de la Guerra, Sheila Public Comment LATE DIST #2

From: Graham Farrar <Graham@glasshousefarms.org>
Sent: Friday, August 16, 2019 11:54 AM
To: Harmon, Nereyda; Wilson, Jeffrey; Klemann, Daniel; Leyva, Petra; Hartmann, Joan; Williams, Das; Hart, Gregg; Adam, Peter; Lavagnino, Steve
Cc: Bozanich, Dennis; sbcob; Litten, Jefferson; Elliott, Darcel; Nelson, Bob; Bantilan, Cory; Plowman, Lisa; CIH
Subject: Updated Odor Certification Plan for G&K Farms/K&G Flower Project
Attachments: CriterionOdorCertificationUpdated.pdf

Supervisors and staff,

Please see the attached updated Odor Certification Plan from Criterion.

Thank you - if you have any questions or comments please don't hesitate to contact me.

Graham Farrar

Cannabis Odor Abatement Plan (Updated)

August 15, 2019

Prepared for:
Graham Farrar; Padaro Glass House

Site Address: 3561 Foothill Rd
Carpinteria, CA 93013

Prepared by:
Nate Seward, PE, CIH
Professional Mechanical Engineer (M31978)
Certified Industrial Hygienist (9582 CP)
Certified Radon Tester #108180RT
EPA & IICRC Instructor (WRT & AMRT)
Licensed Asbestos Abatement Consultant (I-1923)

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August 15, 2019

G&K FARM/K&G FLOWER
Site Address: 3561 Foothill Rd
Carpinteria, CA 93013
APN 005-280-040

1.0 Compliance with Standards

On behalf of G&K Farm/K&G Flower (the applicant), Criterion Environmental, Inc. has prepared this Cannabis Odor Abatement Plan in compliance with the Santa Barbara County Coastal Zoning Ordinance, Section 35-144U. Cannabis Regulations. This plan included the evaluation of the following:

1. The proposed project site, 3561 Foothill Road and analysis of existing infrastructure;
2. Odor emitting activities including cultivation activities taking place onsite;
3. Surrounding land uses including proximity of residential areas;
4. Site specific installation of the odor abatement system (Byers System) surrounding the greenhouse area;
5. Technology effectiveness in reducing and/or eliminating cannabis-related odors;
6. Other options for best available odor control technologies and an analysis of systems available; and
7. Ecosorb content and health studies.

2.0 Site Description

G&K Farm/K&G Flower is applying for a Coastal Development Permit to allow for the use of 5 existing greenhouses totaling 356,070 square feet for cannabis cultivation, with nursery, and mixed-light cultivation. The odor abatement unit would be located within an existing shade structure. The project does not include processing, distribution, manufacturing (extraction), storefront retail, delivery, or testing lab. Processing (trimming, packaging) of the product will take place offsite and product will be transported off-site by a third party transport-only distribution licensee. The property is a 14.66 acre parcel zoned AG-I-10 and shown as Assessor Parcel Number 005-280-040, located at 3480 Via Real with a secondary address of 3561 Foothill Road, Carpinteria, First Supervisorial District.

3.0 Description of Odor Emitting Activities and Phases

Potential odor emitting activities that may occur onsite are as follows:

Immature, Non-Flowering Plants (Nursery): Juvenile plants are non-flowering for a period of four (4) -six (6) weeks. At this time, minimal odors are experienced because the plant is not flowering.

Flowering, Mature Plants (Cultivation): Upon flowering, plants are considered mature. This is considered cultivation flowering phase, which typically lasts eight (8) weeks . Unlike immature plants, the flowering plants generate odor.

4.0 Byers Scientific and Manufacturing: Odor Equipment and Methods

Byers Scientific and Manufacturing is consistent with accepted and available industry specific best control technologies and methods designed to mitigate odors from cannabis nursery and cultivation in greenhouses. The Byers system 6" PVC perforated odor vent pipe is installed throughout the perimeter of the greenhouse areas, where cultivation is taking place. As wind approaches a greenhouse, from any direction, the first thing it will encounter is the curtain of odor neutralizing vapor being emitted by this perimeter piping system. This initial dose of odor neutralizer is carried over the greenhouse and intermixes with odorous cannabis terpenes as they are initially emitted from the greenhouse roof vents. As this air mixture is carried away from the greenhouse, it must pass through the vapor perimeter a second time thus adding a second dose of the neutralizing agent. The odorous cannabis terpenes are thereby neutralized before and shortly after they exit the greenhouse structure.

The Byers System is an approved system as defined by the County of Santa Barbara's Coastal Zoning Ordinance, Section 35-144U Cannabis Regulations – which includes a "vapor phase system." Furthermore, the Byer's System is an approved vapor phase system because it meets the following standards:

- **"The resulting odors must be odor-neutralizing, not odor masking"** - The neutralizing agent (CNB 100) is an actual deodorant neutralizer (not masking agents) specifically formulated for cannabis odors.
- **"The technology must not be utilized in excessive amounts to produce a differing scent (such as pine or citrus)"** - The neutralizing agent does not generate differing scents and is used in a proportional amount to the cannabis odor emissions.

- **"Use of these systems must have supporting documentation which meet United States Environmental Protection Agency's Acute Exposure Guideline Levels or similar public health threshold" -** The deodorant and/or neutralizing by-products is not a public health (acute or chronic) or environmental concern with supporting documentation that meets United States Environmental Protection Agency's Acute Exposure Guideline Levels or similar public health thresholds. An independent study (Dated December 8, 2017) was performed by CPF Associates titled Screening Health Assessment of Waterless Vapor Phase Odor Control Technology. This health study of the CNB100 deodorant was performed to evaluate the potential air impacts and public health risks through inhalation exposure. The conclusions from the study indicated that use of CNB100 within the operation of the Byers System would not be expected to pose a public health concern. The study also concludes the potential air concentrations calculated using a screening level model in the immediate vicinity of the distribution pipe were below available health-protective inhalation criteria. Lastly, the Santa Barbara Air Pollution Control District (SBAPCD) staff recently received the confidential CNB100 formula and confirmed that the mixture does not contain Toxic Air Contaminates (email dated July 8, 2019 – Attachment 4).

The Byer's System is the leading odor neutralizing, vapor-phase technology currently available to prevent these cannabis nuisance odors from drifting off-site. The abatement system is manufactured by Byers Scientific and Manufacturing and consists of the following (See Attachment 1 for technical information):

How it works:

a. Within the housing system unit (See Figure 1), a high-flow, low pressure blower is connected to a holding tank containing an odor neutralizing agent developed specifically to neutralize odors from cannabis. The fan unit vaporizes the odor neutralizing agent and distributes it to a piping system.

Figure 1

b. The PVC piping system is mounted around the upper perimeter of the greenhouse at the roof line as seen in Figure 2. The neutralizing agent injected into the air stream several feet above the piping system (as seen in Figure 3). The cannabis terpene molecules are then neutralized as they mix with the neutralizing agent. The neutralizing agent then surrounds the perimeter of the greenhouses onsite, capturing all odors that may escape during venting of the greenhouses. The neutralizing vapor is designed to always be surrounding the malodor, even if wind direction shifts. The greenhouse structures contain a passive exhaust venting system which allows air to naturally exhaust out the vents located near the roof apex. The venting system is automated and controlled by a computer to mechanically open the vents as needed.

Figure 2

c. A computer monitoring system which is capable of notifying the operator if an equipment failure has occurred so that the system can be repaired and returned to service as soon as possible.

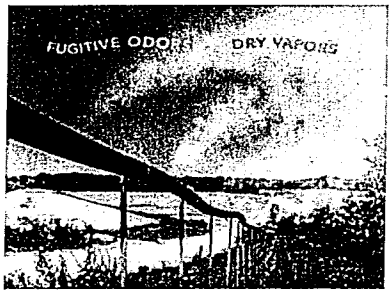


Figure 3

4.1 Neutralizing Deodorant; Ecosorb CNB100

The odor neutralizing agent to be used within the Byers system is Ecosorb CNB 100 (CNB 100) and is manufactured by OMI Industries, a leader in odor neutralization materials. CNB is comprised of two polysorbate surfactants and a blend of citrus and pine oils with the remainder water (see Attachment 1 for SDS Sheet). As described on the Safety Data Sheet within Section 11; Toxicity it is listed that there are no other effects known under "Potential Adverse Human health effects and symptoms". In addition, upon review of the confidential and redacted formulation, the Santa Barbara Air Pollution Control District staff have confirmed that none of the ingredients in Ecosorb CNB 100 are considered toxic air contaminants (TACs) as identified by the State of California.

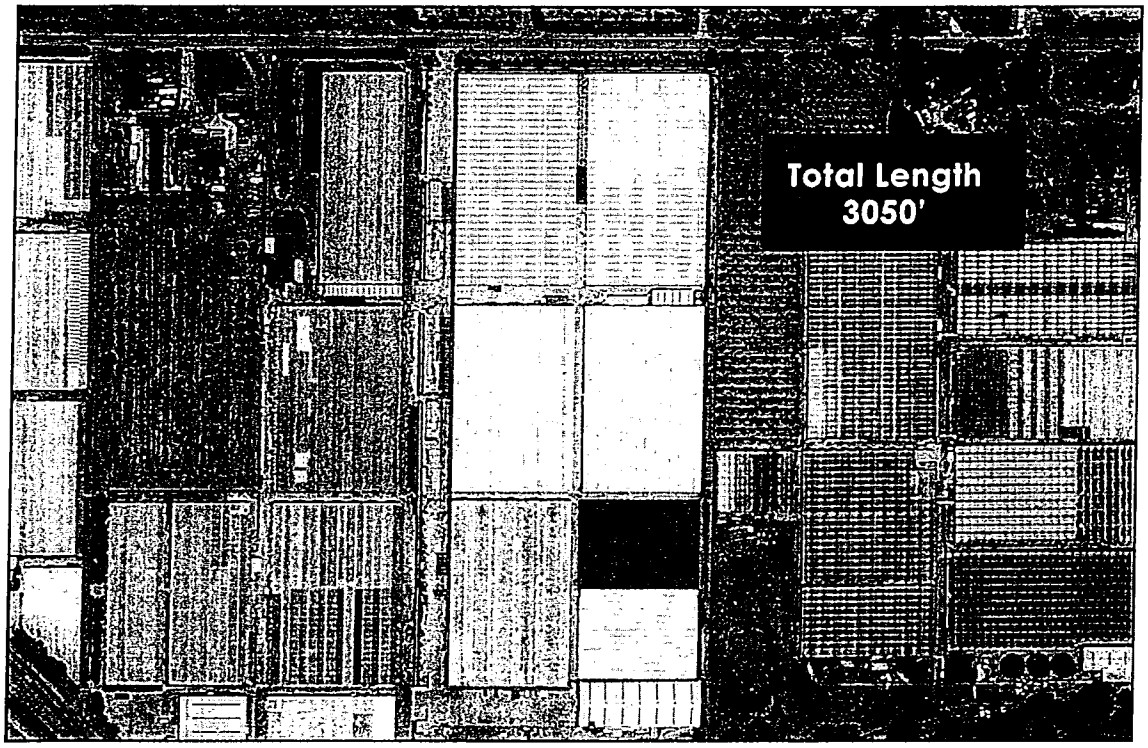
4.2 Site Specific Design Parameters of the Odor System

The proposed Byers system will include approximately 3,050 lineal feet of the perforated piping system attached at the upper part of greenhouses and/or structures where odor-

emitting activities are anticipated to maximize mitigation of odor. A single fan unit will be used to vaporize the odor neutralizing product Ecosorb CNB100.

Byers Scientific & Manufacturing
Industrial Odor Management

GLASSHOUSE FARMS, CARPINTERIA CA
6" PVC D2729 LAYOUT



2332 W. Industrial Park Drive · Bloomington, IN 47404

www.byers-scientific.com

5.0 Review and Approval by Third Parties

Vapor-phase odor neutralizing technology is a proven odor abatement technology for reducing nuisance odors including cannabis related odors. According to a May 2018 presentation by SB Air Pollution Control District (APCD) (See Attachment 2), an inspection was performed by APCD personnel of a 650,000 ft^2 cannabis cultivation facility in Carpinteria which revealed that an odor control system was operating and working as advertised and noted that pungent odors from inside the greenhouse, "could not be detected directly outside the greenhouse or at the property line."

Additionally, the Long Range Planning Division of Santa Barbara County recently prepared a Final Environmental Impact Report (FEIR) to amend its Land Use and Development Code to allow certain types of cannabis activities. Within the FEIR,

Appendix F indicates that vapor-phase technology, including the Byers Scientific system, is effective in odor control in the cannabis industry including Carpinteria, CA and Pueblo, CO.

