

65402-8

3/11/2011

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

MAR 11 2011

OFFICE OF  
PREVENTION, PESTICIDES  
AND TOXIC SUBSTANCES

Ms. LuAnn Maloney  
Regulatory Manager for,  
FMC Corporation  
1735 Market Street  
Philadelphia, PA 19103

Subject: VigorOx<sup>®</sup> 15/23 Antimicrobial Agent  
EPA Registration Number 65402-8  
Your Amendment Dated May 11<sup>th</sup>, 2010  
EPA Received Date May 12<sup>th</sup>, 2010

The amendment referred to above, submitted in connection with under section 3(c)(7)(A) of the Federal Insecticide, Fungicide, and Rodenticide Act, FIFRA, to increase the discharge rate of hydrogen peroxide and peroxyacetic acid based on the stream flow and dilution, is acceptable.

The company argument that supports this proposal cites several examples of local conditions and the effect on pesticide application. These arguments support the proposed use.

Based on the lack of persistence of both compounds, the environmental fate data do not indicate that the proposed use will lead to any environmental exposure issues. Therefore, the increase in the discharge rate of hydrogen peroxide and peroxyacetic acid based on stream flow and dilution, is acceptable.

A stamped copy of the labeling is enclosed.

If you have questions concerning this letter, please contact Karen M. Leavy at (703)-308-6237.

Sincerely,

A handwritten signature in cursive script that reads "M Swindell".

Marshall Swindell  
Product Manager 33  
Regulatory Management Branch I  
Antimicrobials Division (7510P)

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# VigorOx<sup>®</sup> 15/23 Antimicrobial Agent

EPA Registration No. 65402-8  
EPA Est. No. 00279-NY-003

## For Industrial Use Only

Active Ingredients:	Peroxyacetic Acid .....	15%
	Hydrogen Peroxide .....	23%
Inert Ingredients:	.....	62%
Total:	.....	100%

## KEEP OUT OF REACH OF CHILDREN DANGER

VigorOx<sup>®</sup> 15/23 Antimicrobial Agent is for biofouling and slime control in

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

VigorOx<sup>®</sup> 15/23 Antimicrobial Agent is for use in wastewater and sewage effluent disinfectant in public and private treatment facilities.

ACCEPTED  
with COMMENTS  
EPA Letter Dated:

Under the Federal Insecticide,  
Fungicide, and Rodenticide Act as  
amended, for the pesticide,  
registered under EPA Reg. No. 65402-8

### Precautionary Statements Hazards to Humans and Domestic Animals

#### DANGER

Corrosive, causes 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<sup>®</sup> 15/23 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 and aquatic invertebrates. 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.

Any solution released from the system should be diluted with water and tested for residuals to ensure that there is less than 3 ppm peroxygen remaining.

#### 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.

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FMC Corporation  
Peroxygens Division  
1735 Market Street  
Philadelphia Pennsylvania 19103

**Storage and Disposal**

**Storage**

**NEVER RETURN VigorOx® 15/23 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® 15/23 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 into 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 for disposal. Repeat this procedure two more times. Empty drums are not returnable to FMC 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 FMC 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**

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

VigorOx® VigorOx® 15/23 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® 15/23 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® 15/23 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® 15/23 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.

Continuous feed method: Initially, use the intermittent feed method to achieve control. When control is accomplished, apply VigorOx® 15/23 Antimicrobial Agent 3 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® 15/23 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 23 to 138 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).**

VigorOx® 15/23 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® 15/23 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.
- Add the VigorOx® 15/23 Antimicrobial Agent solution at a point in the system where uniform mixing and even distribution will occur.

ACCEPTED  
with COMMENTS  
EPA Letter 12/20/99

Under the Federal Insecticide, Fungicide, and Rodenticide Act as amended for the pesticide registered under EPA Reg. No. 105 402-F

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- Intermittent feed method:** When the system is noticeably fouled, apply 0.8 to 1.2 lb (10 to 16 fluid ounces) of VigorOx<sup>®</sup> 15/23 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.
- 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<sup>®</sup> 15/23 Antimicrobial Agent solution per 1000 gallons of water in the system. When microbial control is achieved, start adding VigorOx<sup>®</sup> 15/23 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 26 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<sup>®</sup> 15/23 Antimicrobial Agent for every 100 gals of make-up water.

**Control of Bacteria and Fungi in Dispersed Pigments**

VigorOx<sup>®</sup> 15/23 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 kiesegeluhr.

Apply 0.2 to 1.2 lb (2.6 to 16 fluid ounces) of VigorOx<sup>®</sup> 15/23 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 46 to 275 ppm of hydrogen peroxide).

**For Disinfection of Sewage and Wastewater Effluents in Treatment Plants**

Use VigorOx<sup>®</sup> 15/23 Antimicrobial Agent to treat sewage and wastewater effluent related to public and private wastewater treatment plants. VigorOx<sup>®</sup> 15/23 Antimicrobial Agent may be applied directly to the effluent or may be used with an appropriate activator such as hydrogen peroxide or other technology. VigorOx<sup>®</sup> 15/23 Antimicrobial Agent may be applied to effluent water discharged from primary, secondary, or tertiary treatments; and to effluent water discharged from trickle bed or percolating fluidized bed filters. The application rate for individual facilities will depend upon the degree of bioloading of the effluent stream to be discharged, the local microbial discharge limit and the Dilution Factor (DF) for the receiving stream. Adjust application rate to meet the need of the individual facility.

