73139-3 1/28/2014 1/19

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Pesticide Programs
Antimicrobials Division (7510P)
1200 Pennsylvania Avenue NW
Washington, D.C. 20460

EPA Reg. Number:	Date of Issuance:
73139-3	JAN 28 2014

Term of Issuance:
Conditional

Name of Pesticide Product:
DIKLOR G Chlorine Dioxide Sterilant Precursor

NOTICE OF PESTICIDE:
x Registration
__ Reregistration
(under FIFRA, as amended)

Name and Address of Registrant (include ZIP Code):

Sabre Oxidation Technologies
2642 Marco Avenue
Odessa, TX 79762

Note: Changes in labeling differing in substance from that accepted in connection with this registration must be submitted to and accepted by the Registration Division prior to use of the label in commerce. In any correspondence on this product always refer to the above EPA registration number.

On the basis of information furnished by the registrant, the above named pesticide is hereby registered/reregistered under the Federal Insecticide, Fungicide and Rodenticide Act. Registration is in no way to be construed as an endorsement or recommendation of this product by the Agency. In order to protect health and the environment, the Administrator, on his motion, may at any time suspend or cancel the registration of a pesticide in accordance with the Act. The acceptance of any name in connection with the registration of a product under this Act is not to be construed as giving the registrant a right to exclusive use of the name or to its use if it has been covered by others.

The application referred to above, submitted under the Federal Insecticide, Fungicide and Rodenticide Act, as amended is acceptable under FIFRA sec. 3(c)(7)(B), provided that you:

1. Submit and/or cite all data required for registration/reregistration/registration review of your product when the Agency requires all registrants of similar products to submit such data.
2. A one year study is required to satisfy the storage and stability and corrosion characteristics requirements (Guidelines 830.6317 and 830.6320). You have 18 months from the date of registration to provide these data.

A stamped copy of your labeling is enclosed for your records. This labeling supersedes all previously accepted labeling. The next label printing of this product must use this labeling unless subsequent changes have been approved. You must submit one (1) copy of the final printed labeling before you release the product for shipment with the new labeling. In accordance with 40 CFR 152.130(c), you may distribute or sell this product under the previously approved labeling for 18 months from the date of this letter. After 18 months, you may only distribute or sell this product if it bears this new revised labeling or subsequently approved labeling. "To distribute or sell" is defined under FIFRA section 2(gg) and it's implementing regulation at 40 CFR 152.3.

Signature of Approving Official:	Date:
Demson Fuller Product Manager Team 32 Regulatory Management Branch Antimicrobials Division (7510P)	JAN 28 2014

EPA Form 8570-

For use only by:

- Federal On-Scene Coordinators (FOSCs) and contractors and other trained federal/state/local response personnel under the FOSC's supervision;
- Trained U.S. Military personnel and contractors under their supervision;
- Persons who, within the preceding 24 months, have been trained and determined to be competent by the registrant (or its contractor) following completion of the required training.

Under the terms and conditions of this product's registration, this product may only be sold or distributed by the registrant directly to the persons identified above.

DIKLOR ™G Chlorine Dioxide Sterilant Precursor

SPORICIDAL DECONTAMINANT for INACTIVATION of *Bacillus anthracis* SPORES on PRECLEANED, HARD, NON-POROUS and POROUS SURFACES

DIKLOR ™G Chlorine Dioxide Sterilant Precursor is a sporicidal decontaminant that inactivates *Bacillus anthracis* spores on precleaned, hard, nonporous and porous surfaces at certain sites when used in accordance with all precautions and directions specified on this label and in the attached DIKLOR ™G Chlorine Dioxide Sterilant Precursor Fumigation Manual(Fumigation manual).

ACTIVE INGREDIENT:
Sodium Chlorite ---------- 25.0%
OTHER INGREDIENTS:---------- 75.0%
TOTAL 100.0%

KEEP OUT OF REACH OF CHILDREN

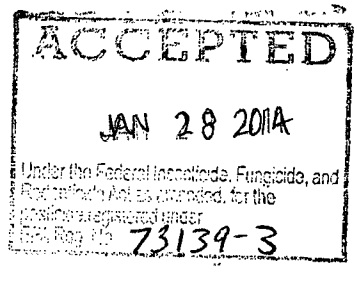
DANGER

SEE (SIDE) (BACK) PANEL FOR ADDITIONAL

PRECAUTIONARY STATEMENTS AND DIRECTIONS FOR USE

EPA Reg. No. 73139- 3
EPA Est. No.---------

Sabre Oxidation Technologies
2642 Marco Avenue
Odessa, TX 79762
Emergency Phone Number
1-800-222-1222



FIRST AID	
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, and then continue rinsing. Call a poison control center or physician 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 physician for treatment advice.
IF SWALLOWED	Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to by a poison control center or doctor. Do not give anything by mouth to an unconscious person. Call a poison control center or doctor immediately for treatment advice.
NOTE TO PHYSICIAN: Probably mucosal damage may contraindicate the use of gastric lavage. Have the product container or label with you when calling a poison control center or going for treatment.	
FOR EMERGENCY MEDICAL INFORMATION CALL TOLL FREE: 1-800-222-1222	

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

DANGER. Corrosive. Causes irreversible eye damage and skin burns. May be fatal if swallowed. Irritating to nose and throat. Do not breathe dust or vapors. Do not get in eyes, on skin or clothing. Do not handle with bare hands. Wear protective eyewear (goggles or face shield), clothing and rubber gloves when handling. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Remove contaminated clothing and wash clothing before reuse. Other chemical may be co-located for this process, refer to fumigation manual and respective Material Safety Data Sheet for chemical specific details.

