

Training Check List on Use of Chloropicrin as a Warning Agent with Vikane® gas fumigant

- Chloropicrin must be applied by persons certified to apply Vikane® gas fumigant or under their supervision on site, with a second person trained in the use of chloropicrin being available on site.
- Chloropicrin is a warning agent that causes smarting of the eyes, tears, discomfort, and has a very disagreeable pungent odor at very low concentrations.

Personal Protective Equipment

- Long-sleeved shirt and long pants
- Chemical-resistant gloves (such as nitrile or butyl)
- Protective eyewear or face shield (Do NOT wear goggles)
- Persons applying chloropicrin must wear either a positive pressure self-contained breathing apparatus or combination air-supplied/SCBA when applying chloropicrin to more than two chloropicrin introduction points within a single fumigated structure

Application of Chloropicrin

In order for chloropicrin to perform effectively as a warning agent, it must be applied:

- At least 5 to 10 minutes before introduction of Vikane.
- In a shallow container with fresh wicking material.
- In the air stream of a fan.
- At a rate of 1 oz/10,000 to 15,000 cu ft or follow dosage rate calculated by the electronic Fumiguide™ system.
- At not more than 3 fl oz of chloropicrin per evaporation container.
- At one or more chloropicrin introduction sites for each 45,000 cu ft of space to be fumigated.

In addition:

- When applying chloropicrin at multiple chloropicrin introduction points within a structure, start at the point farthest from the exit and work toward the exit.
- Use a measuring device to measure the calculated volume of chloropicrin to apply.
- Do not apply liquid chloropicrin directly to soil, concrete or wood in the fumigated space.
- Do not apply chloropicrin in containers made of magnesium, aluminum, or their alloys since chloropicrin is corrosive to these metals.



It is suggested that chloropicrin be introduced:

- On each floor of a multi-story structure.
- At each introduction site of Vikane.
- In areas without excessive furnishings and contents to adsorb chloropicrin.

Storage

- Store upright in a cool, dry, well-ventilated area under lock and key.
- Store only in original container. Do not contaminate water, food or feed by storage or disposal.

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Vikane is a federally Restricted Use Pesticide.

Always read and follow label directions.

These materials have been created specifically for Vikane® gas fumigant and no other structural fumigant. The information contained in these materials is based upon the product label and use instructions for Vikane and are not intended for use with other structural fumigants, which will have different product label requirements. These materials may not be copied or reproduced, in whole or in part, without the permission of Dow AgroSciences.

Training Check List on Use of Chloropicrin as a Warning Agent with Vikane® gas fumigant

Spill and Leak Procedures

- Evacuate immediate area of spill or leak.
- Use a self-contained breathing apparatus (SCBA) for entry into affected area to correct the problem.
- Move the leaking or damaged containers outdoors or to an isolated location, observing strict safety precautions.
- Work upwind if possible.
- Allow spilled material to evaporate or absorb onto vermiculite, dry sand, earth, or similar absorbent material.
- Thoroughly aerate absorbent materials outdoors prior to disposing on site or at an approved disposal facility.
- Do not permit entry into spill area or clean-up area by unprotected persons until chloropicrin is aerated.



Disposal

- If the chloropicrin container is disposable and is non-returnable to the supplier, it is recommended to aerate the empty container opened (e.g., cap off) within the fumigated space during fumigation.
- The location should be close to a fan and/or chloropicrin introduction site. Replace cap.
- After it has been aerated inside of the fumigated space, close the container (e.g., replace the cap) and dispose in a sanitary landfill or by other approved state and local procedures.

General First Aid Procedures

- If inhaled:** Move person to fresh air. Keep warm. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth to mouth if possible. Do not give anything by mouth to an unconscious person.
- If on skin or clothing:** Immediately remove contaminated clothing, shoes or any other item on skin. Rinse skin immediately with plenty of water for 15-20 minutes.
- If in eyes:** Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.
- If swallowed:** Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.
- For any of the above exposures:** Call a poison control center or doctor for further treatment advice.

Date of Training _____ Trainer: _____

Participants(s): _____

FAQs about the New Chloropicrin Dosage Rates for the Fumiguide™ for Vikane® gas fumigant

Q. Why were the new chloropicrin (CP) dosage rates developed?

A. Fumigators observed that the lowest label rate of CP (1 fl oz per 15,000 cubic feet of space to be fumigated) often required additional or extended ventilation to aerate from large buildings. Fumigators requested that the CP dosage rates be re-evaluated to determine if lower doses could provide sufficient CP concentrations throughout the fumigant exposure period.