Residential Zones

3561 Foothill Road is located on an Ag-I zoned property that is 14.66 acres. It is surrounded by other agricultural properties to the north, south, east, and west. The project is accessed from Via Real on the South West corner of the property, and Foothill Road is located on the North West corner of the property.

Appropriate maintenance of the Byers technology will effectively mitigate odors generated from cannabis activities onsite from traveling to the residential areas.

Field Observations

Criterion Environmental personnel, including myself, have also performed olfactory assessments at various cannabis cultivation properties in Carpinteria including the subject site at 3561 Foothill Rd that are deploying the Byers Odor abatement technology. Results from these assessments are similar to the findings from APCD in that there is a substantial reduction in the cannabis related odor intensity within a few feet of the odor emitting source. The onsite field assessments also indicated an obvious reduction or dissipation in odor observation the further downwind from the mixing zone. The mixing zone is the air space above the piping delivery system where the deodorant neutralizer and the cannabis odors interact.

6.0 Odor Complaint Tracking System

G&K Farm/K&G Flower will notify the County of any complaints received within 24 hours.

G&K Farm/K&G Flower staff will receive training from Byers Scientific (the vapor phase system supplier) to ensure it is well versed on the best use and maintenance of the technology.

Below are our odor complaint response procedures:

1. Receive and log/record complaint date, time, details and complainant;
2. Identify the source of the complaint;
3. Check to make sure all product is properly stored in air-tight containers and bags in climate-controlled storage rooms;
4. Verify the integrity of the vapor phase system;
5. Activate back-up system as necessary;
6. Log odor complaint mitigation;

7. Communicate back to the source of the complaint that the odor source has been mitigated;
8. Evaluate existing systems, procedures and technologies to ensure the issue does not repeat itself.

All odor complaints received will be responded to within one hour of the time the initial call was made and a corrective action shall commence within 2 hours of the initial call.

G&K Farm/K&G Flower will provide the odor tracking system records to the County upon inspections or request and maintain the records for a minimum of 5 years.

G&K Farm/K&G Flower will allow the County access to the site at all times, without notice, for the purposes of inspecting odor mitigation practices, odor sources, and complaint tracking system records.

7.0 Analysis of Other Technologies

Ozone generators are often used for odor control, particularly within the structural restoration industry such as smoke and odor or mold/sewage odor control. However, ozone technology has significant disadvantages and concerns. Ozone is a reactive gas and can be harmful if exposed to humans. OSHA has established permissible exposure limits to workers and EPA, NIOSH and FDA have all agreed there is an increase health risk if exposed to ozone. Based on this information, we do not recommend the use of ozone as an odor mitigation technology.

Masking Agents – There are several odor masking agents on the market that essentially disguise a malodor with a stronger more pleasant odor. Due to the ineffectiveness of actually neutralizing the odor, we do not recommend the use of masking agents.

Carbon Filtration system – Carbon filtration systems are effective in mitigating odors but are not appropriate or effective technologies for venting greenhouses. Carbon filtration is only effective in enclosed structures, such as warehouses, and are only effective when they are used in conjunction with an inline fan to pull the air through the filter which includes activated carbon or charcoal. In other words, odor reduction is only achieved if the air moves through the carbon filtration mechanism, which is not feasible in a venting greenhouse. Enclosing a greenhouse, and attempting to use carbon filtration, instead of vapor phase, would require installation of HVAC in the greenhouses, which would result in increased energy usage.

Other than the currently approved odor abatement technologies previously discussed within this plan (i.e. vapor phase technology), Criterion Environmental, Inc. is unaware of any other odor technologies on the market specifically designed for cannabis odor mitigation.

8.0 Conclusions

The Byers vapor-phase system is an approved odor control technology with recognition from SB APCD. Based on the review of the proposed technologies, our field observations, the efficiency of odor removal from these odor abatement systems and the site-specific installation at this property, we conclude the following:

1. The neutralizing agent (CNB 100) is an actual deodorant neutralizer (not masking agents) specifically formulated for cannabis odors
2. The system can be modified or adjusted to deliver the deodorant with the objective to obtain a neutral odor and
3. The deodorant and/or neutralizing by-products is not a public health (acute or chronic) or environmental concern with supporting documentation that meets United States Environmental Protection Agency's Acute Exposure Guideline Levels or similar public health thresholds.

As a Licensed Professional Engineer and Certified Industrial Hygienist, I have reviewed and certified that the equipment and methods, as designed, to be used for reducing odors are consistent with accepted and available industry-specific best control technologies and methods designed to mitigate cannabis related odors. The Odor Abatement Plan as designed will prevent odors, generated from cannabis activities taking place at this site, from being experienced within residential zones.

9.0 Limitations

It should be noted and understood that although cannabis activities have been legalized and permitted within the County, it is expected that illegal and unpermitted commercial and personal growing operations will continue within the immediate area. Some of these operations are not complying with State or County regulations, particularly as it relates to odor abatement and are not in full compliance with the County's standards for odor abatement. Therefore, malodor complaints by the public may be incorrectly directed at the applicant. Cannabis odors, whether "real" or "psychological" are subjective and interpretive, depending on the receptor. If you have any questions or concerns regarding the information provided, please do not hesitate to call us at 805.644.8347 or my cell phone at 805.432.4888.

Respectfully submitted,

Nate Seward, PE, CIH
Professional Mechanical Engineer (M31978)
Certified Industrial Hygienist (9582 CP)

Attachments
Attachment 1 - Byers Vapor Phase Odor Control System- Technical Brochure & CNB100 SDS
Attachment 2 - Santa Barbara APCD- Cannabis Odor Control Presentation
Attachment 3 - December 8, 2017; CPF Associates Screening Health Assessment of Waterless Vapor Phase Odor Control Technology
Attachment 4 – Correspondence from APCD Re Ecosorb

Attachment 1

Byers Vapor Phase Odor Control System- Technical Brochure & CNB100 SDS

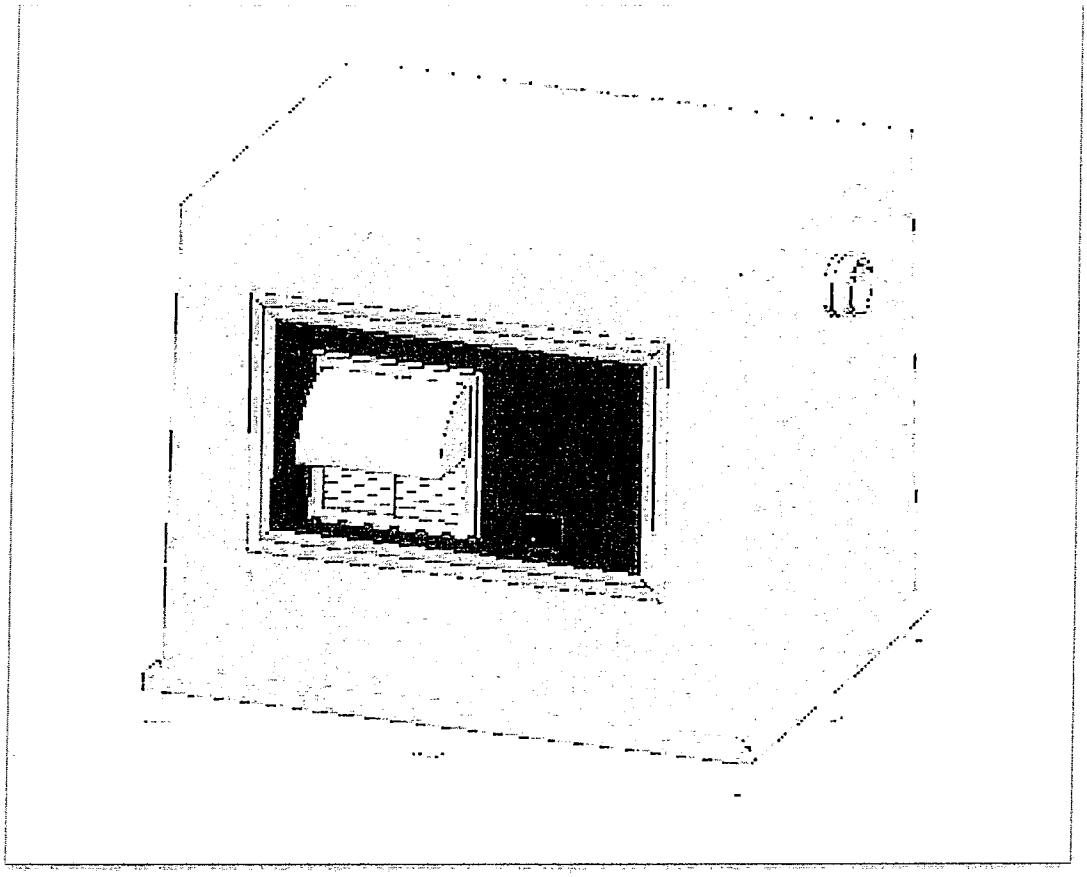
Criterion Environmental, Inc.
1879 Portola Road
Suite K
Ventura, CA 93003

www.criterionenv.com

Phone: 805-644-8347
Fax: 805-644-5347
Email: info@criterionenv.com

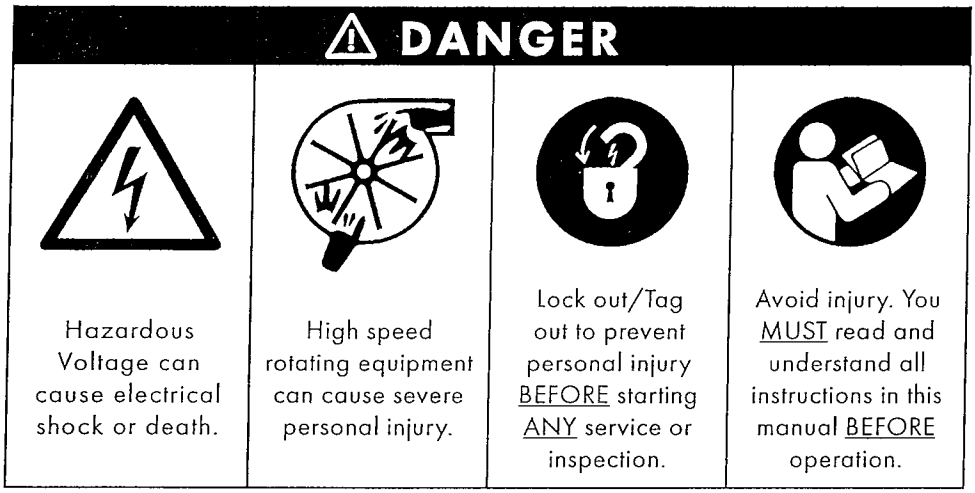
Byers Scientific & Manufacturing
Industrial Odor Management

INSTRUCTION MANUAL



Waterless Vapor System
for Odor Control
HPII Series

Read equipment manufacturer's manual before operating or servicing system. Failure to understand how to safely operate the system can result in an accident causing serious injury or death. Only qualified personnel should operate or service the system.



