutting oil. Then start the continuous procedure described above.

Adjust quantities in any of the above systems to compensate for levels of contamination, pH, type of contamination etc., as necessary.

**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 11¼ gallons of Carnebon 200® 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 11 ¼ gallons of Carnebon 200®.

Continuous proportioning of the Carnebon 200® 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 Carnebon 200® used to 4 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.

**IN FOOD PROCESSING PLANTS, (POULTRY, MEAT, FISH), DAIRIES, BREWERIES AND BOTTLING PLANTS.**

For use as a terminal food-contact surface sanitizer rinse conforming to 21 CFR Part 178.1010 paragraphs b.34 and c.29.

- 1) This solution is intended for use as a food-contact surface sanitizer for dairies, ice cream factories, breweries and food processing plants.
- 2) This solution may be used on hard, non-porous surfaces such as tables, trays, bins, etc. and the interior or exterior of food processing equipment.
- 3) All equipment should be thoroughly cleaned to remove gross food particles and soil by pre-flush or pre-scrape and where necessary, a pre-soak treatment. The surfaces or objects to be treated should then be cleaned with a detergent or cleaner followed by a potable water rinse before application of the sanitizing solution.

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- 4) Preparation of Activated Use-Solution: Prepare an activated solution containing 1,000 ppm of total available chlorine dioxide by adding 2.5 gallons of Carnebon 200® per 50 gallons of water followed by 780 grams (1.71 lbs.) of Activator K per 50 gallons of solution. Allow to stand for 15 minutes after agitation for 5 minutes and then dilute 1:4 in water to give a 200 ppm use-solution of available chlorine dioxide. Alternatively, an activated solution (5,000 ppm of total available chlorine dioxide) can be prepared by adding 2.5 gallons of Carnebon 200® to 7.5 gallons of water followed by food-grade citric acid, phosphoric acid or acetic acid (vinegar) to a pH of 2.6. Allow to stand for 15 minutes after agitation for 5 minutes. Then prepare the use-solution by diluting one part of the 5,000 ppm activated solution with 24 parts of water to give 200 ppm of total available chlorine dioxide.
- 5) Optional Activated Use-Solution (Oxychlor e-generator): An activated use-solution can also be prepared electrolytically by adding Carnebon 200® 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.
- 6) The activated use-solution should be allowed to contact all food processing equipment for at least 1 minute but preferably longer by transferring and/or spraying into each food processing vessel. It is essential that the sanitizing solution contact all surfaces to be sanitized. Thus, hard to reach in-place equipment, pipes, closed vessels, etc., should be filled with the solution to ensure contact of all surfaces with the sanitizing solution. Use suitable protective breathing apparatus when spraying this solution on external equipment.
- 7) After the required contact time or longer, allow the treatment solution to drain from all treated surfaces and to air dry. Do not rinse treated surface.
- 8) 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.

**FOR CONTROL OF MOLLUSKS IN ONCE THROUGH WATER COOLING SYSTEMS**

- 1) Add 10 gallons of Carnebon 200® 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).

**AS AN BACTERIOSTAT FOR TREATING ICE USED FOR ICING FISH IN THE ROUND**

Carnebon 200® 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 1 gallon of Carnebon 200® to 1000 gallons of water.

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### POULTRY-HOUSE DISINFECTION

#### A) Carnebon 200® 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 Carnebon 200®, 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 is set forth below for the reactants, chlorine and Carnebon 200®.

PPM ClO <sub>2</sub>	CARNEBON 200® FEED RATE	Cl <sub>2</sub> FEED RATE LBS./GAL	Cl <sub>2</sub> PPM
20	1.0 gal/1000 gal H <sub>2</sub> O	0.0083	10
30	1.5 gal/1000 gal H <sub>2</sub> O	0.01245	15
40	2.0 gal/1000 gal H <sub>2</sub> O	0.0166	20

#### B) Carnebon 200® 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 spray or dip solution, dilute 2.5 gallons of Carnebon 200® 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, Carnebon 200® is diluted 1:280 (i.e. 2.5 gallons of Carnebon 200® 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.

