

74602-2

12-10-2003

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

December 10, 2003

Kenneth Howlett
 Verox Group, LLC
 1220 North Market Street
 Suite 606
 Wilmington, DE 19801

Subject: **VEROX-5HM**
 EPA File Registration No. 74602-2
 Application Date: September 12, 2003
 Receipt Date: September 17, 2003

Dear Mr. Howlett:

This amendment submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended, is acceptable with conditions.

Conditions

1. *Remove the hand dip application from the "To control bacteria and odor in egg room" directions for use. The hand use application is covered under FDA and should not appear on an EPA.*
2. *A Certification with Respect to Citation of Data form was submitted, which indicates that Verox will offer to pay under the selective method of support. Selective method requires that you identify the specific studies being cited. This requirement has not been satisfied for this product.*

Potato uses have been accepted on a number of sodium chlorite products after the generation of significant data. This data will have to be cited to obtain these uses.

3. *The "In Potato Facilities Such As Potato Storage Sheds, Storage Cellars, Potato Packaging and Processing Facilities" claims have been removed from the stamped label.*

CONCURRENCES							
SYMBOL	7510C						
SURNAME	Mitchell						
DATE	12-10-03						

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General Comments

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

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

Sincerely,

A handwritten signature in black ink, appearing to read "R. Brennis", with a stylized flourish at the end.

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

VEROX[®]-5HM

FOR INSTITUTIONAL OR INDUSTRIAL USE ONLY

ACTIVE INGREDIENT: Sodium Chlorite.....	7.3%
OTHER INGREDIENTS:.....	92.7%
TOTAL	100%

Equivalent to 5% Aqueous Stabilized Chlorine Dioxide

KEEP OUT OF REACH OF CHILDREN
CAUTION

See Side Panels For Additional Precautions

FIRST AID

If on skin or Clothing :	Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes.
If swallowed:	Call a poison control center or doctor for treatment advice. Call a poison control center or doctor for treatment advice. Have a person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor.
If inhaled:	Do not give anything by mouth to an unconscious person. Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible.
If in eyes:	Call poison control center or doctor for treatment advice. 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.

NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate the use of gastric lavage.

HOT LINE NUMBER

Have the product container or label with you when calling the poison control center or doctor, or going for treatment. You may also contact 1-800-858-7378 for emergency medical treatment information.

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EPA REG. NO. 74602-2

EPA EST. 74602-DE-001

ACCEPTED
WITH COMMENTS
EPA REGION 1

_____ Gals. Net (_____)

DEC 10 2003

Manufactured By:
The Verox Group, LLC.
1220 North Market Street, Suite 606
Wilmington, DE 19801

Under the Federal Insecticide,
Fungicide, and Rodenticide Act
registered under EPA Reg. No. 74602-2

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS & DOMESTIC ANIMALS

CAUTION: Harmful if swallowed. May cause skin and eye irritation. Avoid contact with eyes, skin, clothing. Remove and wash contaminated clothing to avoid fire.

ENVIRONMENTAL HAZARDS

This product is toxic to fish and aquatic organisms. Do not discharge effluent containing this product into lakes, stream, 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 the 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 HAZARDS

Dry sodium chlorite is a strong oxidizing agent. This product becomes a fire or explosive hazard if allowed to dry. Mix only into water. Contamination may start a chemical reaction with generation of heat, liberation of hazardous gases. (chlorine dioxide a poisonous, explosive gas), and possible fire and explosion. Do not contaminate with garbage, dirt, organic matter, household products, chemicals, soap products, paint products, solvents, acids, vinegar, beverages, oils, pine oil, dirty rags, or any other foreign matter.

STORAGE AND DISPOSAL

Storage: Do not contaminate water, food or feed by storage or disposal. Keep product in tightly closed container when not in use. Do not drop, roll or skid drum. Keep upright. Always replace cover. Store in a cool, dry well-ventilated area away from heat or open flame.

EMERGENCY HANDLING: In case of contamination or decomposition, do not reseal container. If possible, isolate container in open well-ventilated area. Flood with large volumes of water. If fire occurs, extinguish fire by applying large quantities of water. Any unopened drums near the fire should be cooled by spraying with water.

PESTICIDE DISPOSAL: Pesticides wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste Representative at the nearest EPA Regional Office for guidance.

CONTAINER DISPOSAL: Triple rinse container. Then offer recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or, if allowed by state and local authorities, by burning, stay out of smoke.