TECHNICAL SPECIFICATIONS

SYSTEM OVERVIEW

Footprint 74.5" L x 59.0" D x 63" H

Decibels at 30 feet: 65 dB

Access Door with Intake Filter

Filter Size: 18" x 18" x 1" Nominal

(Actual: 17.75" x 17.75" x 0.75")

63 Gallon Storage Tank

Internal circulation via eductors

Level Sensor

Temperature Sensor

In-Tank Heater for cold climates

Tank can be filled by toggle switch operated pump affixed to tote/drum

Evaporation Tank

Patent-Pending Uniform Vapor Production

Ultrasonic Booster

Level Sensor

Temperature Sensor

In-Tank Heater

Can produce up to 7 equivalent gallons of vapor/day

Tank fills automatically via PLC

ELECTRIC

UL-LISTED PANEL

- 40 / 50 Amp Service Disconnect Switch
- Touch Screen Panel Display
- Indicator Lights
- Programmable Logic Controller (PLC) for Critical System Operations
- Industrial Remote Access Router with External Antenna
- High Limit Heat Safety Controllers

3-PHASE COMPONENTS

(208- 240 / 480VAC)

Main Blower

- 7.5 HP Motor
- 19.4 - 17.6 / 8.8 Full Load Amps
- 3530 RPM

Secondary Blower

- 0.5 HP Motor
- 3450 RPM

In-Tank Heater(s)

- 2000 - 2660 / 3500 Watts
- 5.6 - 6.4 / 4.3 Amps

36VAC COMPONENT

Ultrasonic Booster

- 8.2 Amps

24VDC COMPONENTS

Diaphragm Pumps (3)

- 3.0 gallons per hour
- 3.5 Amps

Precalibrated Level Sensors (2)

Precalibrated Flow Meter with Totalizer

Precalibrated Differential Pressure Sensor (2)

Temperature Sensors (2)

OPERATION

⚠ SAFETY WARNING

ONLY QUALIFIED PERSONNEL THAT HAVE BEEN
PROPERLY TRAINED SHOULD OPERATE THE SYSTEM

BEFORE TURNING ON

- The yellow handled service disconnect located on the electric panel door must be turned to the ON position. The green indicator light for CONTROL POWER ON will be illuminated to visually show that there is power to the unit
- The display screen will boot up upon turning the yellow handled service disconnect. If it does not, contact Byers Scientific & Manufacturing for further troubleshooting
- Inspect fan inlets for obstructions
- Check that the auxiliary is filled sufficiently and that the vapor tank level is between 47 - 50%
- Once door is closed, open filter access door to make sure a filter is in place

OPERATING THE SYSTEM

- With the door closed and locked, turn the "CONTROL POWER ON/OFF" switch on the electrical panel to the ON position
- A green light under EVAPORTATION FAN RUNNING will indicate that the system is in operation. The MAIN FAN RUNNING indicator light is purposefully delayed and will turn green after three seconds. If a red FAN FAULT appears for either the evaporation or main fan, contact Byers Scientific & Manufacturing for further troubleshooting.
- The system is programmed to be self-operating and we advise that any levels set on the touchscreen should be left as is. Altering the inputs could have a negative impact upon the efficacy of the neutralizing vapor.

- The system will send out an SMS text message or email to personnel to alert of any systems needs e.g., filling auxiliary tank or system fault. Level 1 alarms cause the system to completely shut down to prevent potential harm to the system. Level 1 alarms are primarily due to the VFD (variable frequency drive) on the fans and can be due to a multiple factors, such as low/high supply voltage or motor overheating. After such an event, the fault code displayed on the VFD must be provided to Byers Scientific in order to determine the cause of the fault. Failing to do so and resetting the VFD without understanding the fault can harm the system as the VFD fault codes provide insight to the problem.
- To fill the auxiliary tank, make sure that the "CONTROL POWER ON/OFF" switch on the electrical panel is in the OFF position before opening the door. The toggle switch located inside the system controls the pump plumbed into the drum/tote located next to the system. Flip the toggle switch to the ON position until the level on the auxiliary level sensor reaches a maximum of 99%. Overfilling the tank can lead to a fault and the system will not run.
- When replacing drums/totes, be sure to keep the provided attachment and check the filter at the end of the plumbing before inserting into new drum/tote.
- For optimum performance and results, Byers Scientific & Manufacturing recommends operating the unit full-time at a minimum output level of 3-4 equivalent gallons per day. The specified minimum level of output has been established based on calculations of deodorizer molar mass contrasted with a baseline typical malodor molar mass. When site-specific conditions necessitate a greater degree of output, the unit output may be increased up to 6-7 equivalent gallons of output. Please consult with Byers Scientific & Manufacturing personnel for assistance in programming your unit for scheduled production.

MAINTENANCE

Our systems are built for minimal maintenance but will require occasional servicing. Following the provided guidelines will keep your system functioning without interruption.

REPLACING AIR FILTER

The air filter must be changed on a regular basis per your site's specific environment. Dustier environments may require a change every week whereas systems placed within a building may only need to be changed once a month. Failing to change the filter can cause the system to run suboptimal. If an air filter is not placed in the system, we reserve the right to void the warranty due to negligence of maintenance.

REFRESHING THE EVAPORATION TANK

Due to the make-up of the deodorizer, the Evaporation Tank requires to be purged every 2.5 months. It is preferred that a dedicated portable pump is used so that no contamination occurs. First, ensure that the "CONTROL POWER ON/OFF" switch on the electrical panel is in the OFF position beforehand. Failing to do so will cause the transfer pump to come on and pump deodorizer over from the Auxiliary Tank until it reaches its programmed setpoint. The "old" deodorizer should be disposed per the SDS.

Once the Evaporation Tank is empty, flush out with clean water and dispose in the same manner as the "old" deodorizer.

Using the portable pump, refill the Evaporation tank either from the auxiliary tank or directly from the adjacent drum/tote. DO NOT allow the intermittent transfer pump to refill the tank since it can lead to burning out the motor. Refill the tank up to 47%, which will be displayed on the LED readout on the blue Level Sensor located on top of the tank.

TROUBLESHOOTING

FAN FAULTED	Contact Byers Scientific & Manufacturing with VFD Fault Code for further information
TRANSFER PUMP FAULTED	Pump motor issue, contact for replacement
EVAPORATION/AUXILIARY TANK FAULTED	Possible hi-limit controller issue, contact Byers Scientific & Manufacturing for further information

CONTACT INFORMATION:

Byers Scientific & Manufacturing
2332 W. Industrial Park Drive
Bloomington, IN 47404
Phone: (812) 269-6218 E-mail: info@byers-scientific.com

WARRANTY

Byers Scientific & Manufacturing (Seller) warrants products of its own manufacture, against defects of material and workmanship under normal use and service for a period of SIXTY (60) months from date of installation. This warranty does not apply to any of Seller's products or any part thereof which has been subject to extraordinary wear and tear, accident, abuse, misuse, overloading, negligence or alteration. On products furnished by Seller, but manufactured by others, such as fan motors, Seller extends the same warranty as Seller received from the manufacturer thereof. Expenses incurred by Purchaser's in repairing or replacing any defective product will not be allowed except where authorized in writing and signed by an officer of the Seller.

ECOSORB CNB 100

Safety Data Sheet
according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations
Date of issue: 12/04/2017 Version: 1.0

SECTION 1: Identification

1.1. Identification

Product form : Mixture
Product name : ECOSORB CNB 100

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : Odor Neutralizer
Recommended use : Odor Neutralizer
Restrictions on use : None known

1.3. Details of the supplier of the safety data sheet

Manufacturer
OMI Industries
1300 Barbour Way
Rising Sun, IN 47040 - U.S.A
T 1-847-304-9111

1.4. Emergency telephone number

Emergency number : 1-800-662-6367, Monday - Friday 8 am to 5 pm CST

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS-US classification
Not classified

2.2. Label elements

2.3. Other hazards

Other hazards not contributing to the classification : None under normal conditions. Keep out of reach of children.

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances

3.2. Mixtures

This mixture does not contain any substances to be mentioned according to the criteria of section 3.2 of HazCom 2012

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general : Call a poison center/doctor/physician if you feel unwell.
First-aid measures after inhalation : Move to fresh air if necessary.

First-aid measures after skin contact : Wash skin with plenty of water.

First-aid measures after eye contact : Rinse eyes with water as a precaution.

First-aid measures after ingestion : Call a poison center/doctor/physician if you feel unwell.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/effects : None under normal use.

Symptoms/effects after inhalation : No effects known.

Symptoms/effects after skin contact : No effects known.

Symptoms/effects after eye contact : No effects known.

Symptoms/effects after ingestion : No effects known.

Symptoms/effects upon intravenous administration : No other effects known.

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Dry powder. Foam. Carbon dioxide.

Unsuitable extinguishing media : No unsuitable extinguishing media known.

5.2. Special hazards arising from the substance or mixture

Fire hazard : Not flammable.

Reactivity : The product is non-reactive under normal conditions of use, storage and transport.

5.3. Advice for firefighters

Firefighting instructions : Cool tanks/drums with water spray/remove them into safety.

Protection during firefighting : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Stop leak if safe to do so.

6.1.1. For non-emergency personnel

Protective equipment : Gloves and safety glasses recommended.

Emergency procedures : Ventilate spillage area.

6.1.2. For emergency responders

Protective equipment : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

6.2. Environmental precautions

Avoid release to the environment. Prevent liquid from entering sewers, watercourses, underground or low areas.

6.3. Methods and material for containment and cleaning up

For containment : Collect spillage.

Methods for cleaning up : Take up liquid spill into absorbent material.

Other information : Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

For further information refer to section 13. For further information refer to section 8: "Exposure controls/personal protection".

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling	: Ensure good ventilation of the work station. Wear personal protective equipment.
Hygiene measures	: Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures	: Does not require any specific or particular technical measures.
Storage conditions	: Store in a well-ventilated place. Keep cool.
Incompatible products	: Oxidizing agent. Strong acids.
Incompatible materials	: Keep away from strong acids and strong oxidizers.
Storage temperature	: 4 - 29 °C 40°F and 85°F Allowing product to freeze may cause layering.
Heat-ignition	: KEEP SUBSTANCE AWAY FROM: heat sources. ignition sources.
Information on mixed storage	: KEEP SUBSTANCE AWAY FROM: (strong) acids. oxidizing agents.
Storage area	: Keep container in a well-ventilated place. Store in a cool area. Keep out of direct sunlight. Store in a well-ventilated place.
Special rules on packaging	: Keep only in original container.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.2. Exposure controls

Appropriate engineering controls : Ensure good ventilation of the work station.

8.3. Individual protection measures/Personal protective equipment

Personal protective equipment : Gloves and safety glasses recommended.

Hand protection	: Protective gloves. Recommended.
Eye protection	: Safety glasses. Recommended.
Skin and body protection	: None under normal use.
Respiratory protection	: Respiratory protection not required in normal conditions.
Thermal hazard protection	: Not applicable.
Environmental exposure controls	: Avoid release to the environment.
Other information	: Do not eat, drink or smoke during use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Appearance	: White liquid.
Color	: White
Odor	: Characteristic odour
Odor threshold	: No data available
pH	: 6 - 8.5
Melting point	: Not applicable
Freezing point	: No data available
Boiling point	: ≈ 99 °C
Flash point	: No data available
Relative evaporation rate (butyl acetate=1)	: No data available
Flammability (solid, gas)	: Not applicable.
Vapor pressure	: No data available
Relative vapor density at 20 °C	: No data available
Relative density	: ≈ 0.99
Solubility	: Soluble in water.
Partition coefficient n-octanol/water	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity, kinematic	: ≈ 1 cSt
Viscosity, dynamic	: No data available
Explosion limits	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

10.5. Incompatible materials

Oxidizing agent. Strong acids.

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Likely routes of exposure	: Inhalation; Dermal
Acute toxicity	: Not classified
Skin corrosion/irritation	: Not classified pH: 6 - 8.5
Serious eye damage/irritation	: Not classified pH: 6 - 8.5
Respiratory or skin sensitization	: Not classified.
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified
Specific target organ toxicity – single exposure	: Not classified
Specific target organ toxicity – repeated exposure	: Not classified
Aspiration hazard	: Not classified
Potential Adverse human health effects and symptoms	: No other effects known.
Symptoms/effects after inhalation	: No effects known.
Symptoms/effects after skin contact	: No effects known.
Symptoms/effects after eye contact	: No effects known.
Symptoms/effects after ingestion	: No effects known.
Symptoms/effects upon intravenous administration	: No other effects known.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment.

12.2. Persistence and degradability

ECOSORB CNB 100	
Persistence and degradability	Biodegradability in water: no data available.

12.3. Bioaccumulative potential

ECOSORB CNB 100	
Bioaccumulative potential	Not established.

12.4. Mobility in soil

ECOSORB CNB 100	
Ecology - soil	The product is predicted to have high mobility in soil. Soluble in water.

12.5. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Regional legislation (waste)	: Disposal must be done according to official regulations.
Waste treatment methods	: Dispose of contents/container in accordance with licensed collector's sorting instructions.
Sewage disposal recommendations	: Disposal must be done according to official regulations.
Product/Packaging disposal recommendations	: Avoid release to the environment.
Ecology - waste materials	: Avoid release to the environment.

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Not regulated

Transportation of Dangerous Goods

Not regulated

Transport by sea

Not regulated

Air transport

Not regulated

SECTION 15: Regulatory information

15.1. US Federal regulations

ALL COMPONENTS OF THIS PRODUCT ARE LISTED, OR EXCLUDED FROM LISTING, ON THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY TOXIC SUBSTANCES CONTROL ACT (TSCA) INVENTORY

15.2. International regulations

CANADA

ECOSORB CNB 100
Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

ECOSORB CNB 100
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

National regulations

ECOSORB CNB 100
Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Korean ECL (Existing Chemicals List)
Listed on INSQ (Mexican National Inventory of Chemical Substances)

15.3. US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

SECTION 16: Other information

Training advice : Normal use of this product shall imply use in accordance with the instructions on the packaging.