#### 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 2.5 gallons of Carnebon 200® 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 2.5 gallons of Carnebon 200® to each 50,000 gallons of poultry drinking 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 (2.5 gallons of Carnebon 200® 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 water (2.5 gallons of Carnebon 200® per 33,333 gallons of water).

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**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 (1 gallon Carnebon 200® 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 (2.5 gallons Carnebon 200® 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 should 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 (2.5 fl. oz. Carnebon 200® per gallon water). Allow to dry on the floor.
- 4) A foot bath of 1,000 ppm of available chlorine dioxide (2.5 gallons Carnebon 200® per 50 gallons water) is placed at the entrance to the egg room. Doors to the room should be kept closed at all times.
- 5) A hand dip, or rinse tank or basin, containing 50 ppm of available chlorine dioxide (2.5 gallons Carnebon 200® per 1,000 gallons water) is used on entering and exiting the room.

Both the foot bath and hand dip should be replaced daily (sooner if traffic is heavy).

- 6) Humidification water is treated with 40 ppm of available chlorine dioxide (2 gallons of Carnebon 200® per 1,000 gallons water) to prevent the build-up and airborne spread of odor-causing microorganisms.
- 7) Provide 20 ppm of available chlorine dioxide (1 gallon Carnebon 200® per 1,000 gallons water) to the water supply in the egg washing machine.

**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 (2.5 gallons Carnebon 200® 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 should use a hand dip or rinse containing 50 ppm of available chlorine dioxide (2.5 gallons Carnebon 200® diluted to 1,000 gallons with water).

**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 (2.5 gallons Carnebon 200® 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.

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- 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 should use a hand dip or rinse containing 50 ppm of available chlorine dioxide (2.5 gallons Carnebon 200<sup>®</sup> diluted to 1,000 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 (2.5 gallons Carnebon 200<sup>®</sup> 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 (2.5 fl. oz. Carnebon 200<sup>®</sup> 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 Carnebon 200<sup>®</sup> 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 should be mopped daily with a solution containing 390 ppm of available chlorine dioxide (2.5 fl. oz. of Carnebon 200<sup>®</sup> diluted to 1 gallon with water).
- 3) A foot bath containing 1,000 ppm of available chlorine dioxide (2.5 gallons Carnebon 200<sup>®</sup> diluted to 50 gallons with water) should be placed at all entrances to the incubator room.
- 4) 20 ppm of available chlorine dioxide (1.0 gallon Carnebon 200<sup>®</sup> 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 (2.5 gallons Carnebon 200<sup>®</sup> diluted to 500 gallons with water) to reduce airborne bacterial contamination.
- 5) Each time the eggs are removed from the incubator, a prior hand dip at 50 ppm solution of available chlorine dioxide (2.5 gallons Carnebon 200<sup>®</sup> diluted to 1,000 gallons with water) is recommended, followed by a spray of 1,000 ppm solution of available chlorine dioxide (2.5 gallons Carnebon 200<sup>®</sup> diluted to 50 gallons with water) on the eggs from a spray bottle.
- 6) Where containers are used to discard bad eggs, 5 oz. of Carnebon 200<sup>®</sup> per quart of water (3,125 ppm of available chlorine dioxide) will control obnoxious odors 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 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 (1.0 gallon of Carnebon 200<sup>®</sup> diluted to 1,000 gallons 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 (2.5 gallons Carnebon 200<sup>®</sup> diluted to 50 gallons with water). The rinse must be at least ½ inch deep and should 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 (2.5 gallons of Carnebon 200<sup>®</sup> 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 (2.5 gallons Carnebon 200<sup>®</sup> diluted to 50 gallons with water) and stored.

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**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 25.0 ml (approximately 1.0 fl oz.) of Carnebon 200<sup>®</sup> 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 available ClO<sub>2</sub>.
- 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. Carnebon 200<sup>®</sup> solutions should be made up fresh, preferably on Monday and discarded on Friday or 5 days after preparation.