DIRECTIONS FOR USE

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

ACTIVATION

The active biocidal component of the VEROX[®]-5HM system is free chlorine dioxide. Unactivated VEROX[®]-5HM in the neutral to mildly alkaline pH range is bacteriostatic. For higher levels of microbial control, such as sanitation and disinfection, activation of VEROX[®]-5HM is required to generate free chlorine dioxide. The use of the VEROX[®] labeled activator VEROX[®]-AX is specified in most VEROX[®]-5HM label applications. Alternative VEROX[®] labeled activators can also be used. Please contact VEROX[®] Technical Services "VTS" for recommendations for alternative VEROX[®] activators. Activation equivalent to that of VEROX[®]-AX may be achieved by adjusting the VEROX[®]-5HM solution to a pH 2-3 with an alternative VEROX[®] labeled activator. The activated VEROX[®]-5HM is then diluted to the required use concentration in accordance with label instructions. For food processing applications, the VEROX[®]-AX activator should be used. This product can be used in Federally Inspected Meat and Poultry Facilities as a sanitizer.

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

[1]

For use as a terminal food-contact 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.

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Under the terms of the license,

the following information is provided:

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- 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.
- 4) Preparation of Activated Use-Solution
Prepare an activated solution containing 1000 ppm of total available chlorine dioxide by adding one (1) gallon of Verox[®] 5HM per 50 gallons of water followed by 780 grams (1.71 lbs.) of VEROX[®]-AX per 50 gallons of solution. Allow to stand for 15 minutes after agitation for 5 minutes. Alternatively, an activated solution (5000 ppm of total available chlorine dioxide) can be prepared by adding one (1) gallon of VEROX[®] 5HM to 9 gallons of water followed by an approved labeled activator such as VEROX[®]-AX 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 water to give 200 ppm of total available chlorine dioxide.
- 5) 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.
- 6) 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.
- 7) 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 rains of the plant.

IN WATER TREATMENT AND WATER STORAGE SYSTEMS.

[2]

To disinfect water storage systems aboard aircraft, boats, RV's, offshore oil rigs, etc.

- 1) Prior to disinfection, tanks should be cleaned using a VEROX[®] approved detergent and thoroughly flushed with clean, potable water. There is both a 10 minute and a one (1) hour disinfection procedure to choose from.
- 2) Preparation of active Solution: For 10 minute procedure: Place 1 1/3 oz. (39.3 mls) of VEROX[®]-5HM concentrate into a clean plastic container and add 10 grams of VEROX[®]-AX. Prepare in a well-ventilated area. Avoid breathing any fumes which may be produced while crystals are dissolving. Allow 5 minutes

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Disinfectant,
Chlorine Dioxide

Verox[®] 5HM, Verox[®]-AX
EPA Reg. No. 74602-2

reaction time and for crystals to dissolve completely. Pour activated solution into tank and dilute with clean potable water filling the tank completely at the rate of one (1) gallon for each 1 1/3 fl. oz. VEROX®-5HM (500 ppm available chlorine dioxide). Bleed air out of lines and allow to stand at least 10 minutes. Drain tank and lines and flush with potable water.

- 3) For one (1) hour procedure: Place 1 1/3 fl. oz. of VEROX®-5HM concentrate into a clean plastic container and add 10 grams of VEROX®-AX. Prepare in a well-ventilated area. Avoid breathing any fumes which may be produced while crystals are dissolving. Allow 5 minutes reaction time and for crystals to dissolve completely. Pour activated solution into tank and dilute with clean, potable water filling the tank completely, at the rate of 10 gallons for each 1 1/3 fl. oz. VEROX®-5HM (50 ppm available chlorine dioxide). Bleed air out of lines and allow to stand at least one (1) hour. Drain tank and lines, then fill with potable water.

[3]

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. Thoroughly rinse with clean, potable water.
- 2) Potable water should be treated at a rate of one (1/2) fl. oz. (14.8 mls) VEROX®-5HM per 30 gallons potable water (5 ppm available chlorine dioxide) and may be injected via a VEROX®-Generator or batch treated.
- 3) The water storage tank should be sufficiently sealed to prevent outside contamination and kept out of direct sunlight.
- 4) Using a VEROX® test kit, confirm the chlorine dioxide concentration to be 5 ppm and check to see this amount does not fall below 1 ppm.

[4]

To help remove off odors and tastes from municipal well waters.

- 1) VEROX®-5HM should be injected into the incoming water main using a VEROX®-Generator system at a rate of one (1/2) fl. oz. (14.8 mls) VEROX®-5HM per 150 gallons water (1.0 ppm available chlorine dioxide).
- 2) Confirm the VEROX®-Generator system for accuracy using a VEROX® chlorine dioxide test kit and adjust accordingly.
- 3) VEROX®-5HM levels should be checked weekly.

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[5]

- 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 VEROX[®] approved detergent and rinse with clean potable water before sanitizing.
- 3) Preparation of sanitizing solution: Place 1 1/3 fl. oz. (39.33 mls) of VEROX[®]-5HM concentrate into a clean plastic pail or drum and add 10 grams of VEROX[®]-AX. Prepare in a well-ventilated area. Avoid breathing any fumes which may be produced while crystals are dissolving. Allow 5 minutes reaction time for crystals to dissolve completely. To this solution, add 5 gallons of clean potable water (100 ppm available chlorine dioxide).
- 4) To apply: Flush picking baskets, line equipment or other food contact surface with active 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.