Other information : None.

ABBREVIATIONS AND ACRONYMS:	
ATE	Acute Toxicity Estimate
BCF	Bioconcentration factor
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
LC50	Median lethal concentration
IARC	International Agency for Research on Cancer
OECD	Organisation for Economic Co-operation and Development
LD50	Median lethal dose
SDS	Safety Data Sheet
STP	Sewage treatment plant

Hazard Rating

Health : 0 Minimal Hazard - No significant risk to health

Flammability : 0 Minimal Hazard - Materials that will not burn

Physical : 0 Minimal Hazard - Materials that are normally stable, even under fire conditions, and will NOT react with water, polymerize, decompose, condense, or self-react. Non-Explosives.

Personal protection : B

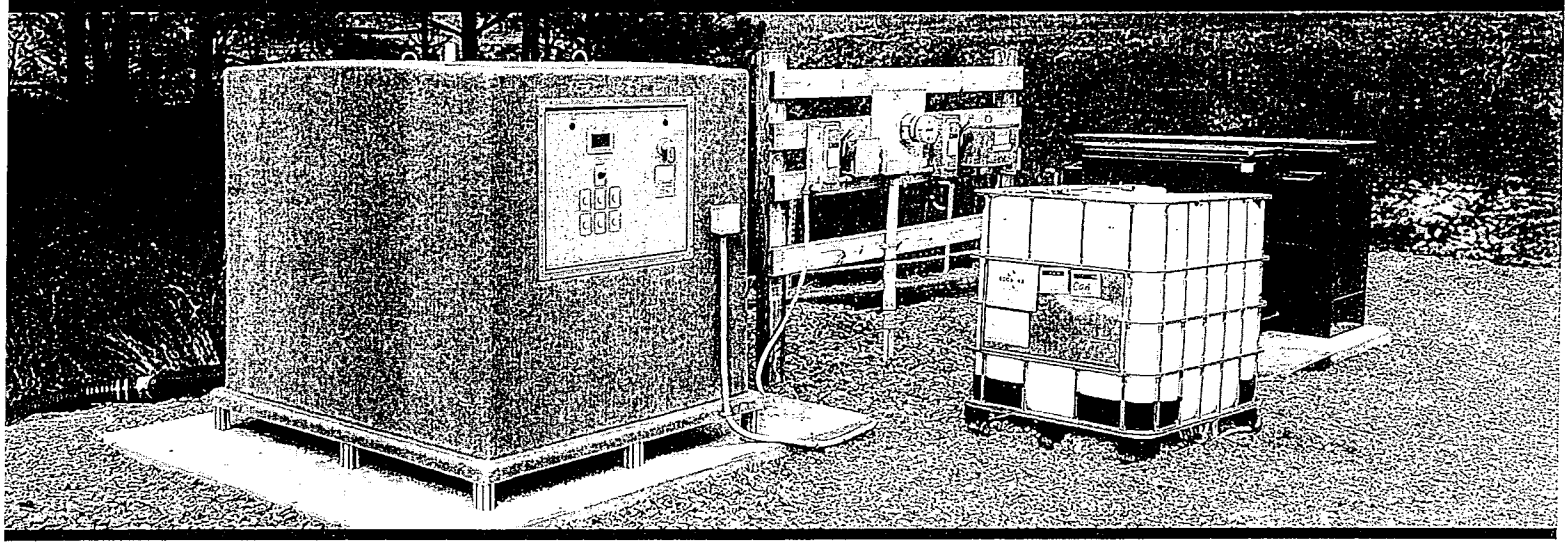
B - Safety glasses, Gloves

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product

Byers Scientific & Manufacturing
Industrial Odor Management

2332 W. Industrial Park Drive
Bloomington, IN 47404
Ph: (812) 269-6218

WATERLESS VAPOR-PHASE SYSTEM FOR ODOR CONTROL



KEY FEATURES:

Patent-pending Uniform Vapor-Distribution Technology ensures that a consistent and controllable level of product is dispersed via the perimeter piping

Remote monitoring 24/7 by Byers Scientific staff on status of all machine operating parameters

Rugged weather resistant enclosure capable of withstanding prolonged exposure to wind, rain and other elements

UL Listed control panel is designed for site specific electrical requirements (e.g. 480 VAC, 3 Phase)

Air filter replacement can be done safely from outside, no need to open/unlock door

Product reservoir tank provides up to three weeks of uninterrupted operation before needing refill

- Key personnel receive email/SMS text notifications alerting of machine needs such as low tank level or air filter replacement
- Operational data are logged to provide evidence of compliance to local/state/federal agencies
- Optional weather station fully integrated with SCADA system available
- Utilizes Ecosorb® 607, a proprietary blend from OMI Industries that is specifically formulated for use in BS&M equipment
- Each system is custom designed and engineered for a client's site-specific characteristics
- Interior access via lockable 120-degree angle, gas assisted door for general machine maintenance such as product tank filling

Byers Scientific & Manufacturing
Industrial Odor Management

2332 W. Industrial Park Drive
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Ph: (812) 269-6218

WATERLESS VAPOR-PHASE SYSTEM FOR ODOR CONTROL

SPECIFICATIONS

YSTEM OVERVIEW

Footprint 74.5" L x 59.0" D x 63" H

Decibels at 30 feet: 65 dB

Access Door with Intake Filter
- Filter Size: 18" x 18" x 1" Nominal (Actual: 17.75" x 17.75" x 0.75")

63 Gallon Storage Tank
- Internal circulation via eductors
- Level Sensor
- Temperature Sensor
- In-Tank Heater for Cold Climates
- Tank can be filled by toggle switch operated pump affixed to tote/drum

Evaporation Tank
- Patent-Pending Uniform Vapor Production
- Ultrasonic Booster
- Level Sensor
- Temperature Sensor
- In-Tank Heater
- Can produce up to 7 equivalent gallons of vapor/day
- Tank fills automatically via PLC

.ECTRIC

JL-LISTED PANEL

- 40 / 50 Amp Service Disconnect Switch
- Touch Screen Panel Display
- Indicator Lights
- Programmable Logic Controller (PLC) for Critical System Operations
- Industrial Remote Access Router with External Antenna
- High Limit Heat Safety Controllers

ELECTRIC (CONT'D)

3-PHASE COMPONENTS (208- 240 / 480VAC)

Main Blower
- 7.5 HP Motor
- 19.4 - 17.6 / 8.8 Full Load Amps
- 3530 RPM

Secondary Blower
- 0.5 HP Motor
- 3450 RPM

In-Tank Heater(s)
- 2000 - 2660 / 3500 Watts
- 5.6 - 6.4 / 4.3 Amps

36VAC COMPONENT

Ultrasonic Booster
- 8.2 Amps

24VDC COMPONENTS

Diaphram Pumps (3)
- 3.0 gallons per hour
- 3.5 Amps

Precalibrated Level Sensors (2)

Precalibrated Flow Meter with Totalizer

Precalibrated Differential Pressure Sensor
- Range: 0 - 2 inH_2O

Precalibrated Differential Pressure Sensor
- Range: 0 - 40 inH_2O

Temperature Sensors (2)

Attachment 2

Santa Barbara APCD May 2018 CAPCOA Presentation

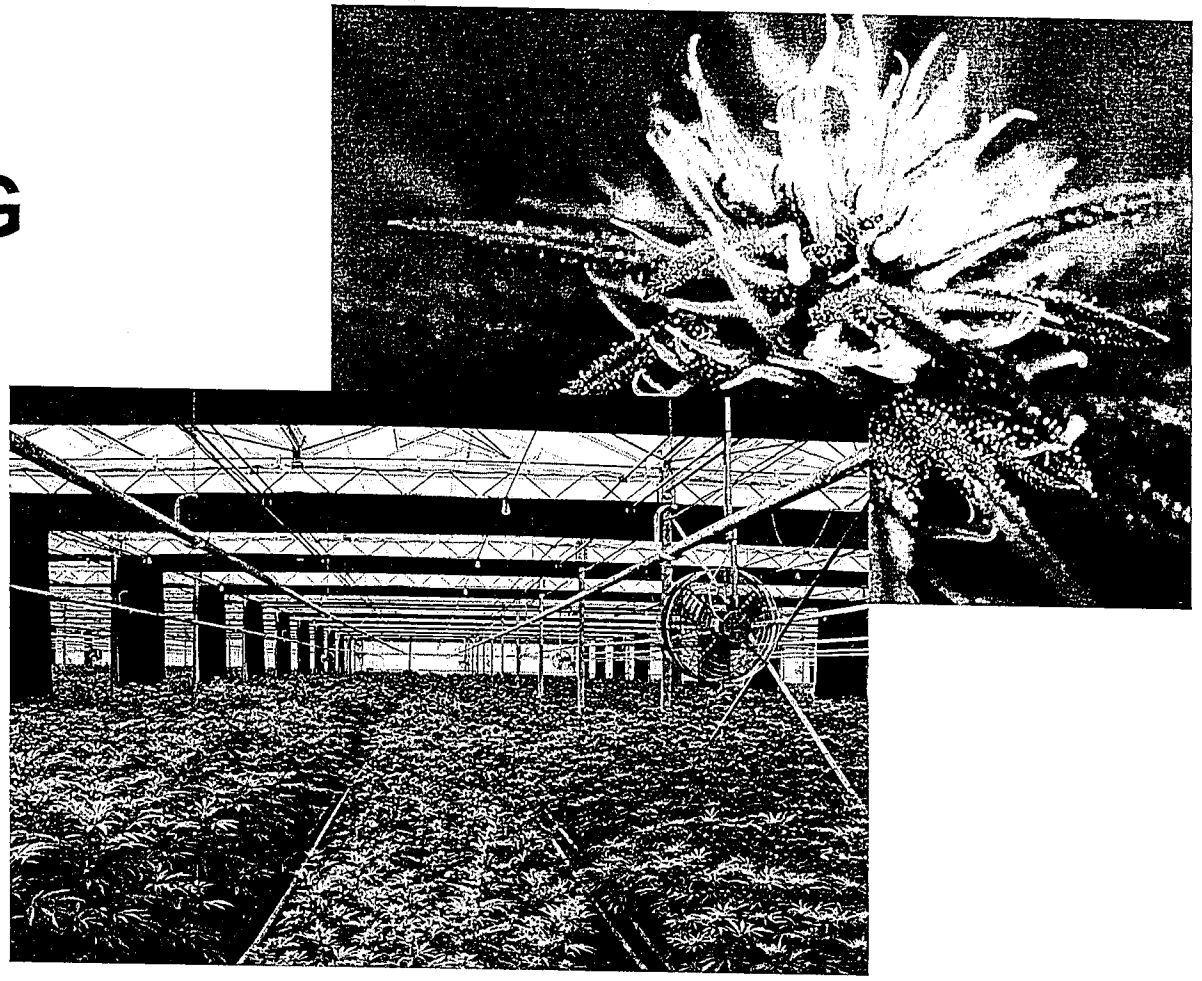
Criterion Environmental, Inc.
1879 Portola Road
Suite K
Ventura, CA 93003

www.criterionenv.com

Phone: 805-644-8347
Fax: 805-644-5347
Email: info@criterionenv.com

Cannabis Odor Control Solutions

PCOA SPRING
MBERSHIP MEETING



a Barbara County
ollution Control District

ssion: To protect the people and the environment
a Barbara County from the effects of air pollution.

