



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

OFFICE OF CHEMICAL SAFETY
AND POLLUTION PREVENTION

February 14, 2018

Rob R. Adams, Jr.
PeroxyChem LLC
c/o Adams Technology Systems
5154 Forest Run Trace-Suite B
Alpharetta, GA 30022

Subject: Notification per PRN 98-10 – Add CA Disclaimer
Product Name: VigorOX 15/10 Antimicrobial Agent
EPA Registration Number: 65402-9
Application Date: January 10, 2018
Decision Number: 538161

Dear Mr. Adams:

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

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

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

If you have any questions, you may contact Joe Daniels at (703) 347-8669 or via email at daniels.joseph@epa.gov.

Sincerely,

A handwritten signature in black ink, appearing to read 'Zeno Bain', with a stylized flourish at the end.

for

Zeno Bain, Product Manager 33
Regulatory Management Branch 1
Antimicrobials Division (7510P)
Office of Pesticide Programs

VigorOx[®] 15/10 Antimicrobial Agent

EPA Reg. No. 65402-9

EPA Est. (See container)

For Industrial Use Only

ACTIVE INGREDIENTS:

Peroxyacetic Acid 15%
Hydrogen Peroxide 10%

OTHER INGREDIENTS: 75%

TOTAL: 100%

KEEP OUT OF REACH OF CHILDREN DANGER

VigorOx[®] 15/10 Antimicrobial Agent is for biofouling and slime control in: **(Not approved for California)**

- Pulp and paper mill systems
- Recirculating process and cooling water systems
- Coating preservation
- Dispersed pigment preservation

VigorOx[®] 15/10 Antimicrobial Agent is for institutional/industrial sanitizing of previously cleaned non-porous food contact surfaces in:

- Dairies, Wineries, Breweries and Beverage Plants
- Meat and Poultry Processing/Packaging Plants
- Milk and Dairy Products Processing/Packing Plants
- Seafood and Produce Processing/Packing Plants
- Food Processing/Packing Plants
- Egg Processing/Packing Equipment Surfaces
- Eating Establishments

VigorOx[®] 15/10 Antimicrobial Agent is for Institutional/ industrial sanitizing of previously cleaned non-porous food contact surfaces such as:

- Eating, Drinking, and Food Preparation Utensils
- Tableware
- Plastic, Glass and Metal Bottles (rinse)

VigorOx[®] 15/10 Antimicrobial Agent is for use as a coarse spray for surfaces to be sanitized.

VigorOx[®] 15/10 Antimicrobial Agent can be used with the HRS[™] and HRS[™] II foaming agents. For food contact applications, the foaming agent must be used in compliance with applicable regulations under the Federal Food, Drug and Cosmetic Act.

VigorOx[®] 15/10 Antimicrobial Agent can be used with the non-foaming agent, Peradigm[™], as an antimicrobial container rinse and for hard, non-porous surface sanitization and disinfection.

VigorOx[®] 15/10 Antimicrobial Agent is for sanitizing surfaces such as packinghouse conveyers and harvesting equipment and containers.

VigorOx[®] 15/10 Antimicrobial Agent is for sanitization of hatching eggs.

VigorOx[®] 15/10 Antimicrobial Agent is for sanitization of shell eggs. **(Not approved for California)**

VigorOx[®] 15/10 Antimicrobial Agent is for porous and non-porous hard surface sterilization except aseptic packaging which is limited to hard surfaces only.



Manufactured by:

PeroxyChem, LLC

2005 Market St Ste 3200

Philadelphia PA 19103-7014

MARKED LABEL

VigorOx[®] 15/10 Antimicrobial Agent is for use in the disinfection of hard surfaces in general commercial and medical environments and as an antimicrobial rinse of Precleaned or New Returnable or Non-Returnable Containers.

VigorOx[®] 15/10 Antimicrobial Agent can be used for reducing pathogenic foodborne bacteria in processing waters for fruits and vegetables.

VigorOx[®] 15/10 Antimicrobial Agent is for use as a dip or spray wash or fog to control the growth of non-public health microorganisms that may cause decay and/or spoilage on raw, post-harvest and fresh cut, fruits and vegetables.

VigorOx[®] 15/10 Antimicrobial Agent is for use in process water that contacts raw, post-harvest, fresh-cut and processed fruits and vegetables.

VigorOx[®] 15/10 Antimicrobial Agent is for use in aseptic food processing on food packaging materials to achieve commercial sterility.

VigorOx[®] 15/10 Antimicrobial Agent is for use in wastewater and sewage effluent disinfectant in public and private treatment facilities. **(Not approved for California)**

VigorOx[®] 15/10 Antimicrobial Agent is for use in agricultural water and irrigation systems. **(Not approved for California)**

VigorOx[®] 15/10 Antimicrobial Agent is for use in commercial and Institutional /Industrial laundry operations for disinfection and sanitization.

VigorOx[®] 15/10 Antimicrobial Agent is for use in oilfield and gas-field well operations. **(Not approved for California)**

VigorOx[®] 15/10 Antimicrobial Agent may be used for the non-pesticidal purpose of cleaning room surfaces by fogging.

First Aid

Have the product container or label with you when calling a poison control center or doctor, or going for treatment.

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 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 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.

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 a poison control center or doctor.
- Do not give anything by mouth to an unconscious person.

Note to Physician: Probable mucosal damage may contraindicate the use of gastric lavage.

Net Contents: 55 Gallons (208 L) 495 lbs (224 kg)

**Precautionary Statements
Hazards to Humans and Domestic Animals
DANGER**

Corrosive, cause's eye and skin damage. Harmful if swallowed. Do not get in eyes, on skin or on clothing. Wear goggles or face shield and rubber gloves when handling. Wash thoroughly with soap and water after handling. Do not breathe vapor or spray mist. Do not enter an enclosed area without proper respiratory protection.