[6]

- 1) Before disinfection, all gross filth must be removed from areas to be disinfected and thoroughly cleaned with a VEROX[®] approved detergent followed by a clean, potable water rinse.
- 2) Preparation of active disinfecting solution: Place 1 1/3 fl. oz. (39.33 mls) of VEROX[®]-5HM concentrate into a clean, plastic pail and add 10 grams of VEROX[®]-AX. Prepare in well-ventilated area, avoid breathing fumes which may be produced while crystals are dissolving. Allow 5 minutes reaction time for crystals to dissolve completely. To this solution, add one (1) gallon of clean, potable water (500 ppm available chlorine dioxide).
- 3) To apply: Spray disinfectant solution onto surface using a VEROX[®] approved spraying device and making sure that the area is thoroughly wet for at least 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 re-use activated solutions.

[7]

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 a VEROX[®] approved detergent followed by a potable water rinse.
- 2) Preparation of solution: Place 2 ½ fl. oz. (73.93 mls) of VEROX[®]-5HM concentrate per gallon of working solution (1000 ppm available chlorine dioxide) into a clean, plastic pail or drum and dilute with clean, potable water.
- 3) To apply: Drench, spray or fog solution onto walls, floors, ceilings and post-crop mushroom growing surfaces using a VEROX[®] approved watering, spraying or DRAMM[™] 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 re-populating. Avoid breathing solution mist by use of an applicable NIOSH/MSHA approved respirator appropriate for chlorine dioxide. Avoid contact with food or food contact surfaces. Allow to air dry.
- 4) Repeat application as needed.

IN ANIMAL REARING AND CONFINEMENT FACILITIES

[8]

To disinfect commercial animal confinement facilities such as poultry houses, swine pens, calf barns and kennels.

- 1) Remove all animals and feed from premises, vehicles, enclosures, coops and crates.
- 2) Remove all litter and manure from floors, walls and surfaces of barns, pens, stalls, chutes and other facilities and fixtures occupied or traversed by animals.
- 3) Empty all troughs, racks and other feeding and watering appliances.
- 4) Thoroughly clean all surfaces with an approved VEROX[®] soap or detergent and rinse with water.
- 5) Preparation of active disinfectant solution: Place 1 1/3 fl. oz. (39.33 mls) VEROX[®]-5HM concentrate into a clean, plastic pail and add 10 grams of VEROX[®]-AX. Prepare in a well-ventilated area. Avoid breathing any fumes, which may be produced while crystals are dissolving. Allow 5 minutes reaction

VEROX[®]-AX
10 grams

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VEROX[®]-AX
10 grams

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time and for crystals to dissolve completely. To this solution, add one (1) gallon of clean, potable water (500 ppm of available chlorine dioxide).

- 6) To apply: Using an approved VEROX[®] commercial sprayer, saturate all surfaces with the activated VEROX[®]-5HM solution for a period of 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 dried.
- 8) Thoroughly scrub treated feed racks, troughs, automatic feeders, fountains and waterers with soap or detergent and rinse with potable water before use.

[9]

To control the buildup 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 an approved VEROX[®] soap or detergent and rinse with clean water.
- 2) Preparation of solution: Place 2 ½ fl. oz. (73.93 mls.) VEROX[®]-5HM concentrate per gallon of working solution (1000 ppm available chlorine dioxide) into a clean, plastic pail.
- 3) To apply: Using an approved VEROX[®] commercial sprayer, saturate all surfaces with the VEROX[®]-5HM solution. When spraying VEROX[®]-5HM solutions, always use an applicable NIOSH/MSHA approved respirator appropriate for chlorine dioxide to avoid breathing mist.

[10]

To control animal odors on carpets

- 1) Add 1 1/3 fl. oz. (73.93 mls) of VEROX[®]-5HM per gallon (500 ppm available chlorine dioxide) of either rug shampoo mix or 1 1/3 fl. oz. VEROX[®]-5HM per each gallon of rinse water. Shampoo carpet. Allow to air dry. CAUTION: VEROX[®]-5HM 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.

ACCEPTED
with COMMENTS
EPA Label Dated:

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Under the Federal Insecticide,
Fungicide and Rodenticide Act as
amended, this pesticide,
registered under EPA Reg. No. 74602-2

[11]

As a terminal sanitizing rinse for stainless steel and other hard nonporous food contact surfaces such as tanks, transfer lines and other food process equipment.