Arlin Genet
or / APCO

5, 2018

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Cannabis in Santa Barbara County

anta Barbara County currently has the most mporary cannabis cultivation licenses in alifornia[1,2]

2 cannabis cultivators in Carpinteria alone[3]

dor generated from cannabis cultivation is a gnificant nuisance issue for residents

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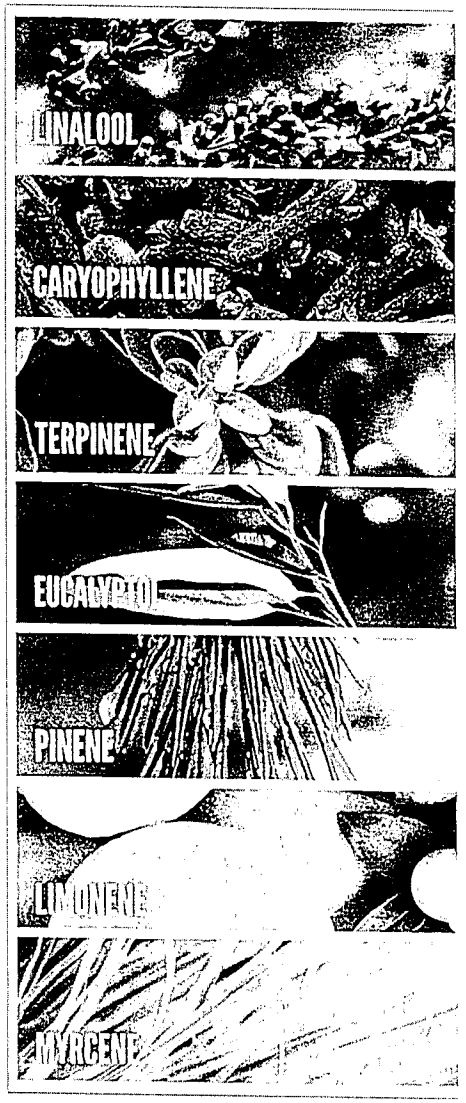
1. https://www.independent.com/news/2018/mar/01/santa-barbara-cannabis-growers-hold-most-temporary/
2. Final Environmental Impact Report (EIR) for the Cannabis Land Use Ordinance and Licensing Program – Santa Barbara County
3. https://www.independent.com/news/2018/mar/23/santa-barbara-county-sets-cannabis-grow-cap/

Odors From Cultivation

dors produced during cannabis flowering stage

or large-scale operations, significant portion of plants ill be flowering at any given time

annabinoids, Terpenes, Sesquiterpenes



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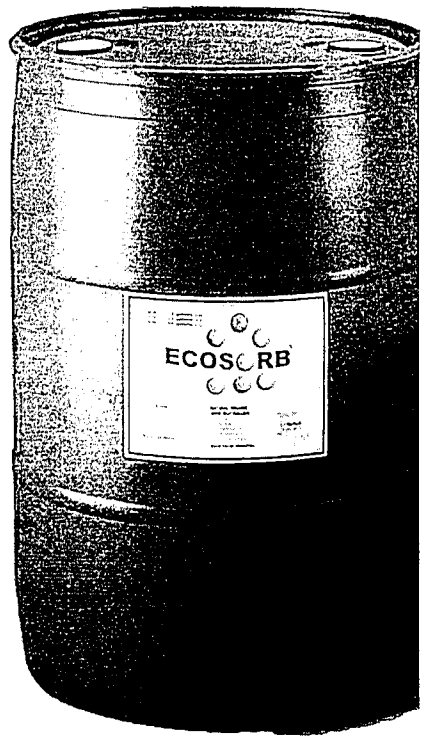
Odor Neutralizers

rocess works like this: chemical reaction occurs between
e odors and compounds in the neutralizer to scrub the
nell

eutralizer is converted into a vapor that gets dispersed

- Odors "surf" the airstream
- Odors & neutralizer more likely to meet if in the airstream together



ıe example shown here: Ecosorb CNB 100 odor neutralizer

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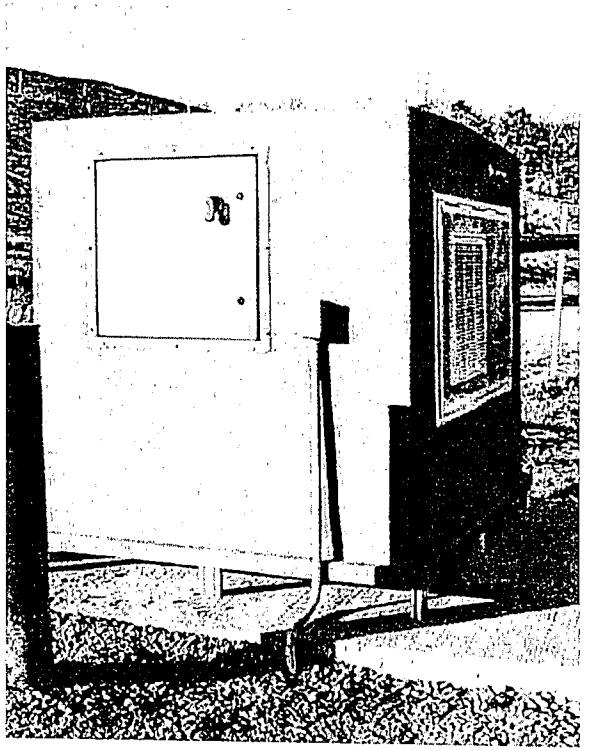
Vapor-Phase Odor Control Technology

apors go through PVC piping around perimeter of eenhouse

VC piping contains holes for release of odor eutralizer

ze and number of holes unique to each installation ut designed to minimize pressure drop



http://byers-scientific.com/assets/bsm-vapor-system-

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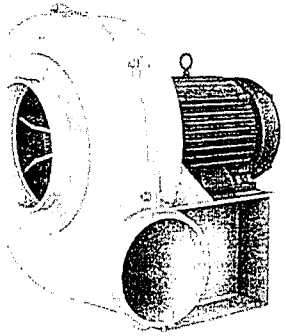
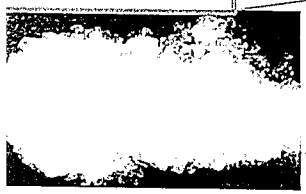
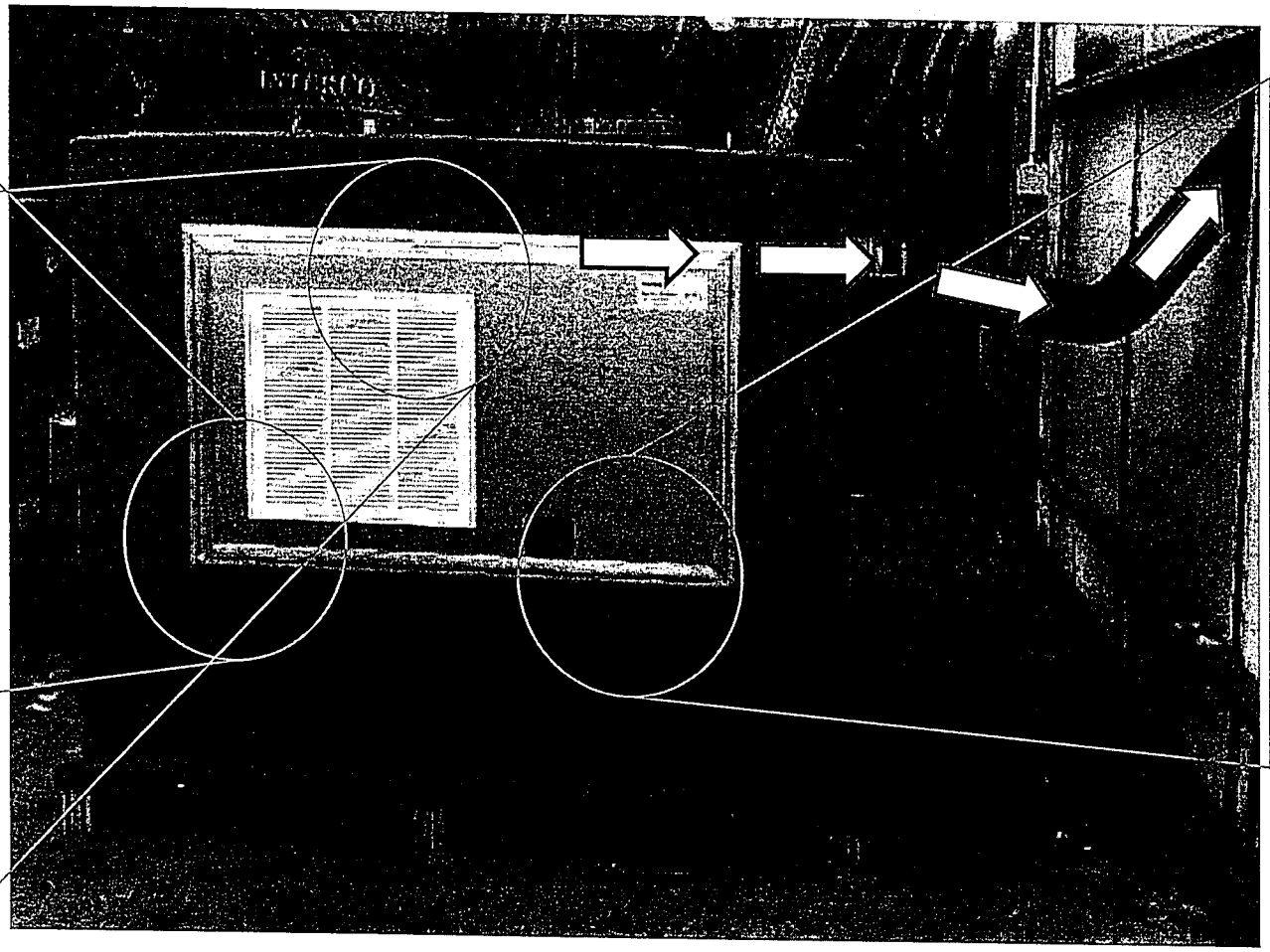
Odor Control System Process Flow

ıg Tank
CNB 100)

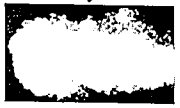
h pressure, low
olume blower







Evaporation Tank
(confidential)



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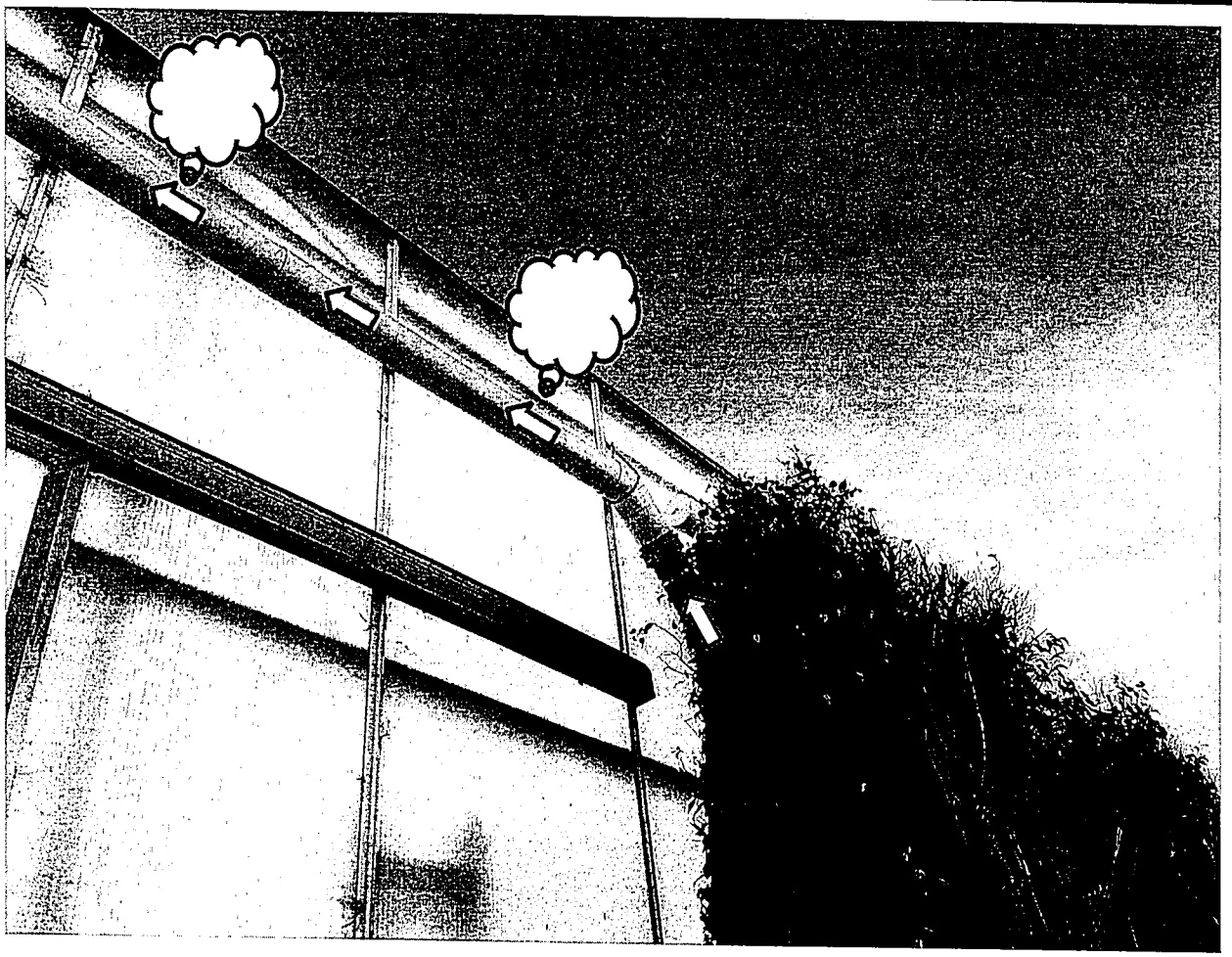
Odor Control System Process Flow Cont