Physical or Chemical Hazards

Strong oxidizing agent. Mix only with water. VigorOx® 15/10 Antimicrobial Agent is not combustible; however, at temperatures exceeding 156°F, decomposition occurs releasing oxygen. The oxygen released could initiate or promote combustion of other materials.

Environmental Hazards

This pesticide is toxic to birds, mammals, fish, aquatic invertebrates, shrimp, clams, and oysters. Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans, or other waters unless in accordance with 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. In developing the NPDES permit, restrictions on the release of waters containing this product during low-flow periods and/or mixing zones, especially during maximum discharge should be considered.

STORAGE AND DISPOSAL

STORAGE: NEVER RETURN VigorOx® 15/10 Antimicrobial Agent TO THE ORIGINAL CONTAINER AFTER IT HAS BEEN REMOVED. Avoid all contaminants, especially dirt, caustic, reducing agents, and metals. Contamination and impurities will reduce shelf life and can induce decomposition. In case of decomposition, isolate container, douse container with cool water and dilute with large volumes of water.

Avoid damage to containers. Keep container closed at all times when not in use. Keep container out of direct sunlight. To maintain product quality, store at temperatures below 86°F. Do not store on wooden pallets.

Procedure for Leak or Spill

Stop leak if this can be done without risk. Shut off ignition sources; no flames, smoking, flares, or spark producing tools. Keep combustible and organic materials away. Flush spilled material with large quantities of water. Undiluted material should not enter confined spaces.

DISPOSAL

Pesticide Disposal: If material has been spilled, an acceptable method of disposal is to dilute with at least 20 volumes of water followed by discharge into suitable treatment system in accordance with all local, state, and Federal environmental laws, rules, regulations, standards, and other requirements. Because acceptable methods of disposal may vary by location, regulatory agencies should be contacted prior to disposal.

VigorOx® 15/10 Antimicrobial Agent which is to be discarded should be disposed of as hazardous waste after contacting the appropriate local, state, or Federal agency to determine proper procedures.

Container Disposal

Nonrefillable containers less than 5 gallons. Nonrefillable container. Do not reuse or refill this container. Offer for recycling, if available. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times.

Nonrefillable containers greater than or equal to 5 gallons. Nonrefillable container. Do not reuse or refill this container. Offer for recycling, if available. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container ¼ full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. Empty drums are not returnable to PeroxyChem, LLC unless special arrangements have been made. Dispose of drums in accordance with local, state, and Federal regulations.

All Refillable containers. Refillable container. Refill this container with pesticide only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. To clean the container before final disposal, empty the remaining contents from this container into application equipment or mix tank. Fill the container about 10 percent full with water. Agitate vigorously or recirculate water with the pump for 2 minutes. Pour or pump rinsate into application equipment or rinsate collection system. Repeat this rinsing procedure two more times. Return to PeroxyChem, LLC for reuse.

DIRECTIONS FOR USE

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

Biofouling Control in Pulp and Paper Mill Systems

(Not approved for California)

For use in the manufacture of paper and paperboard intended for food and non-food contact.

VigorOx® 15/10 Antimicrobial Agent can be used to control bacterial, fungal and yeast growth in pulp, paper and paperboard mills.

1. Severely fouled systems should be cleaned before initial treatment with VigorOx® 15/10 Antimicrobial Agent. Refer to the plant operations manual for directions for cleaning severely fouled systems. The product should be added directly to the system and not mixed with any other chemicals or additives. Other chemicals can be added separately. Contamination with other chemicals could result in product decomposition.
2. Add the VigorOx® 15/10 Antimicrobial Agent at a point in the system where it can be mixed uniformly with the pulp, e.g., the beater, hydropulper, fan pump, broke pump etc.
3. **Intermittent feed method:** Apply 0.5 lb to 1.2 lb (7 to 16 fluid ounces) of VigorOx® 15/10 Antimicrobial Agent per ton (dry basis) of pulp or paper produced for two to three hours every eight-hour shift. Maintain a concentration that provides adequate control. Daily rate could change depending on the severity of the biofouling.
4. **Continuous feed method:** Initially, use the intermittent feed method to achieve control. When control is accomplished, apply VigorOx® 15/10 Antimicrobial Agent continuously at the rate determined adequate for intermittent control. Then reduce the rate of addition to the lowest level sufficient to maintain control. Depending on the severity of the biofouling, control usually can be maintained using a continuous rate of 0.2 to 1.2 lb (2.6 to 16 fluid ounces) of VigorOx® 15/10 Antimicrobial Agent solution per ton (dry basis) of pulp or paper produced on a continuous basis. This will provide 15 to 90 ppm of peroxyacetic acid and 10 to 60 ppm of hydrogen peroxide.

Control of Bacteria and Fungi in Dispersed Pigments

(Not approved for California)

VigorOx® 15/10 Antimicrobial Agent can be used to control bacteria and fungi in the manufacture and storage of dispersed pigments used in paint and paper production such as kaolin clay, titanium dioxide, calcium carbonate, calcium sulfate, barium sulfate, magnesium silicate and kieselguhr.

Apply 0.2 to 1.2 lb (2.6 to 16 fluid ounces) (90 to 545 grams) of VigorOx® 15/10 Antimicrobial Agent solution to each 1,000 lb (454 Kg) of fluid. This

will provide 200 to 1200 ppm of product (30 to 180 ppm of peroxyacetic acid and 20 to 120 ppm of hydrogen peroxide).

Control of Slime Forming Bacteria in Recirculating Cooling Water Systems (Cooling Towers, Evaporative Condensers) and Non-Food Contact Water Systems (Pulp and Paper Mill Water Systems). (Not approved for California)

VigorOx® 15/10 Antimicrobial Agent is for use in treating raw (make-up) and process waters, closed and opened loop systems such as heat exchanges, wet scrubbers, cooling towers, evaporative condensers and recirculating industrial process waters, such as pulp and paper mill water systems.