- 1) All gross food particles and soil should be removed prior to sanitizing by use of a pre-flush, pre-scrape or pre-soak treatment.
- 2) Clean tank, line, or surface thoroughly using a VEROX[®] approved detergent and rinse with clean potable water before sanitizing.
- 3) Preparation of sanitizing solution: Place 1 1/3 fl. oz. (39.33 mls) of VEROX[®]-5HM concentrate into a clean plastic pail or container and add 10 grams of VEROX[®]-AX. Prepare in a well-ventilated area. Avoid breathing any fumes which may be produced while crystals are dissolving. Allow 5 minutes reaction time for crystals to dissolve, completely. To this solution, add 5 gallons of clean potable water (100 ppm available chlorine dioxide).
- 4) To apply: Fill, flush, immerse, or spray tank, line, equipment or food contact surface with active solution making sure surface, area is thoroughly wet for at least one minute. After sanitizing drain tank, line, or equipment and allow to air dry. Fresh sanitizing solution should be made up daily or more often if solution becomes diluted or soiled.

[12]

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 VEROX[®] approved detergent followed by a clean, potable water rinse.
- 2) Place 1 1/3 fl. oz. (39.33) of VEROX[®]-5HM concentrate into a clean, plastic pail and add 10 grams of VEROX[®]-AX. Prepare in a well-ventilated area, avoid breathing any fumes which may be produced while crystals are dissolving. Allow 5 minutes reaction time and for crystals to dissolve completely. To this solution, add one (1) gallon of clean, potable water (500 ppm of available chlorine dioxide).
- 3) To apply: Spray disinfectant solution onto surface to be disinfected, using a VEROX[®] approved spraying device and making sure that the area is thoroughly wet for at least 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 re-use activated solutions.

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[13]

To control mold and mildew, odor and slime-forming bacteria on walls, floors, and ceilings.

- 1) Before treatment, all soil and gross filth must be removed from areas to be treated and cleaned with a VEROX[®] approved detergent followed by a potable water rinse.
- 2) Preparation of solution: Place 2 ½ fl. oz (73.93 mls) of VEROX[®]-5HM concentrate per gallon of working solution (1,000 ppm available ClO₂) into a clean, plastic pail or drum and dilute with clean potable water.
- 3) To apply: spray solutions onto walls, floors, and ceilings using a VEROX[®] approved spraying device and making sure all surface areas are damp. Avoid breathing solution mist by use of an applicable NIOSH/MSHA approved respirator appropriate for chlorine dioxide. Avoid contact with food or food surfaces. Allow to air dry.
- 4) Repeat application as needed.

[14]

To control the buildup of odor and slime and control taste in ice plants and poultry and meat processing plant water.

- 1) Ice-making machinery should be disassembled and thoroughly cleaned with a VEROX[®] approved detergent solution followed by a potable rinse.
- 2) Meter to the incoming water to the ice plant potable water system 51 fl. oz. (1,508.25 mls) of VEROX[®]-5HM per 1000 gallons of water (20 ppm available chlorine dioxide).
- 3) As an additive to potable water in meat and poultry processing plants to inhibit bacterial slime and improve taste and odor, add 51 fl. oz. (1,508.25 mls) of VEROX[®]-5HM per 1000 gallons of water.

[15]

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 etc., should be thoroughly cleaned, when possible, with a VEROX[®] approved detergent and completely rinsed using clean potable water prior to treatment.
- 2) Preparation of solution: Chill tanks or vegetable rinse tanks may be batch loaded at the start up with 1/8 fl. oz. (3.7 ml) non-activated working solution of VEROX[®]-5HM per 10 gallons of potable water (5.0 ppm available chlorine

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dioxide). Make-up waters should be treated using a VEROX®-Generator system and applied at the rate of 1/8 fl. oz. (3.7 ml) per 10 gallons potable water. Make new VEROX®-5HM solutions daily.

[16]

Optional activated solution may be used 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.

- 1) Preparation of activated solution: Prepare in a well-ventilated area, avoid breathing any fumes which may be produced while crystals are dissolving. Measure 1/8 oz. (3.7 ml) of VEROX®-5HM and pour into a clean plastic container containing one (1) gallon of water. Activate the solution by adding one (1) gram of VEROX®-AX.
- 2) Allow this to stand for 15 minutes and then add to 9 gallons of water (5 ppm chlorine dioxide). Chill tanks or vegetable rinse tanks may be batch loaded at start up with activated VEROX®-5HM solution with 1/8 fl. oz. (3.7 ml) per 10 gallons of potable water (5.0 ppm available chlorine dioxide). Make-up waters should be treated using a VEROX®-Generator. In order to insure the accurate delivery, a 1:10 dilution of the active concentration should be made and a feed rate of 1 1/3 fl. oz. (39.33 mls) per 10 gallons should be maintained. Make up fresh VEROX®-5HM solutions daily.

[17]

For use in the preparation of fruits and vegetables to extend freshness and shelf life. Pretreatment for uncut unpeeled fruits and vegetables.