PPE REQUIRED FOR PROTECTION FROM *BACILLUS ANTHRACIS* SPORES

When applying the product to areas contaminated with *Bacillus anthracis* spores, wear the personal protective equipment (PPE) described in this product's Fumigation Manual, the Fumigation Management Plan, or the Remediation Action Plan or equivalent plan.

ENVIRONMENTAL HAZARDS

This pesticide is toxic to fish and aquatic organisms. Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance contact your State Water Board or Regional Office of the EPA.

PHYSICAL OR CHEMICAL HAZARDS
Dry DIKLOR G is a strong oxidizing agent. Only mix into or dilute with water or non-oxidizable materials. Mixing with acids or other chemicals may start a chemical reaction with the generation of heat liberation of a hazardous gas (chlorine dioxide), and possible fire or 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. Contact with acids may release toxic gas. Use only clean, dry utensils when handling.

EMERGENCY HANDLING
In case of contamination or decomposition, do not reseal container. If possible, isolate container in an open and well-ventilated area. Flood with large volumes of water. If fire occurs, extinguish fire by applying large volumes of water. Cool any unopened drums near the fire by spraying with water.

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage or disposal.
STORAGE: Keep product dry in tightly closed container when not in use. Do not drop, roll or skid drum. Keep upright. Always replace cover. Store this product in a cool, dry area away from direct sunlight and heat to avoid deterioration. In case of spill, flood area with large quantities of water. Do not reuse empty container.

PESTICIDE DISPOSAL: Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide 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 HANDLING:
Non-refillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Offer for reconditioning, if appropriate. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll 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. Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration, or if allowed by state and local authorities, by burning. If burned, 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.

See the accompanying DIKLOR G Chlorine Dioxide Sterilant Precursor Fumigation manual for this product for complete use directions and safety precautions for inactivating *Bacillus anthracis* (anthrax) spores on porous and nonporous surfaces. The Fumigation manual contains fumigation specific chemical requirements and specifications in Section III, part D. Fumigation dosage concentration and time are in Section III, part N. This product will be used to create a chlorine dioxide solution at a concentration level of approximately 0.1 – 0.3 % through the controlled reaction of hydrochloric acid (15 percent), sodium hypochlorite (10 to 12 %), and sodium chlorite (%), or a prescribed on label. During the fumigation, a minimum temperature of 70° F, minimum Rh of 70 percent, and either (a) a minimum ClO_2 concentration of 500 parts per million by volume (ppm_v) or (b) a minimum ClO_2 concentration of 3,000 parts per million by volume (ppm_v) must be achieved. The minimum CT clock value of at least 9,000 ppm_v must be conducted at all monitoring locations throughout the duration of either 12 hours or 3 hours fumigation process.

5/19

For use only by:

- Federal On-Scene Coordinators (FOSC) and contractors and other trained federal/state/local response personnel under the FOSC's supervision;
- Trained U.S. Military personnel and contractors under their supervision;
- Persons who, within the preceding 24 months, have been trained and determined to be competent by the registrant (or its contractor) following completion of the required training.

Under the terms and conditions of this product's registration, this product may only be sold or distributed by the registrant directly to the persons identified above.

DIKLOR ™G Chlorine Dioxide Sterilant Precursor – Fumigation Manual

Sabre Oxidation Technologies
2642 Marco Avenue
Odessa, TX 79762
Emergency Phone Number
1-800-222-1222

SPORICIDAL DECONTAMINANT for INACTIVATION of *Bacillus anthracis* SPORES on PRECLEANED, HARD, NON-POROUS and POROUS SURFACES

DIKLOR ™G Chlorine Dioxide Sterilant Precursor is a sporicidal decontaminant that inactivates *Bacillus anthracis* spores on precleaned, hard, nonporous and porous surfaces at certain sites when used in accordance with all precautions and directions specified on the label and in this Fumigation Manual.