1. Severely fouled systems should be cleaned before adding the VigorOx® 15/10 Antimicrobial Agent solution. Refer to the system operation manual for directions to clean severely fouled systems. The product should be added directly to the system and not mixed with any other chemicals or additives. Other chemicals should be added separately. Contamination with other chemicals could result in product decomposition.
2. Add the VigorOx® 15/10 Antimicrobial Agent solution at a point in the system where uniform mixing and even distribution will occur.
3. **Intermittent feed method:** When the system is noticeably fouled, apply 0.8 to 1.2 lb (10 to 16 fluid ounces) of VigorOx® 15/10 Antimicrobial Agent solution per 1000 gallons of water in the system. Repeat until control is achieved. When microbial control is evident, add 1.0 lb (14 fluid ounces) of the solution per 1000 gallons of water in the system every day, or as needed, to maintain control. The daily dose rate could vary depending upon the severity of the biofouling.
4. **Continuous feed method:** Initial dose – When the system is just noticeably fouled, apply 0.8 to 1.2 lb (10 to 16 fluid ounces) of VigorOx® 15/10 Antimicrobial Agent solution per 1000 gallons of water in the system. When microbial control is achieved, start adding VigorOx™ 15/10 Antimicrobial Agent solution continuously at a rate of 1.0 lb (14 fluid ounces) per 1000 gallons of water (provides 17 ppm peroxyacetic acid and 12 ppm of hydrogen peroxide). Then reduce the rate of addition to a level sufficient to maintain control. The dose rate may have to be adjusted to account for losses due to blowdown and evaporation. Add 1.4 fluid ounces of VigorOx™ 15/10 Antimicrobial Agent for every 100 gals of make-up water.

Control of Bacteria and Fungi in Coating Preservation (Not approved for California)

Do not use for coatings preservation applications involving direct or indirect food contact.

VigorOx® 15/10 Antimicrobial Agent can be used as an in-container preservative for the control of bacteria and fungi in water-based coatings such as paper coatings.

- Add 0.2 to 1.2 lb (2.6 to 16 fluid ounces) (90 to 545 grams) of VigorOx® 15/10 Antimicrobial Agent solution to each 1,000 lbs (454 Kg) of water (provides 200 to 1200 ppm of product or 30 to 180 ppm peroxyacetic acid and 20 to 120 ppm of hydrogen peroxide).

Aseptic Food Processing Operations

This product may be used to achieve commercial sterility of food packaging prior to fill and of equipment used in aseptic food processing applications.

Food Packaging Materials

Apply VigorOx® 15/10 Antimicrobial Agent on the exterior and interior of food containers and closure systems (caps, seals, etc.). Apply 4000 ppm peroxyacetic acid at a minimum temperature of 65°C. The solution must remain in contact with the packaging surface for a minimum of 20 seconds. Rinse containers with sterile water prior to filling with processed food; in lieu of a rinse, films may be mechanically stripped of excess sanitizing solution.

For a fine mist or vapor application, no rinse of treatment solution is required: (1) solution application does not exceed 0.0175 mL treatment solution per ounce container capacity; (2) treatment solution has not been recycled; and (3) no treatment solution with a concentration of higher than 4000 ppm peracetic acid has been added to the treatment solution reservoir.

This product may be used on food packaging as an aseptic packaging antimicrobial rinse in food packaging processing operation that has a scheduled process accepted by FDA. The aseptic food processing operation must comply with all applicable FDA regulations, including but not limited to 21 CFR parts 108, 110, 113, and/or 114. Use in an aseptic food processing operation includes testing required for the process validation.

Food Processing Equipment

This product may be used to achieve commercial sterility of non-porous food manufacturing, packaging and filling equipment.

VigorOx® 15/10 Antimicrobial Agent may be used as a manufacturing, filling (including rotary fillers) and packaging equipment.

1. Remove gross soil particles from equipment surfaces.
2. Clean surfaces thoroughly.
3. Rinse thoroughly with potable water.
4. Apply 4000 ppm peroxyacetic acid at a minimum temperature of 65 °C.
5. Use immersion, coarse spray or circulation techniques to apply VigorOx® 15/10 Antimicrobial Agent. Automated application by fine mist or vapor deposition may be used within enclosed spaces.
6. Allow contact time of at least 20 seconds.
7. Allow to drain dry.
8. A final rinse with sterile water is optional.

This product may be used on equipment used in aseptic packaging antimicrobial rinse in food processing operation that has a scheduled process accepted by FDA. The aseptic food processing operation must comply with all applicable FDA regulations, including but not limited to 21 CFR Parts 108, 110, 113, and/or 114. Use in an aseptic food processing operation includes testing required for the process validation.

Sanitization of Non-Porous Food Contact Surfaces

For use in circulation cleaning and institutional/industrial sanitizing of previously cleaned non-porous food contact surfaces and equipment, such as pipelines, tanks, vats, fillers, evaporators, pasteurizers, and aseptic equipment in:

- Dairies, Wineries, Breweries and Beverage Plants
- Meat and Poultry Processing/Packaging Plants
- Milk and Dairy Products Processing/Packing Plants
- Seafood and Produce Processing/Packing Plants
- Food Processing/Packing Plants
- Egg Processing/Packing Equipment Surfaces
- Eating Establishments, and in
- Final Sanitizing Bottle Rinse

Pathogenic Organisms

VigorOx® 15/10 Antimicrobial Agent is an effective sanitizer against *Staphylococcus aureus*, *Escherichia coli*, *Listeria monocytogenes* and *Salmonella typhimurium*.