- 1) Before treatment, whole fruits and vegetables should be washed and thoroughly rinsed with clean potable water.
- 2) To one (1) gallon of water, add 1/8 fl. oz. (3.7 ml) of VEROX®-5HM and add one (1) gram of VEROX®-AX to adjust the pH to 2-3. Allow to stand for 15 minutes then add to 9 gallons of water (5.0 ppm of available chlorine dioxide).
- 3) Dip produce in treatment solution for about 10 to 20 seconds, then follow with a potable water rinse.

[18]

To control the build-up of odor and slime forming bacteria in stainless steel transfer lines and online equipment such as hydrocoolers, pasteurizers and the like overnight and over weekends.

- 1) Clean equipment or line thoroughly using a VEROX® approved detergent followed by a clean potable water rinse before treatment.

ACKNOWLEDGED
WITH COMMENTS
RE: 10/10/03

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- 2) Preparation and application of solution: For each 10 gallons of volume in lines and/or equipment, add 1/2 fl. oz. (14.79 mls), of VEROX®-5HM (20 ppm available chlorine dioxide) to potable make-up water. Mix the solution, fill lines and equipment, and let stand overnight. Drain and allow to air dry just prior to next start-up.

[19]

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, conveyer chains, heat exchanges, heat exchange towers, lines, spray bars, and nozzles should be thoroughly cleaned when possible, and completely rinsed using clean potable water prior to treatment.
- 2) Preparation of solution: Water systems including the cooling or warming tanks or spray systems, towers, lines, and all water containing parts of the system may be batch loaded at start up with 13 fl. oz. (384.46 mls) of VEROX®-5HM per one 1000 gallons of potable water (5.0 ppm available chlorine dioxide). To maintain the 5.0 ppm available chlorine dioxide in the water system a VEROX®-Generator can be used for additions to the system or for treating the make-up water. Make up new VEROX®-5HM solutions daily.

[20]

Optional activated solution: If heavy use of cooling or warming water or introduction of additional bacteria loads is expected or if slime buildup is heavy, an additional activation step may be used in preparation of solution.

- 1) Preparation of activated solution: Prepare in a well-ventilated area, avoid breathing any fumes which may be produced while crystals are dissolving. For each 1000 gallons of water to be treated, measure 13 fl. oz. (384.46 mls) of VEROX®-5HM and pour into a clean plastic container, pail, or drum. To this amount, add VEROX®-AX, at the rate of 95 grams of crystals per 13 fl. oz. of VEROX®-5HM. Allow 5 minutes reaction time for crystals to dissolve. Dilute 1000 gallons of working solution (5.0 ppm available chlorine dioxide). Cooling or warming water systems may be batch loaded at start up using 51 fl. oz. of the prepared solution (1,000) gallons of potable water (5.0 ppm available chlorine dioxide). Batch or timed additions of the prepared solution can be made or a VEROX®-Generator system can be used for additions of the prepared solution to the process water to maintain 5.0 ppm available chlorine dioxide. Make up new VEROX®-5HM solutions daily.

APPROVED
12/10/03
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Under the Federal Insecticide,
Fungicide and Rodenticide Act as
amended, and registered under
EPA Reg. No. 74602-2

[21]

To inhibit bacterial slime forming bacterial buildup in cooling water systems.

- 1) Add 1 gallon of VEROX[®]-5HM per 10,000 gallons (5.0 ppm available chlorine dioxide) of cooling water 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 LABORATORIES, HOSPITALS, MORGUES, AND INSTITUTIONS.

This product is not to be used as a terminal sterilant/high level disinfectant on any surface or instrument that (1) is introduced directly into the human body, either into or in contact with the blood stream or normally sterile areas of the body, or (2) contacts intact mucous membranes but which does not ordinarily penetrate the blood barrier or otherwise enter normally sterile areas of the body. This product may be used to pre-clean or decontaminate critical or semi-critical medical devices prior to sterilization or high level disinfection.

[22]

To disinfect 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 VEROX[®] approved detergent and rinse with water prior to disinfection.
- 2) Preparation of active disinfecting solution: Place 1 1/3 fl. oz. (39.33 mls) of VEROX[®]-5HM concentrate into a clean, plastic pail and add 10 grams of VEROX[®]-AX. Prepare in a well-ventilated area, avoid breathing fumes which may be produced while crystals are dissolving. Allow 5 minutes reaction time and for crystals to dissolve completely. To this solution add one (1) gallon of clean, potable water (500 ppm available chlorine dioxide).
- 3) To apply: Activated solutions may be sprayed, mopped or sponged onto surfaces to be disinfected. All surfaces must be thoroughly wetted for at least 10 minutes. When spraying disinfectant solutions, use an appropriate VEROX[®] approved 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 re-use activated solutions.

APPROVED
FOR USE
DATE: 12/10/03

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REVISIONS
DATE: 12/10/03
BY: [Signature]
No. 74602-2

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[23]

To disinfect bench tops, biological hoods, incubators, stainless steel equipment and instruments.