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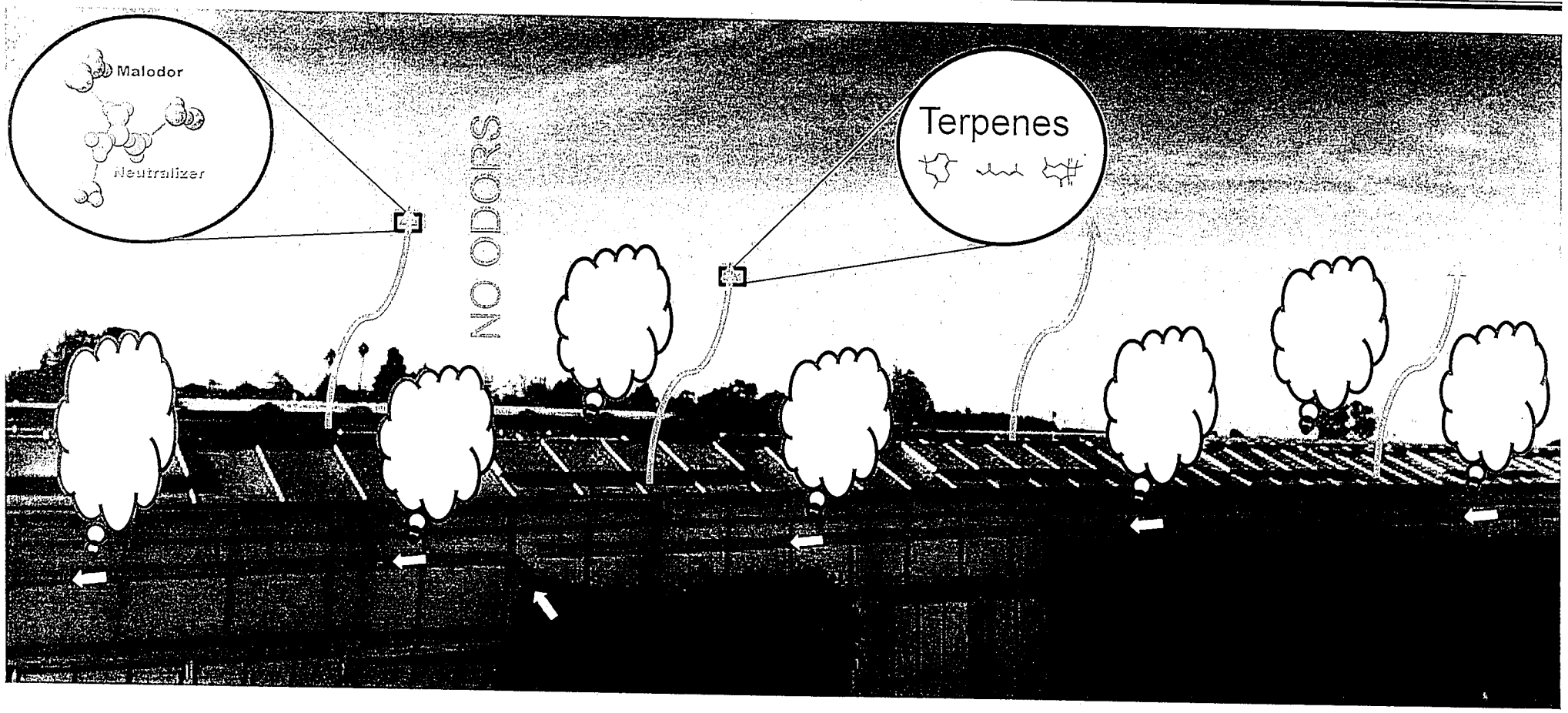
)dor Control System Process Flow Cont



Watch smoke test https://youtu.be/sNEBCpQCgZY

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Considerations

osorb CNB 100 example:

Throughput ~ 3.5 gallons per day

A pine/citrus scent from overproduction of neutralizer vapor

Approximate capital cost $38,000 - $53,000, including installation

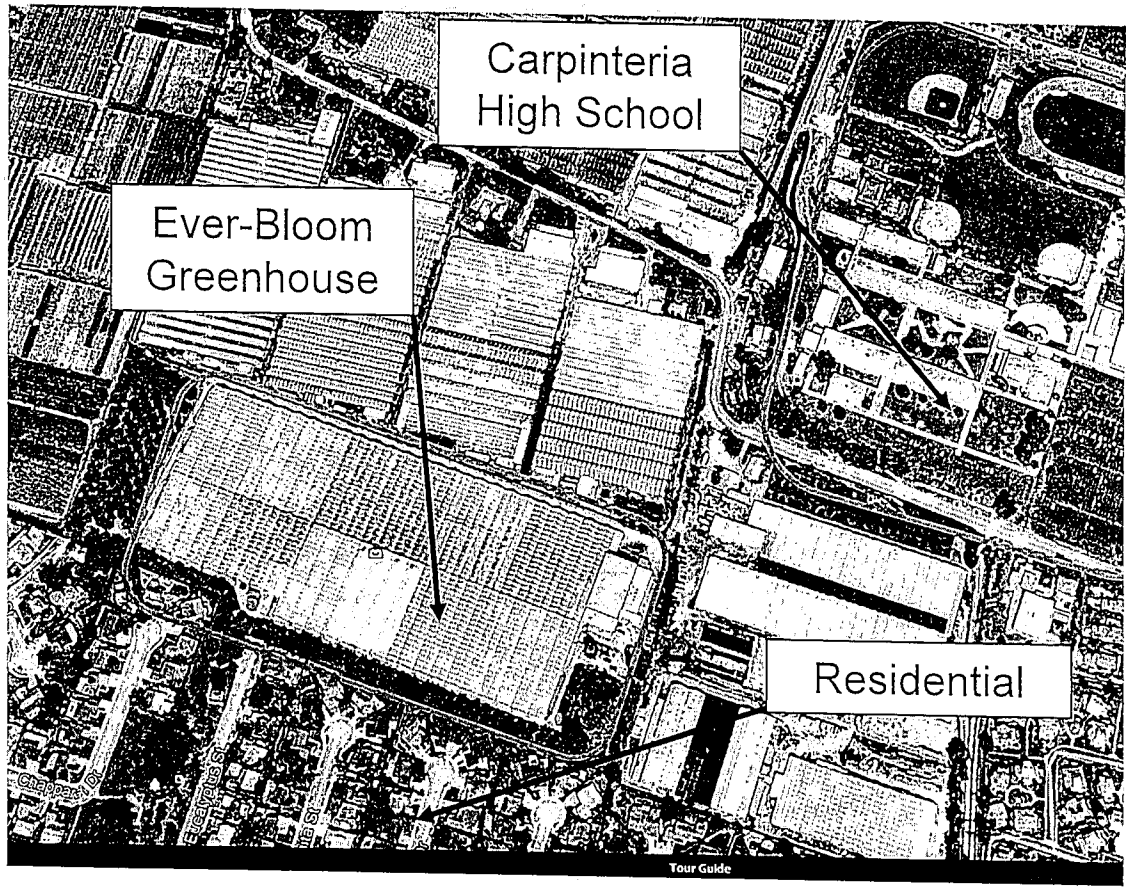
Annual operating cost (based on typical large-scale greenhouse operations) is $45,000 – $50,000 per year

Ever-Bloom Test Case

-acre greenhouse located near
nsitive receptors

0,000 sq. ft cannabis growing
eration, previously grew flowers

talled a Byers-Scientific &
anufacturing vapor-phase odor
ntrol system in November 2017



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tion Control District

Ever-Bloom Test Case Cont.

er-Bloom invited District staff to inspect odor-control system
February 2018

strict staff toured the greenhouse and odor-control system

lor-control system was operating during the visit and
peared to be working as advertised

ngent odors from inside the greenhouse could not be
tected directly outside the greenhouse or at the property line

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Other Applications

stem currently installed at 14 cannabis operations in Carpinteria

stem can be used to control odors from:

- Solid Waste (landfills, waste transfer stations, compost, pulp & paper)
- Wastewater Treatment
- Commercial (food waste, trash compactors, food processing)
- Agricultural (dairy, poultry and hog farming)

o operational at Miramar Landfill in San Diego as well as composting and dfill operations throughout the US

Questions

Santa Barbara County
tion Control District

Ecosorb CNB 100 Data Sheet

Byers Scientific & Manufacturing
Industrial Odor Management
2332 W. Industrial Park Drive
Bloomington, IN 47404
Ph: (812) 269-6218

ECOSORB® CNB 100 TECHNICAL DATA SHEET

ECOSORB Odor Control Solutions

Ecosorb® CNB 100 is an odor neutralizer designed specifically for the control of cannabis odors. It was designed to remove the odorous chemicals that are produced when growing cannabis. Ecosorb® CNB 100 is effective on the main groups of odor causing chemical compounds found in cannabis including but not limited to the cannabinoids, terpenes, and sesquiterpenes groups.

Ecosorb® CNB 100 can be diluted with water or used neat depending on the application and delivery equipment. Dilution with water ranges from roughly 1 part in 10 of water to 1 part in 100 of water, depending on the type of delivery system and odor intensity. This product is a blend of plant oils, food grade surfactant, and purified water.

Ecosorb® CNB 100 should never be applied in a manner that would allow it to come in direct contact with the cannabis plant, water or soil.

FEATURES

- True odor neutralized
- Biodegradable and non-toxic
- Environmentally friendly
- No measurable flash point
- Scientifically proven

ADVANTAGES

- No masking of odors
- Usually no permits required
- Safe for employees and neighbors
- Safe for all environments
- It performs as advertised

PHYSICAL PROPERTIES

pH:	~6.0
Specific Gravity:	~0.99
Boiling point:	~208° F
Appearance:	Milky White
Odor:	Slight Citrus

HMIS CLASSIFICATION

Health: 0 Flammability: 0 Reactivity: 0 Protective Equipment: B

Santa Barbara County
tion Control District

Byers Scientific & Manufacturing
Industrial Odor Management
2332 W. Industrial Park Drive
Bloomington, IN 47404
Ph: (812) 269-6218

ECOSORB® CNB 100 TECHNICAL DATA SHEET

ALL INGREDIENTS CAN BE FOUND LISTED ON THE FOLLOWING CHEMICAL SUBSTANCE INVENTORIES:

United States: TSCA	South Korea: ECL and KECI
Canadian: DSL	China: IECSC
European: EINECS	Japan: ENCS
Australian: AICS	New Zealand: NZIoC

REGULATORY

- Ecosorb® CNB 100 is non-hazardous by OSHA Hazard Communication Standard 29 CFR 1910.1200
- This product does NOT contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm.
- Not subject to reporting requirements of the United States SARA Section 313.
- Uncontrolled product according to WHMIS classification criteria.

HANDLING AND PACKAGING

Ecosorb® CNB 100 is shipped in HDPE containers. It is recommended to store the product in the original container. The product should be stored in a well-ventilated place, in a cool area, out of direct sunlight, and tightly sealed. Store the product above 35°F and below 85°F. Allowing the product to freeze is especially damaging and will disrupt the emulsion. Extended exposure to higher temperatures may cause separation. Ecosorb® CNB 100 is incompatible with oxidizing agents and strong acids. This product does not burn. Always shake or mix before using.

DISPOSAL AND CLEANUP

Wash with water or soap and water. The product is not hazardous to humans, animals, or the environment. Dispose of in accordance with local, regional, and national and/or international regulations.