Clean equipment immediately after use:

1. Remove gross particulate matter with a warm water flush.
2. Wash equipment with detergent or cleaning solution.
3. Rinse equipment with potable water.
4. Prepare VigorOx® 15/10 Antimicrobial Agent solution by adding 0.31 to 0.45 fluid ounces to 5 gallons potable water. This provides 85 to 123 ppm peroxyacetic acid and 57 to 82 ppm of hydrogen peroxide.
5. If sanitizing against *Listeria monocytogenes* use 0.4 to 0.45 fluid ounces (109 to 123 ppm peroxyacetic acid and 73 to 82 ppm hydrogen peroxide) of product to 5 gallons of potable water.
6. Fill closed systems with diluted sanitizer solution for a contact time of one (1) minute.
7. For open or not completely closed systems, use a coarse spray, mop/wipe or flood technique to apply the solution to the surface for a contact time of one (1) minute.
8. Allow surfaces to drain thoroughly before resuming operation.

Non-Pathogenic Spoilage Organisms (Not approved for California)

VigorOx® 15/10 Antimicrobial Agent is an effective sanitizer against non-pathogenic spoilage organisms: yeasts, molds.

Clean equipment immediately after use:

1. Remove gross particulate matter with a warm water flush.
2. Wash equipment with detergent or cleaning solution.
3. Rinse equipment with potable water.
4. To control non-pathogenic organisms, a rate of up to 1.8 fluid ounces to 5 gallons potable water may be used. This will provide 500 ppm peroxyacetic acid and 325 ppm hydrogen peroxide.
5. Fill closed systems with diluted sanitizer solution for a contact time of one (1) minute or more.
6. For open or not completely closed systems, use a coarse spray, mop/wipe or flood technique to apply the solution to the surface for a contact time of one (1) minute or more.
7. Allow surfaces to drain thoroughly before resuming operation.

For use with the non-foaming agent, Peradigm™

VigorOx® 15/10 Antimicrobial Agent may be mixed with the non-foaming agent, Peradigm™ and applied at room temperature or at a minimum of 25 °C.

1. Mix 0.5 fluid ounce VigorOx® 15/10 Antimicrobial Agent with Peradigm in 4.5 gallons of water.
2. Add a maximum of 43 fluid ounces of Peradigm to the dilute solution, and bring total volume to 5 gallons. This provides 125 ppm peroxyacetic acid and 85 ppm hydrogen peroxide.
3. Apply solution, allowing a minimum contact time of 30 seconds.
4. Rinse with sterile or potable water.

Eating Establishment Sanitizing

VigorOx® 15/10 Antimicrobial Agent is an effective sanitizer against *Staphylococcus aureus*, *Escherichia coli*, *Listeria monocytogenes* and *Salmonella typhimurium*.

1. Scrape/prewash plates, utensils, cups, glasses, etc. whenever possible.
2. Wash all items with a detergent.
3. Rinse thoroughly with potable water.
4. Prepare VigorOx® 15/10 Antimicrobial Agent solution as follows: Add 0.31 to 0.45 fluid ounces of the product to 5 gallons of potable water. This will provide 85 to 123 ppm peroxyacetic acid and 57 to 82 ppm of hydrogen peroxide.
5. Immerse all items for at least one (1) minute or for a longer contact time if specified by the local governing sanitizing code.
6. If sanitizing against *Listeria monocytogenes* use 0.4 to 0.45 fluid ounces (109 to 123 ppm peroxyacetic acid and 73 to 82 ppm hydrogen peroxide) of product to 5 gallons of potable water.
7. Place all sanitized items on a rack or drainboard to drain adequately. Air dry if items will not be reused immediately.

Sanitizing Tableware

For sanitizing tableware in low to ambient temperature warewashing machines, inject the diluted VigorOx® 15/10 Antimicrobial Agent solution (0.31 to 0.45 fluid ounces of the product to 5 gallons of potable water) into the final rinse water. This provides 85 to 123 ppm peroxyacetic acid and 57 to 82 ppm of hydrogen peroxide. Allow treated materials to drain adequately. Air dry if items will not be reused immediately.

Final Sanitizing Bottle Rinse

VigorOx® 15/10 Antimicrobial Agent may be used as a final sanitizing rinse for plastic, glass or metal returnable and non-returnable bottles/cans.

1. Wash bottles with detergent or cleaning solution and rinse with potable water.
2. Rinse bottles/cans with a solution prepared by mixing 0.31 to 0.45 fluid ounces of VigorOx™ 15/10 Antimicrobial Agent to 5 gallons of potable water. This provides 85 to 123 ppm peroxyacetic acid and 57 to 82 ppm of hydrogen peroxide. Allow to drain dry.

Sanitization of Hatching Eggs

1. Prepare a dilute solution by adding 0.31 to 0.45 fluid ounces of VigorOx® 15/10 Antimicrobial Agent to 5 gallons of potable water. This provides 85 to 123 ppm peroxyacetic acid and 57 to 82 ppm of hydrogen peroxide.
2. Apply dilute solution as eggs are gathered or prior to setting as a coarse spray or flood so as to lightly wet all egg shell surfaces.

3. Allow to drain dry.

Sanitization of Shell Eggs (Not approved for California)

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

1. Prepare a dilute solution by adding 0.31 to 0.45 fluid ounces of VigorOx® 15/10 Antimicrobial Agent to 5 gallons of potable water. This provides 85 to 123 ppm peroxyacetic acid and 57 to 82 ppm of hydrogen peroxide.
2. The dilute solution must be equal to or warmer than the eggs, but not to exceed 130F.
3. Apply dilute solution as eggs are gathered as a coarse spray or flood. Wet eggs thoroughly.
4. Allow to drain dry.
5. Eggs should be reasonably dry before casing or breaking.
6. The solution must **not** be reused for sanitizing eggs.

This product can be used in Federally Inspected Meat and Poultry facilities as a sanitizer.

Sanitization of Conveyors, Peelers, Slicers, and Saws for Meat, Poultry, Seafood, Fruits, and Vegetables

VigorOx® 15/10 Antimicrobial Agent is an effective sanitizer against *Staphylococcus aureus*, *Escherichia coli*, *Salmonella typhimurium*, and *Listeria monocytogenes*.

For use in the washing, rinsing and sanitizing of conveyor equipment, peelers, collators, slicers, saws etc.