- Add VigorOx<sup>®</sup> 15/23 Antimicrobial Agent to effluent water at a concentration of 0.5 ppm to 15 ppm. Allow contact time of approximately 15 to 60 minutes.
- Use an appropriate peracetic acid test kit analyzer to ensure that the maximum amount of peracetic acid that can be discharged is not exceeded. Contact your FMC representative for assistance establishing treatment regimes.
- The maximum amount of peracetic acid that can be discharged is:
  - 0.09 \* DF, where DF ≥ 12 and

$$DF = \frac{\text{plant effluent discharge} + \text{receiving stream 7Q10}}{\text{plant effluent discharge}}$$

where 7Q10 is the minimum average 7-day flow expected to occur once every 10 years for the receiving stream; or

- 1 ppm if the 7Q10 is unknown or DF < 12.

**Batch Sanitization of Ultra-Filtration and Reverse Osmosis (RO) Membranes**

VigorOx<sup>®</sup> 15/23 Antimicrobial Agent is for use in the sanitization of ultra filtration, medical and non-medical institutional/industrial reverse osmosis (RO) membranes and their associated distribution systems. This product is not for use in kidney dialysis reprocessing equipment.

This product has been shown to be an effective disinfectant when tested by AOAC and EPA methods. This product may not totally eliminate all vegetative microorganisms in reverse osmosis membranes and their associated piping systems due to their construction and/or assembly, but

can be relied upon to reduce the number of microorganisms to acceptable levels when used as directed. Check with equipment manufacturer for membrane compatibility with VigorOx<sup>®</sup> 15/23 Antimicrobial Agent.

- Remove biological or organic fouling from the membrane or other parts of the system with an appropriate cleaner.
- Flush the system with RO permeate or similar quality water.
- Remove mineral deposits with an acidic cleaner prior to sanitizing the membranes.
- Flush the system with RO permeate or similar quality water.
- Prepare an appropriate volume of 1% solution of the product (6.4 fl. oz. per 5 gallons of water). This will provide 560 ppm of peroxyacetic acid and 5500 ppm hydrogen peroxide.
- Fill the entire water circuit to be sanitized with the dilute solution and allow the solution to reach a minimum of 20°C (69°F).
- Recirculate the dilute solution of VigorOx<sup>®</sup> 15/23 Antimicrobial Agent for a minimum of 10 minutes.
- Allow membrane elements to soak in the solution for a minimum of 20 minutes.
- Rinse the RO system and test for residuals to ensure that there is less than 3 ppm peroxygen. Residuals can be reduced by diverting product water to drain.

**Batch Sanitization of Piping Systems Associated with RO Membranes**

- Isolate incompatible equipment from piping system. This includes activated carbon filters and ion exchange equipment. Turn off power to ultraviolet light units.
- Estimate total volume of water contained in the system (tanks, rinse stations and piping). Prepare an appropriate volume of 1.0 to 1.5% VigorOx<sup>®</sup> 15/23 Antimicrobial Agent solution by adding 1.0 to 1.5 gallons of the product for every 100 gallons of solution prepared. Use RO permeate or similar quality water for dilution. This will provide 560 to 843 ppm peroxyacetic acid and 5500 to 8245 ppm hydrogen peroxide.
- Recirculate the dilute VigorOx<sup>®</sup> 15/23 Antimicrobial Agent solution through the system for a minimum of 4 hours. Process usage valves should be opened and closed to expose internals to the VigorOx<sup>®</sup> 15/23 Antimicrobial Agent solution.
- Completely drain the system of dilute VigorOx<sup>®</sup> 15/23 Antimicrobial Agent solution. Thoroughly rinse the system by filling with RO permeate or similar quality water and recirculate before drainage. Repeat the process until test for residuals indicates there is less than 3 ppm peroxygen.

**Continuous/Intermittent Addition to Minimize the Accumulation of Biological Matter Between Intermittent Sanitizing Episodes in Piping Systems Associated with RO Membranes.**

- VigorOx<sup>®</sup> 15/23 Antimicrobial Agent, as received or diluted, may be added continuously to the feed water stream between system sanitizing episodes, to aid in minimizing the regrowth/accumulation of biological matter. The peroxygen residual in the system that is effective will vary with the design and usage characteristics of the system. Adjust the addition rate of VigorOx<sup>®</sup> 15/23 Antimicrobial Agent or the solution and periodically monitor residual peroxygen so that the desired effect is obtained.
- For continuous addition do not exceed 20 ppm VigorOx<sup>®</sup> 15/23 Antimicrobial Agent (0.1 fl. oz. per 40 gallons of water). This will give 1 ppm peroxyacetic acid and 10.5 ppm hydrogen peroxide. For intermittent feed do not exceed 2000 ppm VigorOx<sup>®</sup> 15/23 Antimicrobial Agent (10 fl. oz. per 40 gallons of water). This will give 110 ppm peroxyacetic acid and 1075 ppm hydrogen peroxide.

**Note:** Before using VigorOx<sup>®</sup> 15/23 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, VigorOx<sup>®</sup> 15/23 Antimicrobial Agent are a new sanitizing/disinfecting solution daily to ensure effectiveness. Do not reuse sanitizing/disinfecting solutions. Dispose of any unused sanitizing/disinfecting solution. **Note:**

May cause bleaching of treated surfaces

ACCEPTED  
with COMMENTS  
EPA Letter Dated:  
MAR 11 2011

Under the Federal Insecticide, Fungicide, and Rodenticide Act as amended, for the pesticide, registered under EPA Reg. No. 65402-8

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**Note:** Before using VigorOx® 15/23 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 303-595-9048  
TRANSPORTATION: 800-424-9300  
OTHER: COLLECT 716-879-9499

Label Effective Date: 051010

ACCEPTED  
with COMMENTS  
EPA Letter Dated:

MAR 11 2011

Under the Federal Insecticide,  
Fungicide, and Rodenticide Act as  
amended, for the pesticide,  
registered under EPA Reg. No. 65402-8