ACTIVE INGREDIENT:
Sodium Chlorite ---------- 25.0%
OTHER INGREDIENTS:---------- 75.0%
TOTAL 100.0%

KEEP OUT OF REACH OF CHILDREN

DANGER

SEE (SIDE) (BACK) PANEL FOR ADDITIONAL PRECAUTIONARY STATEMENTS AND DIRECTIONS FOR USE

EPA Reg. No. 73139- 3
EPA Est. No.----------

Sabre Oxidation Technologies
2642 Marco Avenue
Odessa, TX 79762
Emergency Phone Number

6/19

TABLE OF CONTENTS

7/19

I. GENERAL APPROACH TO FUMIGATION AND REMEDIATION

The objective of chlorine dioxide (ClO_2) fumigation is to effectively decontaminate buildings and contents contaminated or potentially contaminated with *Bacillus anthracis* spores on pre-cleaned, hard, porous and non-porous surfaces under operating conditions that protect site workers, the surrounding community and the environment.

Each fumigated building or subpart thereof must be properly tented or sealed and subjected to negative pressure by extraction of building air though negative air units (NAUs). The ClO_2 gas in extracted air is removed by means of an emission control system containing activated carbon cells. Specified temperature and relative humidity (Rh) conditions are to be achieved within the treatment zone prior to the introduction of ClO_2 gas. During fumigation, operational parameters are monitored at an appropriate number of co-located temperature, Rh, and ClO_2 gas sampling points. At the end of the specified time period for fumigation, the addition of ClO_2 gas is terminated and natural decay of the gas within the building begins. Where necessary, the decay process is accelerated by the addition of alkaline sodium sulfite, hydrogen peroxide, or erythobic acid solution to the process liquid loop. Decay of ClO_2 gas in the building decay continues until such time that ClO_2 concentration levels at all monitoring points have fallen below the Occupational Safety and Health Administration (OSHA) eight-hour time-weighted average (TWA) permissible exposure level (PEL) of 0.1 parts per million by volume (ppm_v), at which time the building may be re-entered by fumigation personnel.

The user of this product shall develop a site-specific Fumigation Management Plan (or Remediation Action Plan or equivalent) that follows these label instructions and takes into account site-specific information such as the size of the structure, materials of construction, contents, conditions, surrounding community particulars, as well as biological efficacy plan that may include biological indicators, and environmental sampling, etc.

II. PERSONAL PROTECTIVE EQUIPMENT (PPE) REQUIREMENTS

A. Respirator Requirements

When a respirator is required for use with this product:

- The respirator must be fit tested and fit checked using a program that conforms with OSHA's requirements (see 29 CFR Part 1910.134)
- The respirator user must be trained using a program that conforms with OSHA's requirements (see 29 CFR Part 1910.134)
- The respirator user must be examined by a qualified medical practitioner to ensure the physical ability to safely wear the style of respirator to be worn.
- The respirator must be maintained according to a program that conforms with OSHA's requirements (see 29 CFR Part 1910.134)

B. Other Protective Equipment

- Protective clothing—long sleeve shirt, long pants, shoes plus socks
- Gloves—specify appropriate type
- Protective eyewear or face shield

8/19

C. **PPE Required for Protection from *Bacillus Anthracis* Spores**

- When entering areas contaminated with *Bacillus anthracis* spores, wear the personal protective equipment (PPE) described in this product's Fumigation Manual, the Fumigation Management Plan, or the Remediation Action Plan or equivalent plan.

III. DIRECTIONS FOR USE

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

A. **Site Preparation**

To the extent feasible, remove debris, non-reusable items and water-soaked materials. Eliminate sources of moisture ingress (e.g., roof or window leaks, damaged plumbing, etc.) that may contribute to water damage and/or mold growth. Open enclosed spaces (e.g., closets, drawers, cabinets, etc.) to allow maximum exposure to the ClO_2 gas during fumigation.

B. **Building Containment**

Tent (encapsulate) the building undergoing fumigation completely with a material demonstrated to be impervious to ClO_2 gas, or effectively seal the building through utilization of sealing materials such as tape, caulking, etc. in all external cracks, crevices, or building openings, through which ClO_2 might escape during fumigation.

C. **Negative Air Pressure and Emission Control**

For Structures of up to 17,000,000 cubic feet

Contain ClO_2 gas in the building through use of a negative air pressure system designed to maintain a slight negative pressure on the internal walls and ceiling of the building during fumigation operations. Achieve negative pressure by removing building air through two negative air units (NAUs). Locate the NAUs on opposite sides of the building where possible. The systems should be redundant in that each NAU should maintain a negative pressure on the building during times when the second NAU is shut down.

Monitor negative pressure through use of a pressure differential monitor (e.g., MAGNEHELIC® Gauge) installed on each NAU system. Conduct a negative air balance test before fumigation to demonstrate the ability of each NAU system to independently maintain a negative pressure on the building. Achieve a target negative pressure level during fumigation of -0.005 inches of water column or greater.

Air being removed from the building during fumigation to create negative pressure will contain residual ClO_2 gas. A treatment train is necessary to remove ClO_2 prior to discharging the extracted air to the surrounding environment. Provide each NAU with a gas scrubbing treatment train that consists of: (1) an induced draft fan; (2) vapor phase carbon cell; or a wet reducing scrubber in series with a vapor phase carbon cell; and (3) a means to monitor airflow, pressure differential and gas emission levels.