1. Remove all products from equipment unless treating only the return portion of a conveyor.
2. Prepare VigorOx® 15/10 Antimicrobial Agent solution by adding 0.31 to 0.45 fluid ounces to 5 gallons of potable water. This provides 85 to 123 ppm peroxyacetic acid and 57 to 82 ppm of hydrogen peroxide.
3. Apply sanitizer solution to the return portion of the conveyor or to the equipment using a coarse spray or other means of wetting the surfaces. Control the volume of solution so as to permit maximum drainage and to prevent puddles. The conveyor surface may still be damp when food contact occurs.
4. If sanitizing against *Listeria monocytogenes* use 0.4 to 0.45 fluid ounces (109 to 123 ppm peroxyacetic acid and 73 to 82 ppm hydrogen peroxide) of product to 5 gallons of potable water.
5. Allow equipment to drain adequately before reusing; a dry surface is not required.

Packinghouse Sanitization

VigorOx® 15/10 Antimicrobial Agent is an effective sanitizer against microorganisms: *Aspergillus versicolor**, as well as *Staphylococcus aureus*, *Escherichia coli*, and *Salmonella typhimurium*.

(**Aspergillus versicolor* Not approved for California)

1. Remove gross contamination with a cleaner or other suitable detergent and rinse with potable water.
2. Use VigorOx® 15/10 Antimicrobial Agent at a dilution of 3.1 fluid ounces per 50 gallons of water (85 ppm peroxyacetic acid and 57 ppm hydrogen peroxide) as a general sanitizing coarse spray to reduce bacterial and fungal contamination of walls, floors, conveyors and harvesting containers.
3. Allow sanitizer to contact surface for at least one (1) minute.
4. Allow to air dry, do not rinse.

Field Equipment Sanitization

VigorOx® 15/10 Antimicrobial Agent may be used to sanitize harvest equipment such as pickers, trailers, trucks (including truck body parts and tires), bins, packing crates, ladders, power tools, hand tools, gloves, rubber boots, pruning shears or other equipment sanitizing surfaces contaminated with *E. coli*, *Salmonella typhimurium*, and *S. aureus*.

1. Before sanitization, move the field equipment into an area with an impervious surface and with controlled drainage. Ensure that no sanitization solution will be released into the environment.
2. Remove gross contamination with a cleaner or other suitable detergent and rinse with water.
3. Use VigorOx® 15/10 Antimicrobial Agent at a dilution of 3.1 to 5.0 fluid oz per 50 gallons of water (85 to 135 ppm peroxyacetic acid and 57 to 90 ppm hydrogen peroxide) as a general sanitizing coarse spray.
4. Allow sanitizer to contact surface for at least one (1) minute.
5. Allow to air dry, do not rinse.

Surface Disinfection

VigorOx® 15/10 Antimicrobial Agent is an effective one-step cleaner and disinfectant against gram positive and negative bacteria (vegetative forms): *Staphylococcus aureus*, *Salmonella enterica*, *Pseudomonas aeruginosa*. It is effective in hard water (up to 400 ppm as calcium carbonate equivalent), and in the presence of moderate organic soil. It may be used in general commercial and medical environments to clean, disinfect, and deodorize inanimate surfaces, such as:

- Floors, walls, and other non-porous surfaces such as tables, chairs, counter tops, garbage cans/bins, bathroom fixtures, sinks, bed frames, shelves, racks, carts, refrigerators, coolers, glazed tile, linoleum, vinyl, sealed asphalt, glazed porcelain, plastic (such as polypropylene and polyethylene), stainless steel or glass.
- Areas of use in hospitals, surgical and obstetrical suites; operating tables, housekeeping services; physical therapy departments; nursing homes, health care facilities, autopsy facilities, pharmaceutical and chemical processing facilities and equipment.
- Schools, colleges, industrial facilities, dietary areas, office buildings, recreational facilities, retail and wholesale establishments.
- Animal hospitals, veterinary clinics, animal life science laboratories, kennels, kennel runs, cages, feeding and watering equipment, pet shops, zoos, pet animal quarters, poultry premises, trucks, hatcheries, and live stock quarters.

Prepare VigorOx® 15/10 Antimicrobial Agent disinfecting solution by adding 1.1 to 9.5 fluid ounces of the product to 5 gallons of potable water. This will provide 300 to 2600 ppm peroxyacetic acid and 200 to 1730 ppm hydrogen peroxide. If surfaces are moderately soiled, the disinfection solution may be used without a pre-cleaning step. For grossly soiled surfaces, remove filth from surfaces to be disinfected by cleaning with a detergent or suitable cleaning product. Rinse with clean water. To disinfect, apply VigorOx® 15/10 Antimicrobial Agent by wiping, mopping, or as a coarse spray. Allow to soak for at least 10 minutes, then air dry.

VigorOx® 15/10 Antimicrobial Agent may be mixed with the non-foaming agent, Peradigm™. Preclean surfaces prior to disinfection.

- Prepare a diluted solution of VigorOx® 15/10 Antimicrobial Agent by adding a minimum of 1.0 fluid ounce to 4.5 gallons of water.
- Add a maximum of 43 fluid ounces of Peradigm to the dilute solution, and bring total volume to 5 gallons.
- Apply solution as previously described, allowing a minimum contact time of 10 minutes.

Antimicrobial Rinse of Precleaned or New Returnable or Non-Returnable Containers

To reduce the number of nonpathogenic beverage spoilage organisms: *Aspergillus versicolor*, *Byssochlamys fulva*, **Pediococcus damnosus*, **Lactobacillus buchnei*, and *Saccharomyces cerevisiae**, use 1 to 10 fluid ounces of product per 5 gallons of water. This provides 265 to 2700 ppm peroxyacetic acid and 175 to 1800 ppm hydrogen peroxide. After applying the antimicrobial rinse, allow containers to drain thoroughly. Optional rinse with sterile or potable water. ***(Not approved for California)**

VigorOx® 15/10 Antimicrobial Agent may be mixed with the non-foaming agent, Peradigm™ and applied at room temperature or at a minimum of 25°C.