- 1) Clean all surfaces thoroughly with a VEROX[®] approved detergent and rinse with water prior to disinfection.
- 2) Preparation of active disinfectant solution: Place 0.50 ml of VEROX[®]-5HM concentrate into a clean, plastic pail or glass beaker and add 2 ½ grams of VEROX[®]-AX. Prepare in a well-ventilated area, avoid breathing any fumes which may be produced while crystals are dissolving. Allow 5 minutes reaction time and for crystals to dissolve completely. Then add activated VEROX[®]-5HM solution to one (1) liter of clean, potable water (500 ppm available chlorine dioxide).
- 3) To apply: 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 10 minutes. Allow to air dry. Activated solutions of VEROX[®]-5HM, stored in plastic squirt bottles, may be held up top one (1) week before replacement with fresh solution. Soak solutions of VEROX[®]-5HM should be changed daily.

[24]

To disinfect water bath incubators.

- 1) Prior to disinfection, thoroughly clean reservoir with a VEROX[®] approved detergent and rinse with clean water.
- 2) Preparation of active solution: Place 1/8 fl. oz. (3.7 mls) of VEROX[®]-5HM into a clean glass or plastic container. Add one (1) gram of VEROX[®]-AX per each 1/3 fl. oz. VEROX[®]-5HM. Prepare in a well-ventilated area, avoid breathing any fumes which may be produced while crystals are dissolving. Allow 5 minutes reaction time and for crystals to dissolve completely. Add activated VEROX[®]-5HM solution to one (1) gallon of clean, potable water (50 ppm available chlorine dioxide).
- 3) To apply: Activated solution should be poured into a water bath reservoir and allowed to stand one (1) hour at room temperature. Drain reservoir and fill with fresh water.

[25]

To control odor and slime forming bacteria in water bath incubators.

- 1) When using VEROX[®]-5HM in water bath incubators, always begin with a freshly cleaned and disinfected reservoir.

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- 2) To apply: Fill water bath with a clean, potable water near capacity. For each gallon of water add 1/8 fl. oz. (3.7 mls) of VEROX®-5HM (50 ppm available chlorine dioxide) When water becomes cloudy, discard water and repeat procedure.

[26]

To control odors resulting from the sterilization of spent biologicals in steam autoclaves.

- 1) To reduce autoclave odors of used biologicals, prepared solution should be sprayed or poured directly into the stainless steel autoclave buckets.
- 2) Preparation of solution: Place 2 ½ fl. oz. (73.93 mls) of VEROX®-5HM concentrate into a clean glass or plastic container. Dilute concentrate to one (1) gallon clean, potable water per each 2 ½ fl. oz. (73.93 mls) 1000 ppm available chlorine dioxide.
- 3) To apply: Spray or pour VEROX®-5HM solution into or onto the, autoclave buckets just prior to autoclaving.

[27]

To deodorize animal holding rooms, morgues and work rooms.

- 1) Rooms to be deodorized should be in a clean condition prior to VEROX®-5HM application.
- 2) Preparation of solution: Place 2 ½ fl. oz. (73.93 mls) VEROX®-5HM concentrate per one (1) gallon of working solution or 50 ml per one (1) liter of working solution (1000 ppm available chlorine dioxide) into a clean glass or plastic container.
- 3) To apply: Spray solution using a VEROX® approved 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.

POULTRY HOUSE DISINFECTION

[28]

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 one (1) gallon of VEROX®-5HM to each 10,000 gal. of poultry drinking water.

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- 2) After 24 hours, the addition rate can be reduced to 1 ppm of available chlorine dioxide by adding one (1) gallon of VEROX®-5HM to each 50,000 gal. 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 (1 gal. of VEROX®-5HM per 100,000 gal. 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 (1 gal. of VEROX®-5HM per 33,333 gal. of water).

[29]

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 gal. VEROX®-5HM diluted to 1,000 gal. with water) to remove gross filth or heavy soil.
- 2) Spray the entire area for 5 minutes with a VEROX® Dramm™ Fogger with a 1000 ppm solution of available chlorine dioxide (1 gal. of VEROX®-5HM diluted to 50 gal. with water), being sure to cover walls, ceilings, 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 (1 oz. VEROX®-5HM per 50 gal. of water) is placed at the entrance to the egg room. Doors to the room should be kept closed at all times. Allow to dry on the floor to establish a contact time.
- 4) A foot bath of 1000 ppm of available chlorine dioxide (1 gal. of VEROX®-5HM per 50 gal. of 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 (1 gal. of VEROX®-5HM per 1000 gal. of water) is used on entering and exiting the room.

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

- 6) Humidification water is treated with 40 ppm of available chlorine dioxide (0.8 gallons of VEROX®-5HM per 1000 gal. of water) to prevent the build-up and airborne spread of odor causing microorganisms.