During fumigation operations, monitor the treated building air exiting the carbon cells to identify potential "breakthrough" of ClO_2 gas, which is indicative of exhaustion of the carbon cell media. Monitor potential breakthrough by placement of an extractive ClO_2 gas sample point at both the inlet and outlet to the scrubber treatment train. Collect samples from the outlet sample port on a continuous basis.

Pause the fumigation process immediately should breakthrough be observed until the cause of breakthrough is ascertained and corrective measures are implemented as necessary. Utilize corrective measures including one or more of the following, depending upon the situation: (1) reduce the amount of extraction air coming into the carbon cell; (2) shut the affected NAU down; (3) switch all air removal requirements to the unaffected NAU; (4) terminate any further ClO_2 gas additions to the building; and/or (5) convert the gas emitters to scrubbers to expedite removal of residual ClO_2 from the building.

Provide standby electrical generation power to provide power to critical fumigation systems (including the NAUs) should utility power to a fumigation site be interrupted at any time.

D. Chlorine Dioxide Generation

Generate ClO_2 solution in a Sabre Companies LLC (Sabre) mobile ClO_2 generation system that produces ClO_2 solution at a concentration level of approximately 1,000 – 4,000 ppm percent through the controlled reaction of hydrochloric acid (15 percent), sodium hypochlorite (10 to 12 percent) and sodium chlorite (25 percent, DiKlor G Sodium Chlorite Solution, USEPA Registration Number 73139-3) or as prescribed generation method on the label.

E. Chlorine Dioxide Distribution

Pump the liquid ClO_2 solution from the generator to gas "emitter(s)" strategically located around or inside the building. The emitter(s) remove ClO_2 gas from the ClO2 solution into the air stream flowing from the building, through the emitter(s) and back into the building. Allow depleted ClO_2 solution to flow back to the generator in a flow loop where it can be "recharged" to its initial concentration level and used again. Continue adding ClO_2 gas to the building until the target concentration is achieved and/or maintained in the desired range.

Locate the ClO_2 emitter(s) based on building configuration and location of existing Air Handler Units (AHUs). Use the building air distribution ductwork and diffuser system, as necessary, to distribute gas throughout the building treatment area. Design the number of emitters in sufficient quantity to deliver the desired concentration of ClO_2 gas to the entire structure undergoing fumigation. Use supplemental mass transfer fans where necessary in the building to assist in mixing and dispersion of the gas.

F. Chlorine Dioxide Removal

At the conclusion of fumigation, allow residual ClO_2 gas remaining in the building to decay naturally; alternatively, if quicker removal of ClO_2 is desired, convert the gas emitters into active gas scrubbers. Conversion of the ClO_2 gas emitters into ClO_2 gas scrubbers is accomplished by adding an alkaline sodium sulfite solution, an alkaline peroxide solution or an alkaline Erythorbic acid solution to the liquid ClO_2 solution process flow loop. Circulate this solution to the emitters so that ClO_2 gas is removed from the building when air is drawn through the emitters.

10/19

G. **Temperature and Rh Control**

Bring the building to a minimum temperature of 70° Fahrenheit (F) for at least one hour at all temperature monitoring points before introducing ClO_2 gas into the building. Control temperature through use of the building's existing heating, ventilation and air conditioning (HVAC) system or through use of portable heat generation or cooling devices. Operate building AHUs in full recirculation mode with no outside fresh air intake to help achieve the desired temperature level before fumigation.

Bring the building to a minimum Rh value of 70 percent for at least one hour at all Rh monitoring points before introducing ClO_2 gas into the building. If necessary to achieve and maintain the Rh level above 70 percent, utilize the emitters as humidifiers by controlling the temperature of water in the circulation loop and adjusting that temperature through use of steam coils, or cooling the water through a shell and tube heat exchanger. Make every reasonable effort to limit the development of a condensing atmosphere within the building during fumigation.

H. **Chemical Storage**

Store precursor chemicals in 55-gallon drums, 275-gallon totes or portable storage tanks. The quantity is dependent on the size of the building being fumigated. Make provisions for storage of the three ClO_2 precursor chemicals and neutralization chemicals (e.g., 25 percent sodium hydroxide, 36 percent sodium bisulfite, 50 percent hydrogen peroxide, or Erythorbic acid; note: type and quantity dependent on active scrubbing solution media chosen). Store all precursor and neutralization chemicals within secondary containment areas using proper segregation principles to prevent accidental mixing of reactive materials (e.g., store hydrochloric acid within a separate containment basin away from sodium chlorite and sodium hypochlorite).

I. **Dehumidification**

Dehumidify the building promptly after completion of ClO_2 gas removal to lower the relative humidity level of building air to at least 60% to facilitate drying of internal building surfaces to prevent growth of mold and mildew post fumigation. Confirm first that ClO_2 levels have fallen below the OSHA TWA PEL standard of 0.1 ppm_v at all monitoring locations within the building. Utilize the fumigated building's existing HVAC system to facilitate dehumidification where possible.