- Mix a minimum of 0.5 fluid ounce VigorOx® 15/10 Antimicrobial Agent with Peradigm in 4.5 gallons of water.
- Add a maximum of 43 fluid ounces of Peradigm to the dilute solution, and bring total volume to 5 gallons. This provides 125 ppm peroxyacetic acid and 85 ppm hydrogen peroxide.
- Apply solution, allowing a minimum contact time of 30 seconds.
- Rinse with sterile or potable water.

For Porous and Non-porous Hard Surface Sterilization

VigorOx® 15/10 Antimicrobial Agent may be used to sterilize both porous and non-porous hard surfaces in institutions, manufacturing, food-processing or other non-medical facilities where sterilization is required. It is effective in the presence of 400 ppm hard water (measured as calcium carbonate equivalent) and moderate organic soil (tested as 5% serum).

- Remove gross filth with a suitable detergent if present. Rinse with clean water.

- Mix 2.5 fluid ounces VigorOx® 15/10 Antimicrobial Agent per gallon of clean water. This provides 3400 ppm of peroxyacetic acid and 2240 ppm of hydrogen peroxide.
- Spray, sponge or flood to wet all surfaces thoroughly. Solution must remain in contact with surface for 6 hours. Reapply solution to surfaces as necessary to maintain wet conditions.
- Rinse food-contact surfaces with a sterile or potable water rinse, followed by application of a sanitizing solution of VigorOx® 15/10 Antimicrobial Agent.
- Do not re-use solution; prepare new solution each time.

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

For Disinfection of Sewage and Wastewater Effluents in Treatment Plants **(Not approved for California)**

Use VigorOx® 15/10 Antimicrobial Agent to treat sewage and wastewater effluent related to public and private wastewater treatment plants. VigorOx 15/10 Antimicrobial Agent can be applied directly to the effluent or may be used with an appropriate activator such as hydrogen peroxide or other technology. VigorOx® 15/10 Antimicrobial Agent may be applied to effluent water discharged from trickle bed or percolating fluidized bed filters. The application rate for individual facilities will depend on the degree of bioloading of the effluent stream to be discharged and the local microbial discharge limit. Adjust application rate to meet the need of the individual facility.

- Add VigorOx® 15/10 Antimicrobial Agent to effluent water at a concentration of 0.5 ppm to 15 ppm. Allow contact time of approximately 15 to 60 minutes.
- The maximum amount of peracetic acid that can be discharged from the treatment facility is 1 ppm. Use an appropriate peracetic acid test kit analyzer to ensure that this level is not exceeded. Contact your PeroxyChem, LLC representative for assistance establishing treatment regimes.

For Reducing Pathogenic Foodborne Bacteria in Processing Waters for Fruits and Vegetables

VigorOx® 15/10 Antimicrobial Agent can be used for reducing (in 90 seconds) 99.9% of pathogenic food borne bacteria (*Escherichia coli*, *Salmonella enterica*, and *Listeria monocytogenes*) in processing waters for fruits and vegetables.

- Ensure the solution is thoroughly mixed.
- Add VigorOx® 15/10 Antimicrobial Agent at a dilution of 0.54 fluid ounce per 16 gallon of water. This provides approximately 45 ppm peroxyacetic acid and 30 ppm hydrogen peroxide.
- Allow the solution to circulate at least 45 seconds before adding or treating raw, fresh-cut or processed fruits and vegetables.
- Add concentrate as needed to maintain a minimum product concentration of 45 ppm peroxyacetic acid.
- Prepare fresh process water daily. Do not reuse water that is badly fouled.

For Treatment of Processing Waters to Control Growth of Non-Public Health Microorganisms that Can Cause Spoilage of Fresh-Cut, Post-Harvest or Processed Fruits and Vegetables

- Ensure the solution is thoroughly mixed.
- Add VigorOx® 15/10 Antimicrobial Agent at a dilution of 0.1 fluid oz. to 1.0 fluid oz. per 16 gallons of water. This provides 5 to 85 ppm peroxyacetic acid and 4 to 57 ppm hydrogen peroxide.
- Allow the solution to circulate at least 45 seconds before adding or treating raw, fresh-cut or processed fruits and vegetables.
- Add concentrate as needed to maintain a concentration of at least 5 ppm peroxyacetic acid and 4 ppm hydrogen peroxide.
- Prepare fresh process water daily. Do not reuse water that is badly fouled.

For Treatment of Processed Fruit and Vegetable Surfaces and *Process Water to Control Growth of Non-Public Health Microorganisms that Can Cause Spoilage

***(Process Water Not approved for use in California)**

1. Add VigorOx® 15/10 Antimicrobial Agent at a dilution of 1.5 fluid ounces per 25 gallons of water. Ensure that the solution is thoroughly mixed. This provides 80 ppm of peroxyacetic acid and 50 ppm of hydrogen peroxide.
2. Apply the prepared solution as a spray or dip. Allow a minimum contact time of 45 seconds. No rinse following application is required. This use complies with the requirements at 21 C.F.R. 173.315 (a) (5). A potable water rinse is not required following application of the diluted solution.

For Treatment of Raw, Unprocessed Fruit and Vegetable Surfaces **(Not approved for use in California)**

VigorOx® 15/10 Antimicrobial Agent can be applied as a dip or spray to control the growth of non-public health microorganisms: *Xanthomonas campestris (axonopodis)* pathovars citrumelo (citrus canker surrogate) and *Aspergillus versicolor*, blue mold (*Penicillium* species), green mold (*Penicillium* species) and stem-end rot (*Geotrichium*) that may cause decay and/or spoilage on raw, post-harvest fruits and vegetables during the washing process. This product can be applied during physical cleaning processes, including at the roller spreader, washer manifold, dip tank, on the brushes or elsewhere in the washing process prior to, simultaneously with or after detergent wash.