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- 7) Provide 20 ppm of available chlorine dioxide (0.4 gal. VEROX®-5HM per 1000 gal. of water) to water supply in the egg washing machine.

[30]

To control bacteria and odor in the hatching area

- 1) As soon as chicks are separated from Hatch, remove the 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 a VEROX® approved soap or detergent and rinse with water.
- 6) Spray or fog the entire area for five (5) minutes with a 1000 ppm solution of available chlorine dioxide (1 gal. VEROX®-5HM to 50 gal with water) using a VEROX® Dramm™ Fogger . Allow a ten (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 a VEROX® approved 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 (1 gal. of VEROX®-5HM diluted to 1000 gal. with water).

[31]

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.

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- 4) Thoroughly clean all surfaces with a VEROX[®] approved soap or detergent and rinse with water.
- 5) Spray or for the entire area for five (5) minutes with a 1000 ppm solution of available chlorine dioxide (1 gal. of VEROX[®]-5HM with water), using a VEROX[®] Dramm[™] Fogger. Allow a ten (10) minute contact time.
- 6) Ventilate buildings, coops and other closed spaces. Do not house poultry or empty equipment until treatment has been absorbed, set or dried.
- 7) Thoroughly scrub treated feed racks, troughs, automatic feeders, fountains and waterers with a VEROX[®] approved 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 gal. VEROX[®]-5HM diluted to 1000 gal. 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 1000 ppm of available chlorine dioxide (1 gal. VEROX[®]-5HM diluted to 50 gal. with water), on hands, wire mesh and in empty chick boxes to control contamination and odors from litter.
- 11) To clean the floor by mopping daily, use a solution containing 390 ppm of available chlorine dioxide (1 oz. VEROX[®]-5HM per gal. of water). Allow to dry.

[32]

To control bacteria and odor in the incubator room

- 1) The area is sprayed or fogged with an approved VEROX[®] system at least once per week for five (5) minutes with a 1000 ppm solution of available chlorine dioxide (1 gal. of VEROX[®]-5HM diluted to 50 gal. 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 (1 oz. of VEROX[®]-5HM diluted to one (1) gal. with water).
- 3) A foot bath containing 1000 ppm of available chlorine dioxide (1 gal. of VEROX[®]-5HM diluted to 50 gal.) should be placed at all entrances to the incubator room.
- 4) 20 ppm of available chlorine dioxide (0.4 gal. of VEROX[®]-5HM diluted to 1000 gal. with water) is added to water in the humidification system or the air filters are sprayed with a 100 ppm solution of available chlorine dioxide (1 gal. of VEROX[®]-5HM diluted to 500 gal. with water) to reduce airborne bacterial contamination.

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- 5) Each time the eggs are removed from the incubator, a prior hand dip at 50 ppm solution of available chlorine dioxide (1 gal of VEROX[®]-5HM to 1000 gal.) is recommended, followed by a spray of 1000 ppm solution of available chlorine dioxide (1 gal. of VEROX[®]-5HM diluted to 50 gal. with water) on the eggs from a spray bottle.
- 6) Where containers are used to discard bad eggs, 2 oz. of VEROX[®]-5HM per quart of water (3,125 ppm 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.

[33]

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 of 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 gal. of VEROX[®]-5HM diluted to 1000 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 1000 ppm available chlorine dioxide (1 gal. of VEROX[®]-5HM diluted to 50 gal. 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 disinfected by spraying or fogging with an approved VEROX[®] system with a solution containing 1000 ppm of available chlorine dioxide (1 gal. of VEROX[®]-5HM diluted to 50 gal. with water) for fifteen (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 1000 ppm solution of available chlorine dioxide (1 gal. of VEROX[®]-5HM diluted to 50 gal. with water) and stored.

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[34]

Sanitation of Food-Grade Egg Shells for Food or Food Products:

- 1) To sanitize clean shell eggs intended for food or food products. VEROX[®]-5HM should be prepared using a VEROX[®]-Generator System and applied at the rate of 1/8 fl. oz. of VEROX[®]-5HM (3.7ml) per 10 gallons potable water (5.0 ppm available chlorine dioxide). The active solution must be equal to or warmer than the eggs, but not to exceed 130f. Wet eggs thoroughly and allow to drain. Eggs that have been sanitized with VEROX[®]-5HM shall be subjected to a thorough potable rinse only if they are to be immediately broken for use in the manufacture of egg products. Eggs must be reasonably dry before casing or breaking. The solution of VEROX[®]-5HM must **not** be reused for sanitizing eggs.

[35]

For Fogging and Misting Applications:

VEROX[®]-5HM may be added to the plant misting or fogging systems to deodorize and to control odor causing bacteria, mold and mildew in food processing plants, dairies, bottling plants, poultry, meat and fish plants and animal facilities such as poultry houses, swine pens, calf barns and kennels.