Continue the dehumidification process until such time that the moisture content of various types of building materials such as wood, drywall and masonry reach desired levels. Use a Moisture Encounter Meter where appropriate to measure the moisture content at various locations inside the building to confirm the effectiveness of the dehumidification process.

J. **Process Wastewater**

Store wastewater generated by the fumigation process in a dedicated on-site storage tank. Collect and analyze representative samples of the wastewater for purposes of waste profiling. If the wastewater is determined to be non-hazardous, dispose of into the sanitary sewer system if allowed by the local publicly owned treatment works. Otherwise, send off-site to a permitted, non-hazardous wastewater treatment facility.

11/19

K. Ancillary Equipment

Provide standby electrical generation power to provide power to critical fumigation systems should utility power to a fumigation site be interrupted at any time.

L. Equipment Testing

Test all key fumigation system components as they are installed to ensure that all subsystems will operate as designed.

Before commencing the fumigation, conduct a low-level "pulse" test in which all subsystems are simultaneously challenged as if it were the actual fumigation, with the exception that significantly lower ClO_2 concentration levels are used (i.e., 200 to 500 ppm_v) than those used during the actual fumigation process and ClO_2 is introduced into the building for a much shorter duration (i.e., 15-30 minutes). Design and conduct the test such that all elements that support the fumigation are proven functional, operational and effective.

During the low-level pulse test, bring environmental conditions inside the building to target levels and verify that all equipment is operating and functioning properly. Also verify that data collection devices and chemical fluid and gas sampling operations are functioning as designed. Finally, assess the exterior of the building with handheld ClO_2 monitors to make sure there are no significant gas leaks.

12/19

M. **Fumigation Operation Sequencing**

Perform fumigation activities in the following operational sequence to ensure safety and efficacy of the process.

Task Number	Task Description
1	Verify spill containment supplies are in place
2	Verify necessary chemical inventory is in place
3	Verify acceptable meteorological conditions exist
4	Conduct pre-fumigation safety meeting
5	Verify Emergency Response Team is in place
6	Verify Operations Team is in place
7	Verify building AHUs are operating
8	Verify Mass Transfer mixing fans are operating (when needed)
9	Initiate NAU operation
10	Achieve desired building negative pressures
11	Initiate liquid flow loop water circulation
12	Initiate emitter blower operation
13	Achieve desired temperature and Rh levels
14	Turn off all lights in building
15	Confirm all personnel are out of building
16	Initiate ClO_2 generation
17	Initiate ClO_2 concentration "ramp-up"
18	Initiate internal and external ClO_2 gas sampling
19	Achieve minimum desired ClO_2 concentration to start CT clock
20	Maintain ClO_2 concentration above target level
21	Achieve desired CT clock value at all monitoring locations
22	Terminate ClO_2 generation
23	Initiate active ClO_2 scrubbing (when needed)
24	Terminate scrubbing operations
25	Shut-down emitters and liquid process loop
26	Terminate gas sampling when $ClO_2 < 0.1$ ppm_v
27	Initiate building dehumidification
28	Conduct building inspection entry
29	Turn on lights in building
30	Terminate building dehumidification
31	Turn off AHUs, fans and NAUs

N. **Operational Objectives**

Achieve a minimum temperature of 70° F, minimum Rh of 70 percent, and either (a) a minimum ClO_2 concentration of 500 parts per million by volume (ppm_v) or (b) a minimum ClO_2 concentration of 3,000 parts per million by volume (ppm_v) at all monitoring locations to start the concentration by time (CT) building exposure clock.

Conduct fumigation with a minimum duration of either (a) twelve (12) hours or (b) three (3) hours that achieves a minimum CT Clock value of at least 9,000 ppm_v-hours at all monitoring locations.

O. **Relative Humidity Monitoring**

Monitor Rh at an appropriate number of co-located building locations through use of HOBO® Model U12-011 TEMP/RH Data Loggers or equivalent. The instrument has a measuring range of 5 to 95 percent with an accuracy of ± 2.5 percent. Take measurements at 5-minute intervals during the conditioning, fumigation and aeration phases of the process. Obtain a local readout of Rh readings by connecting the data loggers to a personal computer (PC) via USB, Cat 5 data cable or fiber optic cable from the various monitoring locations. Log data in the monitor during fumigation and download for manipulation following fumigation.

P. **Temperature Monitoring**

Monitor temperature at an appropriate number of co-located building locations through use of HOBO® Model U12-011 TEMP/RH Data Loggers. The instrument has a measuring range of -4 to 158° F with an accuracy of ± 0.63° F. Take measurements at 5-minute intervals during the conditioning, fumigation and aeration phases of the process. Obtain a local readout of temperature readings by connecting the data loggers to a PC via USB Cat 5 data cable or fiber optic cable from the various monitoring locations. Log data in the monitor during fumigation and download for manipulation following fumigation.