1. Prepare treatment solution by adding 1.0 fluid ounce per 16 gallons of potable water. This will provide 85 ppm peroxyacetic acid and 57 ppm hydrogen peroxide.
2. Apply the diluted sanitizer solution using a coarse spray directed at the fruits or vegetables, or by soaking the fruits or vegetables in the solution. Allow a contact time of at least 45 seconds.
3. The treated produce can be drain dried without a potable water rinse. Do not reuse solution after treatment.

VigorOx® 15/10 Antimicrobial Agent can be used on the following raw and post-harvest fruits and vegetables

Fruits

- Citrus fruits: citrus citron, citrus hybrids, grapefruit, kumquat, lemon, lime, mandarine (tangerine), orange, and pummelo
- Pome fruits: apple, crabapple, mayhaw, pear, and quince
- Stone fruits: apricot, cherry, nectarine, peach, plum, and prune
- Berries group: blackberry, blueberry, currant, cranberry, grape, honeysuckle, kiwifruit, serviceberry, raspberry, and strawberry

Vegetables

- Root & tuber vegetables: artichoke (Chinese and Jerusalem), beet, carrot, chicory, ginger, ginseng, horseradish, parsley, potato, radish, rutabaga, salsify, sweet potato, and yam
- Leaves of root and tuber vegetables: beet, carrot, celeriac, chicory, radish, rutabaga, sweet potato, turnip and yam
- Bulb vegetables: chive, garlic, leek, onion, and shallot
- Leafy vegetables: arugula, celery, endive, fennel, lettuce, parsley, radicchio, rhubarb, spinach, and swiss chard
- Brassica leafy vegetables: broccoli, Brussels sprouts, cabbage, cauliflower, collards, kale, and mustard greens
- Legumes: bean, chickpea, guar, lentil, pea, and soybean
- Fruiting vegetables: eggplant, pepper, tomatillo, and tomato
- Cucurbits: citron melon, cucumber, gourd, *Momordica* spp., muskmelon, pumpkin, and squash, and watermelon

Sprouts and seeds of: Fruits and Vegetables that are listed on this label including citrus fruits, pome fruits, stone fruits, berries group, root & tuber vegetables, bulb vegetables, leafy vegetables, Brassica leafy vegetables, legumes, and fruiting vegetables.

Other

- Tree nuts: almond, beech nut, brazil nut, butternut, cashew, chestnut, filbert, hickory nut, macadamia nut, pecan, walnut
- Cereal grains: Barley, buckwheat, corn, millet, oats, popcorn, rice, rye, sorghum, teosinte, triticale, wheat, and wild rice
- Herbs and spices: Allspice, anise, balm, basil, chive, celery seed, clove buds, cinnamon, coriander, cumin, curry, and dill (including seed), fennel, lavender, lemongrass, lovage, pepper, nutmeg, rosemary, saffron, sage, taragon, thymne, and vanilla

- Edible fungi: mushroom and truffle
- Miscellaneous fruits and vegetables: asparagus, avocado, banana, fig, globe artichoke, hops, mango, okra, papaya, pawpaw, peanut, persimmon, pineapple, water chestnut, and watercress.

VigorOx® 15/10 Antimicrobial Agent can be applied by fogging to control the growth of non public health microorganisms that may cause decay and/or spoilage on raw, post harvest fruits and vegetables during the post harvest process.

1. ~~Ensure room is properly ventilated. Vacate all personnel from room during fogging and for a minimum of 2 hours after fogging. Ensure there is no strong odor characteristic of acetic acid before having personnel return to work area. Do not enter room until hydrogen peroxide concentrations are correctly tested and are below 1 ppm on a time weighted average.~~
2. ~~Fog area using one quart of a 0.06% solution (1.0 fluid ounce per 16 gallons of water) per 1,000 cu. ft. of room volume. Allow surface to drain thoroughly before operations are resumed.~~

Agricultural and Horticultural Uses

(Not approved for use in California)

A Restricted-Entry-Interval of zero (0) hours is required for VigorOx® 15/10 Antimicrobial Agent in agricultural or horticultural uses. This product should not be mixed or combined with any pesticides or fertilizers. Upon soil contact, the diluted product decomposes rapidly to oxygen, carbon dioxide and water. This product may be harmful to fish if exposed on a continuous basis at concentrations greater than 1 ppm of active peracetic acid. Meter VigorOx® 15/10 Antimicrobial Agent into pressurized pipes using a plastic or stainless steel injection/backflow device installed upstream from the equipment to ensure thorough mixing prior to application. For open bodies of water, allow adequate mixing prior to product flow entering any body of water. If open pouring of this product is required, pour product close to the surface of the water as possible to reduce odor and exposure.

Treatment of Agricultural and Irrigation Water Systems

(Not approved for use in California)

Use VigorOx® 15/10 Antimicrobial Agent to control sulfides, odor, slime, and algae in sand filters, humidification systems, storage tanks, ponds, reservoirs, canals. Apply VigorOx® 15/10 Antimicrobial Agent at 15 to 75 fluid ounces per 10,000 gallons of water. This provides 2 ppm to 10 ppm peroxyacetic acid. Repeat dose as necessary to maintain control. For prevention of algae, some systems may require continuous low level dosing during warm, sunny periods (2 ppm to 5 ppm peroxyacetic acid).

Drip Irrigation Systems **(Not approved for use in California)**

To clean slime and algae from drip system filters, tapes and emitters, meter VigorOx® 15/10 Antimicrobial Agent at 7.5 to 15 fluid ounces per 1000 gallons. This provides 10 ppm to 20 ppm peroxyacetic acid. Use this product at the recommended dose for a minimum of 30 minutes during normal irrigation cycles. Upon irrigation cycle completion, discontinue use and flush the lines.