CONTAINERS

Ecosorb® CNB 100 is available in the following sizes:

- 5 Gallon Pails
- 55 Gallon Drums
- 275 Gallon Containers

DISTRIBUTOR OF
Ecosorb® *Remarkably effective. Surprisingly simple.*

OMI INDUSTRIES
One Corporate Drive, Suite 100
Long Grove, IL 60047, USA
Phone: 800.662.6367 Fax: 847.304.0989
www.omi-industries.com

Attachment 3

December 8, 2017; CPF Associates Screening Health Assessment of Waterless Vapor Phase Odor Control Technology

Criterion Environmental, Inc.
1879 Portola Road
Suite K
Ventura, CA 93003

www.criterionenv.com

Phone: 805-644-8347
Fax: 805-644-5347
Email: info@criterionenv.com

Scientific Research and Consulting

MEMORANDUM

TO:	Marc Byers, Byers Scientific & Manufacturing
FROM:	Sarah Foster, CPF Associates, Inc.
DATE:	December 8, 2017
RE:	Screening Health Assessment of Waterless Vapor Phase Odor Control Technology

INTRODUCTION AND SUMMARY

Byers Scientific & Manufacturing has developed a waterless vapor phase odor control technology which releases an Ecosorb® odor control product in gaseous form. Byers requested CPF Associates to conduct a health assessment of this system to evaluate its potential air impacts relative to inhalation criteria derived to be protective of public health. This memo describes the health assessment and its conclusions.

The application scenario evaluated in this study was defined by Byers. It assumed that Ecosorb® CNB 100, a proprietary odor control product, would be fed into the vapor phase odor control technology at a rate of 2.5 gallons per day and, once volatilized, would be distributed as a gas through a pipe. Air flow through the pipe would be generated by a fan set at roughly 300 cubic feet per minute and the product would be released from upward-facing holes spaced at nine foot intervals along the length of the pipe. The pipe would be placed around the outside perimeter of a building at a height of 10-15 feet (3.0-4.6 m). The total pipe length would vary from about 575-3,150 feet (175-960 m), depending on the building's footprint. The composition of CNB 100 was provided to CPF by its manufacturer, OMI Industries, under the understanding that this is confidential business information.

The assessment was a screening-level evaluation that relied on conservative, health-protective assumptions. These assumptions are expected to overestimate potential air concentrations, exposures and risks associated with the evaluated scenario.

The assessment showed that operation of the Byers-defined application scenario would not be expected to pose public health concerns. Potential air concentrations calculated using a screening-level model in the immediate vicinity of the distribution pipe were below available health-protective inhalation criteria.

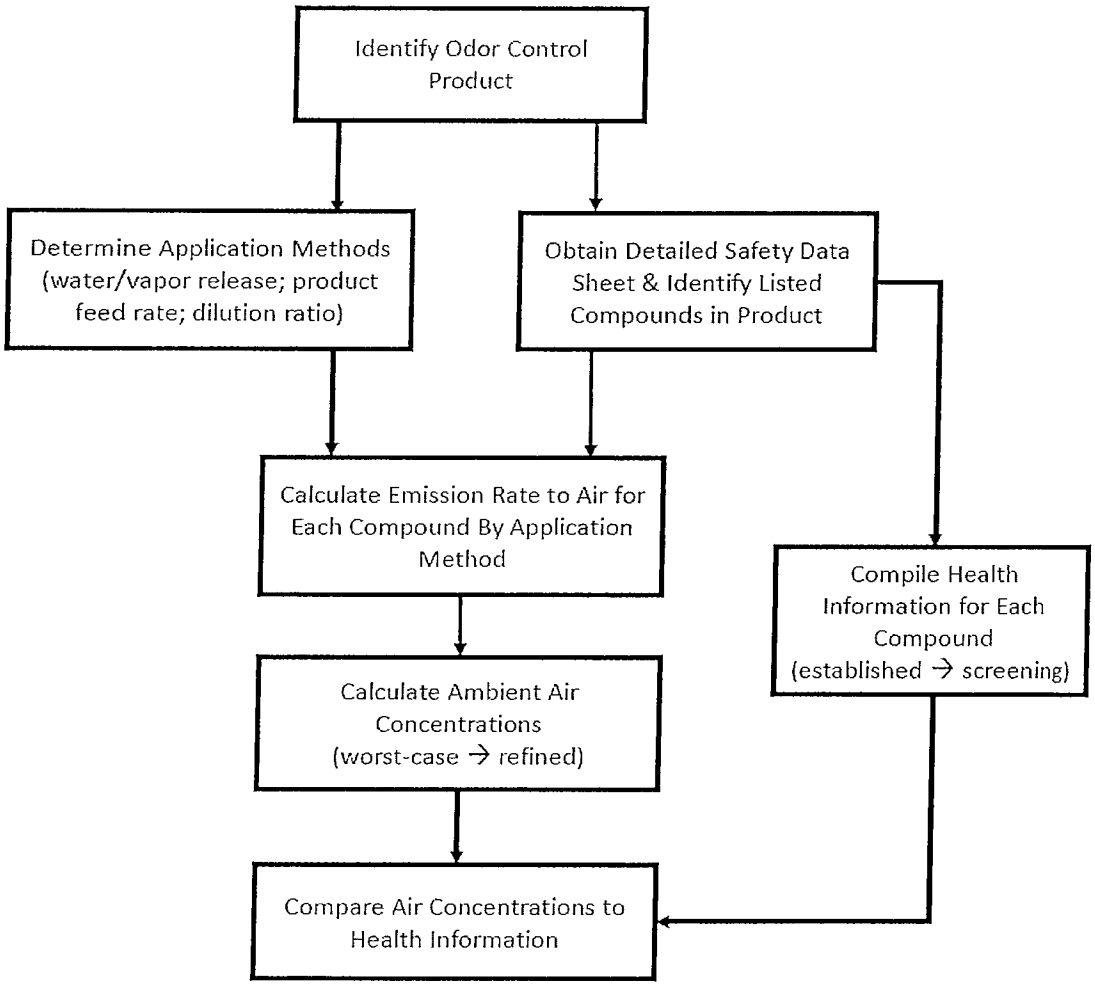
SCREENING HEALTH ASSESSMENT

Methodology

CPF has developed a methodology to evaluate odor control product use at landfills and other potentially odiferous facilities. This methodology is based on well-accepted health risk assessment principles and has been used to objectively assess more than one dozen odor control products delivered using a variety of application systems.

A flow chart of the methodology is provided in Figure 1. Broadly defined, the methodology combines information about odor control product composition, odor control application methods, health effects information and modeled ambient air concentrations to evaluate the potential for public health concerns via inhalation.

Figure 1
Overview of Odor Control Product Health Assessment Methodology



Consistent with standard health risk assessment practice, the methodology can be applied in a stepwise fashion of increasing refinement, as warranted. The initial screening-level evaluation employs conservative, health-protective assumptions which are intended to overestimate potential air concentrations, exposures and potential risks. If the screening-level evaluation does not demonstrate a potential for health concerns, then no further assessment is needed. If not, more refined evaluations can be performed to further evaluate an odor control system under more realistic conditions.

Assessment of Byers Vapor Phase Odor Control System

Application Method

In this assessment, a screening-level evaluation was conducted of an application setup defined by Byers. It was assumed that Ecosorb® CNB 100, an odor control product, would be fed into the vapor phase odor control technology at a rate of 2.5 gallons per day and, once volatilized, would be distributed as a gas inside a pipe of variable length, with air flow generated by a fan set at roughly 300 cubic feet per minute. The pipe would be placed around the outside perimeter of a building, close to but below the roof edge, at a height of 10-15 feet (3.0-4.6 m) and the total pipe length would vary from about 575-3,150 feet (175-960 m), depending on the footprint of the building. The vapor would be released from holes, each roughly 0.16 inch (4 mm) in diameter and facing upwards, placed every nine feet along the pipe length. Due to the pressure created by the fan, the vapor is expected to be emitted at a velocity of more than 100 ft/sec (>45 m/sec) from each hole.

Odor Control Product

The odor control product evaluated was Ecosorb® CNB 100. Its composition was provided to CPF by its manufacturer, OMI Industries, under the understanding that this is confidential business information. The product is comprised of two polysorbate surfactants and a blend of citrus and pine oils with the remainder being water.[1] Both polysorbate surfactants are widely used in hundreds of industrial, consumer, medicinal and personal care products. The Safety Data Sheet (SDS) for CNB 100 is provided in Attachment A. This SDS includes information about the product, its hazards and instructions for handling, disposal, transport, first-aid, fire-fighting and exposure control measures.

Emission Rates into Air

Emission rates into air for the product as a whole and its individual constituents were calculated based on the application setup described above and the Ecosorb® CNB 100 composition. The method for calculating emission rates was designed to ensure that potential air impacts would be overestimated in the interests of health protectiveness. First, it was assumed that 100% of the product would be volatilized in the odor control technology and transported down the distribution pipe. Second, each constituent in CNB 100 was assumed to be present at the maximum percentage provided by OMI. Third, the calculated emission rates from all holes were summed and the resulting cumulative emission rate was then assumed to be released from a shorter section of pipe on only one side of a building, rather than dispersed along the entire pipe surrounding all four building sides. Overall, these assumptions are expected to overestimate potential emission rates, and thus also air concentrations.

Ambient Air Concentrations

Potential air concentrations were calculated in the immediate vicinity of the distribution pipe using a screening method called a box model. This approach assumes that emissions are completely mixed in a

[1] The percentages of each polysorbate surfactant and the citrus/pine oil blend in Ecosorb CNB 100 are a proprietary trade secret, however, they were provided to CPF for the purposes of this analysis. In accordance with a Confidentiality Agreement, this composition is not specifically provided in this memo. The product's Safety Data Sheet is included in Attachment A.

box having a specified width and height through which wind is blowing.[2] It is generally considered more likely to overestimate than underestimate concentrations because the model does not take into account air mixing and dispersion outside the box, atmospheric reactions or settling (deposition). All of these processes, which naturally occur in the outdoor environment, would result in lower concentrations than those modeled. As a result, the air concentrations due to emissions are expected to be overestimated.

For this assessment, the box was defined to conservatively estimate potential air concentrations that might occur in the immediate vicinity of the distribution pipe (i.e., within roughly 15 feet). It was assumed to extend outward 15 feet (4.57 m) from the side of the building and upwards to a building height of 18 feet (5.5 m), with air flowing through this cross-section at a velocity of 1 mile per hour (0.447 m/sec), representative of a calm wind speed. Air concentrations would be lower if a larger box and higher wind speed were used.[3]

Health Criteria for Odor Control Product

The next step in the assessment involved compilation of available health criteria for the odor control product and its constituents. These criteria reflect concentrations in air (in mg/m^3) or average daily intakes (in mg/kg body weight/day) that are protective of public health. They are developed by regulatory agencies and public health scientists based on scientific information about the toxicity of chemical substances. When these values are derived, safety factors are generally incorporated to ensure that they are protective of human health.

Numerous information sources were searched to identify available health effects criteria.[4] Criteria were able to be identified for all constituents in Ecosorb® CNB 100 - either for the listed constituent itself (each polysorbate surfactant) or for a component in the constituent (citrus and pine oil blend). For example, for the blend of pine and citrus oils, dominant components in orange, lime, lemon, tangerine, grapefruit and pine oils were identified from published studies, and then acute short-term inhalation criteria were compiled as available for each of these. Among the dominant components, acute short-term inhalation criteria were available for limonene, α-terpineol, and α- and β-pinene. The lowest among these three criteria (59 mg/m^3) was selected to evaluate the entire oil blend.

In addition to identifying criteria for constituents in Ecosorb® CNB 100, the results from acute inhalation toxicity studies were used to derive an inhalation criterion for the product as a whole. Acute inhalation toxicity studies have been conducted for two Ecosorb® products that are used to

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[2] American Society for Testing and Materials (ASTM). 1994. Emergency Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites. Philadelphia, PA. ES 38-94.

[3] The equation for calculating air concentrations in the simple well-mixed box model is: Ca = (ER*1,000)/(H*W*V), where Ca = Air concentration (mg/m^3), ER = Emission rate (g/sec), 1,000 = Conversion factor (1,000 mg/g), H = Box height (5.5 m), W = Box width (4.57 m), and V = Air velocity through box (0.447 m/sec).