Q. **Chlorine Dioxide Monitoring**

Monitor ClO_2 concentration levels by means of a composite sample collection system constructed of 3/8-in inside diameter high-density polyethylene (HDPE) tubing. HDPE tubing has been shown to be non-reactive with ClO_2. Run the tubing from an appropriate number of co-located monitoring locations inside the building to a central sampling manifold located outside the building. Have knowledgeable air-sampling technicians collect samples and deliver them to an on-site gas laboratory for analysis. Place a vacuum pump on the downstream side of the sampling manifold to move air through the system and return it to the building on a continuous basis such that the samples represent existing conditions within the building at the time they are taken.

Collect samples from the sampling manifold via impingement of two liters of air at a flow rate of 1.0 liter per minute through 15 milliliters of a strongly buffered pH 7 potassium iodide solution (modified OSHA Method ID126SGX). Once collected, analyze samples via amperometric titration, using a 0.1 normal sodium thiosulfate solution as the titrant (modified American Water Works Association Method 4500-ClO_2-E and modified 2-step version of same).

During ClO_2 ramp-up, collect samples at a select number of monitoring locations every 15 minutes until the minimum CT Clock start value is demonstrated at these locations. Once the minimum CT Clock start value has been established, collect samples at all monitoring locations every 30 minutes for the remainder of the fumigation. It is possible that additional samples may be required outside of the normal rotation sequence of one sample per half-hour. Reasons that could trigger increased sampling include abnormally low or high ClO_2 concentration readings, mechanical problems with the sampling pump or impingers, condensate in the sampling tubing, etc. Commence the use of an increased sampling frequency when necessary due to special circumstances and continue until the situation that initiated the problem is corrected.

R. **CT Clock Monitoring**

Start the CT clock when the desired minimum ClO_2 concentration level (either 500 or 3,000 ppm) is reached at all selected monitoring locations. Once started, accumulate CT exposure credit so long as the ClO_2 concentration level remains above the minimum established criteria value, as do temperature and Rh readings. Continue the fumigation until all monitoring locations have achieved a 9,000 ppm_v-hour minimum CT clock value. Place accumulated CT clock values on hold if the established minimum Rh, temperature and ClO_2 concentration values

14/19

are not maintained. Restart the CT clock during the next sampling period during which all three process variables are found to be in compliance with the prescribed minimum values.

S. **Use Precautions**

Conduct fumigation operations in a manner that protects both workers and members of the general public from exposure to fumigation process chemicals through implementation of specifically designed safety measures.

T. **Worker Safety**

Site-Specific Health and Safety Plan

Develop a site-specific Health and Safety Plan (HASP) to establish safe working and operating conditions for both fumigation preparation activities and fumigation operations. Prepare the HASP in accordance with applicable OSHA guidelines and regulations.

Health and Safety Training

Establish minimum health and safety training requirements for all personnel involved in fumigation operations. Do not allow workers to participate in, or supervise field activities until they have been trained to a level required by their job function and responsibility. Cover appropriate elements during initial training including: (1) names of personnel and alternates responsible for site safety and health; (2) safety, health and other hazards present on site; (3) proper use, care and maintenance of PPE; (4) work practices by which the worker can minimize risks from hazards; (5) safe use of engineering controls and equipment on site; (6) medical surveillance requirements, including recognition of symptoms and signs which might indicate over exposure to hazards; and (7) contents of the site HASP.

In addition to initial training, provide Hazard Communication (HAZCOM) and Respiratory Protection training. In HAZCOM training, provide information on the possible types of biological or chemical agent contamination present within a facility, as well as the chemical substances stored and generated on-site, including physical properties, fire and explosion data, reactivity data, health hazard data, emergency and first aid procedures, spill and leak procedures, etc. In Respiratory Protection training, provide information about the proper selection, fitting, use, care and maintenance of respirators, with an emphasis on specific respirators worn if responding to an emergency involving either a chemical release or a fire. Provide basic First Aid and CPR training to all personnel who might be involved in a response to a medical emergency on-site.

Provide an orientation briefing to individuals who are on-site for short periods of time performing limited tasks as either visitors or contractors, including an overview of the site-specific HASP and a discussion of the facility layout. Also make these individuals aware of evacuation notification procedures and alert them to the pre-determined emergency response Rally Points or places of safe refuge where they should report in the event of an emergency.

Post-Fumigation Building Re-Entry Requirements

Establish a post-fumigation building re-entry requirement that prohibits workers from re-entering the building in OSHA Level D protective equipment until such time that it has been demonstrated that the concentration of ClO_2 at all monitoring points has fallen to a level below the applicable OSHA TWA PEL standard of 0.1 ppm_v.

U. **Public Safety**

Coordination with Local Authorities

Coordinate in advance with local agencies responsible for providing emergency response services regarding the fumigation process and make them aware of facility information, potential chemical hazards and on-site response procedures so they will be prepared to effectively respond or assist should an emergency event occur. Where appropriate, conduct an on-site orientation session to familiarize authorities with the site as well as the potential emergency events and hazards associated with on-site chemical storage and ClO_2 generation events.