For Sanitization and Disinfection of Laundry in Commercial and Institutional and Industrial Operations

Use VigorOx® 15/10 Antimicrobial Agent in commercial and Institutional and Industrial including Hospitality laundry operations for control of microorganisms: *Klebsiella pneumoniae*, *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *E. coli* and other coliforms.

For sanitization to control *Klebsiella pneumoniae*:

1. Add 2.3 fluid ounces VigorOx® 15/10 Antimicrobial Agent per 100 pounds of dry laundry - assumes 5 parts water to 1 part dry laundry based on 100 lbs. of dry laundry.
2. Inject VigorOx® 15/10 Antimicrobial Agent into the sanitizing rinse step at 2.3 fluid ounces per 60 gallons of water applied. VigorOx® 15/10 Antimicrobial Agent is effective in water up to 400 ppm of water hardness. Treat laundry for a minimum of 5 minutes at a minimum of 18 °C. Following sanitization, laundry may be rinsed with water that may include a softener, starch, odor neutralizer, fragrance, soil release agent, and/or fluid repellent.

For disinfection:

1. Add 13.6 fluid ounces VigorOx® 15/10 Antimicrobial Agent per 100 pounds of dry laundry - assumes 5 parts water to 1 part dry laundry based on 100 lbs. of dry laundry.
2. Inject VigorOx® 15/10 Antimicrobial Agent into the disinfecting rinse step at 13.6 fluid ounces per 60 gallons of water applied. VigorOx® 15/10 Antimicrobial Agent is effective in water up to 400 ppm of water hardness. Treat laundry for a minimum of 15 minutes at a minimum of 20 °C. Following disinfection, laundry may be rinsed with water that may include a softener, starch, odor neutralizer, fragrance, soil release agent, and/or fluid repellent.

For antimicrobial use with aqueous treatment fluids in subterranean oilfield and gas-field well operations such as well drilling, formation fracturing, productivity enhancement and secondary recovery.

(Not approved for use in California)

VigorOx® 15/10 Antimicrobial Agent can be for control of slime forming and spoilage bacteria, yeast and fungi and anaerobic sulfate reducing bacteria, *Desulfovibrio vulgaris*, that lead to reservoir souring and metal corrosion.

This product must be introduced through a closed mixed/loading and delivery transfer system equipped with a metering device that is appropriate for its intended uses.

Drilling Muds, Fracturing Fluids, Well Squeezed Fluids

(Not approved for use in California)

For the preservation of drilling muds, workover and completion fluids and other product susceptible to contamination, pre-mix with the fluid or add directly at the point of use at 3.75 fluid ounces per 1000 gallons of water (5 ppm of Peroxyacetic acid and 3.3 ppm of Hydrogen Peroxide) to 75.5 fluid ounces per 1000 gallons of water (100 ppm of Peroxyacetic Acid and 66 ppm of Hydrogen Peroxide) as required. Depending on the severity of the contamination, initial application may be added up to 755 fluid ounces per 1000 gallons of water (1000 ppm of Peroxyacetic acid and 670 ppm of Hydrogen Peroxide).

Flooding, Injection and Produced Water

(Not approved for use in California)

For Water Flooding operations, add initially at 3.75 fluid ounces per 1000 gallons of water (5 ppm of Peroxyacetic acid and 3.3 ppm of Hydrogen Peroxide) to 75.5 fluid ounces per 1000 gallons of water (100 ppm of Peroxyacetic Acid and 66 ppm of Hydrogen Peroxide) and repeat until control is achieved. Subsequent treatment may be continued on a weekly basis or as required.

Injection wells associated with gas storage systems may be treated up to 100 ppm of Peroxyacetic Acid and 66 ppm of Hydrogen Peroxide when diluted in the formation water. Any additional top-up water should be treated as required.

For hydrostatic systems, apply 3.75 fluid ounces per 1000 gallons of water (5 ppm of Peroxyacetic acid and 3.3 ppm of Hydrogen Peroxide) to 75.5 fluid ounces per 1000 gallons of water (100 ppm of Peroxyacetic Acid and 66 ppm of Hydrogen Peroxide) depending on the water quality and the duration of the shut-in.

Pipeline and Tank Maintenance

(Not approved for use in California)

For microbial control in water-bottoms in crude and refined hydrocarbon storage tanks, piping and transportation systems. Apply 3.75 fluid ounces per 1000 gallons of water (5 ppm of Peroxyacetic acid and 3.3 ppm of Hydrogen Peroxide) to 75.5 fluid ounces per 1000 gallons of water (100 ppm of Peroxyacetic Acid and 66 ppm of Hydrogen Peroxide) in the aqueous phase, directly injected into the water-bottom, pipeline or may be added to the hydrocarbon phase. Treatment may be applied daily or monthly for both storage and transportation systems as needed.

Non-Pesticidal Cleaning

All surfaces must be cleaned and disinfected in accordance with label directions prior to fogging.

1. Prior to fogging, remove or carefully protect all food products and packaging materials.
2. Vacate the area of all personnel prior to, during, and after fogging until the hydrogen peroxide concentration is below 0.5 ppm. Ensure room is properly ventilated after fogging.
3. Fog areas using one quart per 1000 cu. ft. of room area with a 0.30% (3.8 fluid ounces per 10 gallons of water) VigorOx® 15/10 Antimicrobial Agent solution.
4. Allow surfaces to drain thoroughly before operations are resumed.

Note: May cause bleaching of treated surfaces

Note: Before using VigorOx® 15/10 Antimicrobial Agent to sanitize metal surfaces, it is recommended that the diluted solution be tested on a small area to determine compatibility.

In all applications always prepare a new solution daily to ensure effectiveness. Do not re-use solutions. Dispose of unused solution.

EMERGENCY TELEPHONE NUMBERS (24 HOURS)

MEDICAL: COLLECT 303-389-1409

CHEMTREC: 800-424-9300

OTHER: COLLECT 716-879-0400