[4] Information sources searched included: California Environmental Protection Agency (CALEPA) Reference Exposure Levels (RELs), US Environmental Protection Agency's (USEPA) Risk-Based Screening Levels (RSLs), USEPA's Acute Exposure Guideline Levels (AEGLs), American Industrial Hygiene Association's Emergency Response Planning Guidelines (ERPGs), Temporary Emergency Exposure Limits (TEELs) developed by the DOE Office of Emergency Management, US National Library of Medicine PubChem databases, European Union and European Food Safety Authority assessments on food additives, Safety Assessments prepared by Cosmetic Ingredient Review Expert Panels, and Japan Food Safety Commission reports on food additives.

formulate CNB 100 (Ecosorb® 606 and Ecosorb® 206). The acute inhalation toxicity studies examined the occurrence of adverse effects on rats exposed to each product for four hours at a high concentration in aerosolized form (2,220 mg/m^3 for Ecosorb® 606 and 2,080 mg/m^3 for Ecosorb® 206). Observations of the test animals for 12 different health endpoints (ranging from lacrimation to tremors to death) were tabulated during the exposure period and for 14 days after the exposure ceased. No adverse effects were observed at either tested air concentration. The lowest of the two no observed adverse effect levels (NOAELs) was divided by an uncertainty factor of 100 to derive the criterion for this assessment (21 mg/m^3). [5]

Compare Air Concentrations to Health Information

The potential for a health concern was evaluated by comparing the calculated air concentrations to the health information. If the calculated air concentration for a compound or odor control product is lower than the corresponding inhalation health criterion, adverse public health effects would not be expected to occur under the assumed odor control application scenario. If an air concentration exceeds its criterion, this does not mean that adverse effects will occur among the general public because of the conservative assumptions included in both the derivation of the criterion and the calculation of air concentrations. Rather it indicates that further investigation may be warranted, using more refined and realistic assumptions, to help determine whether or not levels in air may present a potential public health concern.

In this analysis, the potential air concentrations calculated in the immediate vicinity of the distribution pipe were below the available health-protective criteria. As noted above, the air concentrations were calculated using a screening-level box model and assuming total emissions from a pipe around four sides of a building were all released from a shorter section of pipe along only one side of a building. The calculated air concentration of the product as a whole was two times lower than its criterion. The concentrations of the individual constituents in CNB 100 were lower than their respective criteria by factors of 370 to 1,760.

Discussion of Uncertainties

The results of health assessments inherently reflect some uncertainty because of the complexities involved in the analysis. In accordance with standard practice, key uncertainties affecting this assessment are discussed here. In general, uncertainties in health assessments, including this one, are addressed by using conservative (i.e., health protective) assumptions which collectively produce results much more likely to be overestimated than underestimated. This adds a margin of safety to the results.

Conservative assumptions used in this assessment have been noted above, such as concentrating all emissions from a pipe around four sides of a building into one pipe section along only one building side, assigning small dimensions (i.e., 15 feet by 18 feet) to the simple box model, assuming each constituent was present in the product at the maximum percent noted by OMI, and assessing the blend of citrus and pine oils using only the lowest available inhalation health criterion among those for dominant components of these oils. Deriving a health-protective criterion for the product as whole

[5] Consistent with screening-level methods for deriving reference air concentrations, the uncertainty factor of 100 incorporated one factor of 10 for animal to human extrapolation and another factor of 10 for human variability.

based on a NOAEL from a toxicity study that evaluated only one exposure level was another conservative assumption, because the actual NOAEL may be much higher. Some uncertainties were not explicitly addressed in this study, such as whether the form of emissions might vary in extremely cold temperatures (e.g., gas versus aerosols), whether the composition of volatilized constituents might vary after long periods of operation and the effect of buildings on dispersion and mixing of emissions. The modeling of air concentrations was conducted for one building using a simple screening-level model with conservative input assumptions; more refined calculations of potential air concentrations could be estimated using more sophisticated methods (e.g., refined air dispersion modeling, wind tunnel modeling or computational fluid dynamic modeling). Overall, these uncertainties are not expected to change the conclusions of this assessment.

This assessment addressed only the inhalation route of exposure with a focus on the general public. Not considering other exposure routes (e.g., dermal) is appropriate given that the general public would not be expected to come into contact with the odor control product in any manner other than through the air. With respect to occupational situations, which were not addressed here, this product should only be used in accordance with its SDS, any label instructions, and regulatory requirements of Cal/OSHA.

Conclusions

Based on the methods and assumptions used, this screening-level assessment showed that operation of the Byers-defined application scenario would not be expected to pose public health concerns. Potential air concentrations calculated using a screening-level model in the immediate vicinity of a distribution pipe were below available health-protective inhalation criteria. The calculated air concentration of the product as a whole was two times lower than its criterion. The concentrations of evaluated individual constituents in CNB 100 were lower than their respective criteria by factors of 370 to 1,760.

ABOUT CPF ASSOCIATES

CPF Associates, Inc. is an independent Maryland-based scientific and research consulting firm with in-depth experience and expertise in the health and environmental evaluation of air emission sources, waste management technologies, industrial facilities and waste sites. CPF applies state-of-the-art scientific tools - risk assessment, life-cycle analysis, epidemiology and environmental impact analysis - to address public health and environmental issues. In over 30 years of professional association, the CPF Principals have conducted hundreds of projects for energy-from-waste (EfW) facilities, landfills, incinerators, biosolids management facilities, recycling plants, transfer stations and other types of treatment units. The principal investigator for this assessment was Ms. Sarah Foster, a Principal with CPF Associates. Internal review was provided by Dr. Paul Chrostowski, also a Principal with CPF.

ATTACHMENT A

SAFETY DATA SHEET

ECOSORB CNB 100

Safety Data Sheet
according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations
Date of issue: 12/04/2017 Version: 1.0

SECTION 1: Identification

1.1. Identification

Product form : Mixture
Product name : ECOSORB CNB 100

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : Odor Neutralizer
Recommended use : Odor Neutralizer
Restrictions on use : None known

1.3. Details of the supplier of the safety data sheet

Manufacturer
OMI Industries
1300 Barbour Way
Rising Sun, IN 47040 - U.S.A
T 1-847-304-9111

1.4. Emergency telephone number

Emergency number : 1-800-662-6367, Monday - Friday 8 am to 5 pm CST

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS-US classification
Not classified

2.2. Label elements

2.3. Other hazards

Other hazards not contributing to the classification : None under normal conditions. Keep out of reach of children.

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances

3.2. Mixtures

This mixture does not contain any substances to be mentioned according to the criteria of section 3.2 of HazCom 2012

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general : Call a poison center/doctor/physician if you feel unwell.
First-aid measures after inhalation : Move to fresh air if necessary.

First-aid measures after skin contact : Wash skin with plenty of water.

First-aid measures after eye contact : Rinse eyes with water as a precaution.

First-aid measures after ingestion : Call a poison center/doctor/physician if you feel unwell.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/effects : None under normal use.

Symptoms/effects after inhalation : No effects known.

Symptoms/effects after skin contact : No effects known.

Symptoms/effects after eye contact : No effects known.

Symptoms/effects after ingestion : No effects known.

Symptoms/effects upon intravenous administration : No other effects known.

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Dry powder. Foam. Carbon dioxide.

Unsuitable extinguishing media : No unsuitable extinguishing media known.

5.2. Special hazards arising from the substance or mixture

Fire hazard : Not flammable.

Reactivity : The product is non-reactive under normal conditions of use, storage and transport.

5.3. Advice for firefighters

Firefighting instructions : Cool tanks/drums with water spray/remove them into safety.

Protection during firefighting : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Stop leak if safe to do so.

6.1.1. For non-emergency personnel

Protective equipment : Gloves and safety glasses recommended.

Emergency procedures : Ventilate spillage area.

6.1.2. For emergency responders

Protective equipment : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

6.2. Environmental precautions

Avoid release to the environment. Prevent liquid from entering sewers, watercourses, underground or low areas.

6.3. Methods and material for containment and cleaning up

For containment : Collect spillage.

Methods for cleaning up : Take up liquid spill into absorbent material.

Other information : Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

For further information refer to section 13. For further information refer to section 8: "Exposure controls/personal protection".

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling	: Ensure good ventilation of the work station. Wear personal protective equipment.
Hygiene measures	: Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures	: Does not require any specific or particular technical measures.
Storage conditions	: Store in a well-ventilated place. Keep cool.
Incompatible products	: Oxidizing agent. Strong acids.
Incompatible materials	: Keep away from strong acids and strong oxidizers.
Storage temperature	: 4 - 29 °C 40°F and 85°F Allowing product to freeze may cause layering.
Heat-ignition	: KEEP SUBSTANCE AWAY FROM: heat sources. ignition sources.
Information on mixed storage	: KEEP SUBSTANCE AWAY FROM: (strong) acids. oxidizing agents.
Storage area	: Keep container in a well-ventilated place. Store in a cool area. Keep out of direct sunlight. Store in a well-ventilated place.
Special rules on packaging	: Keep only in original container.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.2. Exposure controls

Appropriate engineering controls : Ensure good ventilation of the work station.

8.3. Individual protection measures/Personal protective equipment

Personal protective equipment : Gloves and safety glasses recommended.

Hand protection	: Protective gloves. Recommended.
Eye protection	: Safety glasses. Recommended.
Skin and body protection	: None under normal use.
Respiratory protection	: Respiratory protection not required in normal conditions.
Thermal hazard protection	: Not applicable.
Environmental exposure controls	: Avoid release to the environment.
Other information	: Do not eat, drink or smoke during use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Appearance	: White liquid.
Color	: White
Odor	: Characteristic odour
Odor threshold	: No data available
pH	: 6 - 8.5
Melting point	: Not applicable
Freezing point	: No data available
Boiling point	: ≈ 99 °C
Flash point	: No data available
Relative evaporation rate (butyl acetate=1)	: No data available
Flammability (solid, gas)	: Not applicable.
Vapor pressure	: No data available
Relative vapor density at 20 °C	: No data available
Relative density	: ≈ 0.99
Solubility	: Soluble in water.
Partition coefficient n-octanol/water	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity, kinematic	: ≈ 1 cSt
Viscosity, dynamic	: No data available
Explosion limits	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

10.5. Incompatible materials

Oxidizing agent. Strong acids.

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Likely routes of exposure	: Inhalation; Dermal
Acute toxicity	: Not classified
Skin corrosion/irritation	: Not classified pH: 6 - 8.5
Serious eye damage/irritation	: Not classified pH: 6 - 8.5
Respiratory or skin sensitization	: Not classified.
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified
Specific target organ toxicity – single exposure	: Not classified
Specific target organ toxicity – repeated exposure	: Not classified
Aspiration hazard	: Not classified
Potential Adverse human health effects and symptoms	: No other effects known.
Symptoms/effects after inhalation	: No effects known.
Symptoms/effects after skin contact	: No effects known.
Symptoms/effects after eye contact	: No effects known.
Symptoms/effects after ingestion	: No effects known.
Symptoms/effects upon intravenous administration	: No other effects known.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment.

12.2. Persistence and degradability

ECOSORB CNB 100	
Persistence and degradability	Biodegradability in water: no data available.

12.3. Bioaccumulative potential

ECOSORB CNB 100	
Bioaccumulative potential	Not established.

12.4. Mobility in soil

ECOSORB CNB 100	
Ecology - soil	The product is predicted to have high mobility in soil. Soluble in water.

12.5. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Regional legislation (waste)	: Disposal must be done according to official regulations.
Waste treatment methods	: Dispose of contents/container in accordance with licensed collector's sorting instructions.
Sewage disposal recommendations	: Disposal must be done according to official regulations.
Product/Packaging disposal recommendations	: Avoid release to the environment.
Ecology - waste materials	: Avoid release to the environment.

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Not regulated

Transportation of Dangerous Goods

Not regulated

Transport by sea

Not regulated

Air transport

Not regulated

SECTION 15: Regulatory information

15.1. US Federal regulations

ALL COMPONENTS OF THIS PRODUCT ARE LISTED, OR EXCLUDED FROM LISTING, ON THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY TOXIC SUBSTANCES CONTROL ACT (TSCA) INVENTORY

15.2. International regulations

CANADA

ECOSORB CNB 100
Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

ECOSORB CNB 100
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

National regulations

ECOSORB CNB 100
Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Korean ECL (Existing Chemicals List)
Listed on INSQ (Mexican National Inventory of Chemical Substances)

15.3. US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

SECTION 16: Other information

Training advice : Normal use of this product shall imply use in accordance with the instructions on the packaging.

Other information : None.

ABBREVIATIONS AND ACRONYMS:	
ATE	Acute Toxicity Estimate
BCF	Bioconcentration factor
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
LC50	Median lethal concentration
IARC	International Agency for Research on Cancer
OECD	Organisation for Economic Co-operation and Development
LD50	Median lethal dose
SDS	Safety Data Sheet
STP	Sewage treatment plant

Hazard Rating

Health : 0 Minimal Hazard - No significant risk to health

Flammability : 0 Minimal Hazard - Materials that will not burn

Physical : 0 Minimal Hazard - Materials that are normally stable, even under fire conditions, and will NOT react with water, polymerize, decompose, condense, or self-react. Non-Explosives.

Personal protection : B

B - Safety glasses, Gloves

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product

Attachment 4

APCD Correspondence

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