Site Emergency Planning

Conduct meetings on-site periodically to discuss project roles and responsibilities, site communication procedures, hazardous materials storage issues and potential hazards. The goal of these meetings should be to gain consensus with regard to roles and responsibilities during potential emergency events.

Site Security

Establish site security measures to prevent unauthorized entry to the site and secure the site perimeter during on-going fumigation preparation activities. Include site entry control procedures, personnel responsibilities, facility lighting requirements and emergency communication procedures.

Specialized Training

Provide specialized training to prepare site personnel to respond to a variety of potential emergency event scenarios that might occur during fumigation preparation activities or during the fumigation itself including a fire inside or outside the building, chemical spill and/or a release of a significant amount of the fumigant to the atmosphere during fumigation.

Emergency Response Supplies and PPE

Stage appropriate spill response supplies in location suitable for cleanup of hazardous materials being stored on-site in close proximity to the stored materials. Also stage a variety of PPE, including Self-Contained Breathing Apparatus, at appropriate locations for use in an emergency response to a potential hazardous material release.

Site Communications

Assign two-way radios to key personnel at the site. Two-way radios facilitate effective communication among all parties at the worksite and allow for careful monitoring of work tasks by individuals responsible for initiating and performing emergency response activities. Use separate channels for work being performed inside and outside the building so that individuals monitoring the work can effectively monitor tasks being performed in both locations simultaneously.

Surface and Ground Water Protection

Protect surface and ground water supplies by containing any chemical release that might occur within a secondary containment area and respond with absorbents and neutralizing agents stored on-site. Place impervious spill mats

16/19

in close proximity to storm drains in the vicinity of chemical storage areas where necessary. Deploy these mats immediately to cover drainage catch basins in the event of a chemical release from a primary storage vessel.

Site Evacuation Contingency Plan

Develop specific procedures to respond to a potential emergency response scenarios that might occur during fumigation preparation operations or the fumigation itself. Identify a Site Safety and Health Officer (SSHO) who is responsible for determining when on-site personnel should "Shelter-In-Place" or evacuate the site should an emergency evacuation of the site be contemplated.

V. Fire Response

Place fire extinguishers throughout the site, both inside and outside the building, for use in fighting an incipient-stage fire. Also, activate existing operational building fire suppression systems in the event of a fire inside the building.

In the event that a fire is detected either inside or outside the building, implement a series of predetermined response measures including the following:

- The individual who identifies the fire immediately alerts their Supervisor, the SSHO and the Emergency Response Coordinator (ERC) for the site.
- If the individual who identified the existence of the fire can immediately extinguish it with a local fire extinguisher without endangering themselves or others, they extinguish the fire while the ERC is assembling the on-site Emergency Response Team (ERT).
- The on-site ERT dons proper PPE and initiates emergency response activities. The ERT is provided with PPE as warranted by the nature of the fire
- Potentially affected electrical systems are deactivated as soon as possible if appropriate to prevent a spread of the fire.
- After donning appropriate PPE, the source and nature of the fire are investigated. If the fire is determined to be in its incipient stage, the ERT attempts to extinguish the fire. If a fire either inside or outside the building is determined to be beyond the incipient stage, the SSHO or ERC immediately requests the assistance of external emergency fire response authorities.
- The SSHO notifies all site workers to cease their activities, shutdown all process equipment and report to a designated location so that a "headcount" may be taken to account for all personnel.
- The SSHO determines if a site evacuation is necessary. If instructed to evacuate, personnel proceed to one of the designated Rally Points or to an off-site place of safe refuge.
- If the fire emergency also involves a release of hazardous materials, the release is addressed in accordance with the response measures outlined in Section 4.2.3 of this Plan.
- If necessary, based on the size and scope of the fire, the SSHO notifies appropriate external authorities and provides them with appropriate information about the fire.

W. **Chemical Spill Response**

Locate all storage vessels within secondary containment areas. Store incompatible materials within separate secondary containments. Place impervious spill mats near all storm water catch basins in the vicinity of chemical storage areas where necessary to prevent inadvertent discharge of chemicals through the storm drain sewer system in the event of a leak or other accidental release.

In the event that a hazardous material leak from a storage vessel or associated piping is detected, implement a series of predetermined response measures including the following:

- The individual who identified the release immediately alerts their Supervisor, the SSHO and the ERC for the site.
- The ERC assembles the on-site ERT, who don proper PPE and initiate response activities. The ERT is provided with PPE as warranted by the nature of the hazardous material release.
- After donning appropriate PPE, the source and nature of the release are investigated and the release is stopped at its source (if safe to do so). Spill mats are placed over storm drain catch basins to prevent discharge of spilled material to the storm water drainage system and/or to ground water where necessary. Any sources of ignition present in the area are also eliminated.
- If any personnel have been affected by the release, they are evacuated from the area of impact as soon as possible and first aid is administered as appropriate. If necessary, external medical emergency response authorities are summoned.
- Only members of the ERT involved in overseeing or performing emergency operations are allowed within the designated hazard area. If possible, the area is roped or otherwise blocked off. If a release cannot be immediately contained within a containment area, an isolation area is established around the spill, using sorbent and neutralizing materials.
- In the event a release breaches onsite secondary containment, the leading edge around the spill is contained with neutralizing agents and/or absorbents or other appropriate materials. Pumps may be employed to transfer spilled liquids to on-site waste tanks and for the removal of any liquid that may congregate at low points or depressions on surfaces.
- If the total amount of hazardous material released is less than the equivalent volume of 300 gallons, spill response materials and equipment located on-site are utilized to contain and collect the waste.
- Collected waste material is stored in secure storage containers for future disposal.
- If the amount of hazardous material released is greater than that which can be contained and collected for disposal by the on-site ERT, arrangements are made with an external contractor to respond to the site with adequate supplies and equipment to perform necessary clean-up operations.
- The SSHO determines if a site evacuation is necessary. If instructed to evacuate, personnel proceed to one of the designated Rally Points or to an off-site place of safe refuge.
- The SSHO notifies external emergency response authorities if deemed necessary by the size and scope of the release. External emergency response authorities will take appropriate actions if required to safeguard the surrounding community.

18/19

- Following the initial spill response, provisions are made to conduct a full environmental assessment to delineate impacted areas. Hazardous materials generated from a release are disposed of off-site in accordance with applicable laws and regulations.

X. Building ClO_2 Leak Detection and Repair

Perform ambient air monitoring during both the low-level "pulse" test and the actual fumigation to identify leaks of ClO_2 gas from the building so that appropriate action may be taken in the event a leak is detected. Whenever possible, repair building leaks immediately using appropriate patching materials.

Dispatch teams of trained employees to the immediate perimeters of the building, and to the rooftop where appropriate, as soon as ClO_2 liquid begins flowing from the generator to the emitters. Initially assign at least two teams to building monitoring duties. Each team should consist of at least two individuals, each having had sufficient previous experience with ClO_2 to readily identify its characteristic odor in air.

Equip each monitoring team with a calibrated Industrial Scientific Gas Monitor with a ClO_2 sensor capable of detecting ClO_2 gas and reporting TWA readings for purposes of comparison with OSHA's eight-hour TWA PEL and the American Conference of Governmental Industrial Hygienists (ACGIH) recommended 15-minute TWA Short Term Exposure Limit (STEL). The OSHA PEL for ClO_2 is 0.1 ppm_v, and the ACGIH STEL is 0.3 ppm_v. Because the human olfactory response to ClO_2 has been shown through experience to be far more sensitive than any commercially-available hand-held monitoring technology, the primary objective of using the monitor is not to identify the presence of ClO_2 emissions, but rather to make sure that team members are not being exposed to concentrations of the gas that are in excess of prescribed standards and recommended threshold levels while they are performing their ambient monitoring and repair assignments. In the event that ClO_2 readings above the 0.1 ppm_v eight-hour OSHA standard or the 0.3 ppm_v 15-minute ACGIH STEL are registered by a monitor during fumigation, the team identifying the reading should leave the area where the elevated reading was identified and don appropriate respiratory protection before continuing work in the area. A full-face negative pressure respirator with combination P-100 filter/acid gas cartridges should be used for ClO_2 concentrations above an applicable exposure standard but less than 5 ppm_v. A self-contained breathing apparatus and appropriate skin protection should be used in any atmosphere containing more than 5 ppm_v of ClO_2.

Identify potential sources of ClO_2 emissions from the top and sides of the building and immediately perform any repairs and/or modifications necessary to eliminate or reduce emissions to the greatest degree possible. Also, communicate monitoring findings to the Project Manager so that operational changes and/or a shutdown of fumigation operations can be initiated immediately in the event that a leak cannot be effectively patched in a reasonable period of time. When a building leak cannot be quickly and effectively repaired, adjust operational parameters as necessary to mitigate the leak or terminate the fumigation process to eliminate exposure risk to the surrounding community.

Y. Adjustment of Operational Parameters

In the event a ClO_2 leak cannot be promptly repaired through use of available patching materials, adjust fumigation operating parameters, either temporarily or for the remaining duration of the fumigation, to prevent additional gas from escaping the building into the surrounding environment.

Increase the NAU fan speed upwards to increase the negative pressure level on the internal walls and ceiling of the building and/or decrease the target ClO_2 concentration level being applied to the building to lower the concentration of ClO_2 in air escaping through the leak.

Z. Termination of Fumigation Process

Should it be determined that a significant ClO_2 leak cannot be effectively repaired, nor can the magnitude of the leak be substantially mitigated through adjustment of operational parameters, terminate the fumigation process and take necessary measures to remove residual gas from the building.

Turn gas emitters into gas scrubbers through the addition of an appropriate neutralizing agent to the liquid ClO_2 flow loop. Circulate this solution from the generator to the emitters to remove ClO_2 from the building as air is drawn through the emitters.

AA. Post Fumigation Repair and Cleaning

Remove any remaining debris, non-reusable items and water soaked materials. Replace, repair or clean damaged areas of structure as needed.