Application Directions:

When fogging rooms with VEROX[®]-5HM, care should be taken not to exceed the TLV-TWA of 0.1 ppm (0.30 mg/m³). If the TLV-TWA is to be exceeded, turn off air handlers and vacate people and livestock from the rooms to be fogged or misted. Ventilate for 15 minutes prior to reentry.

- 1) Mix 1.7 ml to 33 ml VEROX[®]-5HM per gallon of water. To this dilution, add a sufficient amount of 1 to 3% by weight of a VEROX[®] activator to lower the pH to 3.5 to 5.0.
- 2) Allow this diluted mixture to react for at least 15 minutes before adding to the plant fogging or misting system.
- 3) For best result, fogging or misting with diluted, activated VEROX[®]-5HM should be done as close to the ceiling as possible.

NOTE -- Be careful not to add large concentrated solutions of a VEROX[®] activator to undiluted VEROX[®]-5HM as high concentrations of chlorine dioxide gas may evolve. The concentration of chlorine dioxide in the diluted VEROX[®]-5HM solution should not be allowed to exceed 0.5 ppm as determined by the Hach DPD method for chlorine dioxide detection. Please consult your VEROX[®] Technical Services "VTS" representative for exact testing procedures before adding any VEROX[®] activator to VEROX[®]-5HM. The use of VEROX[®]-5HM in fogging or misting should be accompanied by a regular air monitoring program.

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POULTRY PROCESSING

[36]

Carcass sprays, dips, rinses:

VEROX[®]-5HM may be used as an equipment rinse and carcass spray or dip at a use rate of 0.8 to 1.9 ounces per gallon (500-1200 ppm available chlorine dioxide) in combination with the VEROX[®]-AX activator at levels sufficient to achieve a solution pH of 2.5 to 2.9

Chill water application:

VEROX[®]-5HM is a source of available chlorine dioxide for treating poultry chill water and pre-chill water when used at a rate of 0.11 to 0.33 ounces per gallon in combination with the VEROX[®]-AX activator at levels sufficient to achieve a solution pH of 2.8 to 3.2.

TO CONTROL SLIME AND MOLD GROWTH ON FOOD PROCESS AND BEVERAGE CONVEYORS

[37]

VEROX[®]-5HM may be sprayed on food process conveyors to control mold and slime build-up that leads to product contamination and possible belt slippage. Apply VEROX[®]-5HM at a rate of 1.1 to 2.2 fluid ounces per 5 gallons of water either by itself or in combination with a non-reactive water based lubricant.

FOR DEODORIZATION

[38]

VEROX[®]-5HM effectively eliminates odors in the air and at their source.

- 1) Before deodorization, remove unopened and unwrapped food and beverages from the area to be treated.
- 2) Dilute a minimum of 0.6 fluid ounces of VEROX[®]-5HM per gallon of water to be used. For severe conditions, VEROX[®]-5HM may be used undiluted.
- 3) For room deodorization, spray, pour, or wipe the VEROX[®]-5HM solution as needed. For best results, apply the VEROX[®]-5HM as near to the center of the area to be treated as possible.
- 4) For surface deodorization, spray, pour, or wipe the VEROX[®]-5HM on the effected area as often as necessary. For best results, allow to air dry for ten (10) minutes after treatment and then rinse surfaces treated with potable water.

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TO CONTROL MOLD AND MILDEW

[39]

VEROX®-5HM is effective in controlling mold and mildew on bathroom surfaces, shower stalls, on curtains, in laundry rooms, hampers, and on other surfaces where mold and mildew may be present.

- 1) Before treatment, remove gross filth and debris from the affected surfaces. Remove all open unwrapped food and beverages from the vicinity.
- 2) Dilute a minimum of 13 fl. oz. of VEROX®-5HM solution as needed. For several applications, VEROX®-5HM may be used undiluted.
- 3) Spray mist, fog, pour or wipe the VEROX®-5HM solution onto the surface to be treated. Allow the VEROX®-5HM to contact the surface for at least 5 minutes. Allow the surfaces to drain and air dry. After 30 minutes, rinse with water. Repeat as necessary.

TO PREVENT CORROSION AND SLIME FORMATION IN OIL FIELD SECONDARY RECOVERY OPERATIONS

[40]

Application Directions:

- 1) Prepare a working solution by diluting each gallon of VEROX®-5HM to be used with 6 gallons injection water.
- 2) Proportion 1 part of the diluted VEROX®-5HM solution into 130-140 parts reinjection water acidified or activated with a VEROX® activator to a pH of 3.0 to 4.0.
- 3) Increase or decrease the dose rate of the VEROX®-5HM solution as indicated by monitoring the microbial quality of the water.

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Fungicide, is classified as a pesticide
and used, for this purpose,
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