Q. How were the new CP dosage rates developed?

A. Field research was conducted using detection devices, including infrared analyzers, to accurately measure CP concentrations adjacent to and distant from CP introduction locations in sealed buildings throughout a range of exposure times. Research was conducted by Dr. Rudi Scheffrahn, University of Florida, and Dr. Bob Williams, Dow AgroSciences, from 2000 through 2006. Eighty buildings, representing slab and crawl space, residential and commercial buildings in Florida and California and ranging from 12,000 to 2,700,000 cubic feet in volume, were tested. The results of the field testing were used by Dr. Scott Ray, Dow AgroSciences, to develop a new model for calculating CP dosage rates based on exposure time, structure volume, and underseal.



MIRAN gas analyzer used to measure CP concentrations throughout various exposure periods in field trials.

Q. How will the fumigator calculate the ounces of CP to apply using the new CP dosage rates?

A. The fumigator will need to use a new or upgraded Fumiguide™ electronic calculator to determine the ounces of CP to apply using the new CP dosage rates.

Q. What is the cost and procedure for upgrading a Fumiguide electronic calculator?

A. The cost to upgrade a Fumiguide calculator depends upon its serial number, hand-written serial number on the instruction label on the back of the unit. Serial numbers 901 and above will cost \$65 per unit to replace the firmware chip. Serial numbers 900 and below will cost \$175 to replace the circuit board. These prices do not include shipping. Payment terms and shipping directions are described in the enclosed "Fumiguide Calculator Upgrade Form." Fumiguides requiring upgrades should be sent with this upgrade form directly to Doug Hampton at:

Hamptech, c/o PMMI Electronics

1007 Spanish Moss Lane

Houston, TX 77077

Phone: 281-293-8000 Email: doug.hampton@pmmi-electronics.com

New Fumiguides cost \$405 and can be ordered directly from Dow AgroSciences using the standard Fumiguide order form.

100% Vikane users may be eligible for a free upgrade to their Fumiguide Calculator to include the new variable chloropicrin dosage rates. Contact your Dow AgroSciences or Distributor rep for details.

Q. Can the rate of 1 fl oz CP/10,000 to 15,000 cubic feet of space to be fumigated still be applied?

A. Yes. The new Vikane label states, "Use 1 fl oz [CP]/10,000 to 15,000 cubic feet (30 ml/283 to 425 cubic meters) of space to be fumigated or follow dosage rate calculated by the electronic Fumiguide™ system."

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FAQs about the New Chloropicrin Dosage Rates for the Fumiguide™ for Vikane® gas fumigant

Q. What differences will fumigators observe using the new upgraded Fumiguide electronic calculators?

A.

- Fumigators will need to toggle to “Yes” to accept the terms of the agreement (see below), printed on a sticker on the top side of calculator, to enter data for calculations.
- Fumigators will not need to select a CP dosage rate (“10” or “15”). The Fumiguide will use data already entered for volume, underseal, and exposure time to calculate the ounces of CP to apply.
- The Fumiguide will display a range in ounces of CP to apply to the nearest ¼ ounce. The maximum ounce dose will be based on 1 oz/10,000 cubic feet. The minimum ounce dose is calculated by the model.
- Fumigators will observe that increasing volume, slab vs. soil underseal, or decreasing exposure time will reduce the minimum CP dose in ounces, as demonstrated in the following examples:

Fumigation Parameters	CP Dose (ounces) range based on 1 oz/10,000 to 15,000 ft ³	CP Dose (ounces) Range in New Fumiguide electronic calculator
50,000 cubic feet, slab underseal, 24 h exposure	3.3 - 5	2.25 - 5
500,000 cubic feet, slab underseal, 24 h exposure	33.3 - 50	13.75 - 50
150,000 cubic feet, slab underseal, 24 h exposure	10 - 15	4.25 - 15
150,000 cubic feet, slab underseal, 36 h exposure	10 - 15	7 - 15
150,000 cubic feet, foam underseal, 24 h exposure	10 - 15	6.5 - 15

Q. What are terms of the agreement on the Fumiguide?

A. The terms state: NOTICE: FUMIGUIDE LICENSE AGREEMENT. This device contains proprietary information of Dow AgroSciences LLC (“Company”). By using this device the user agrees to: only use the device to determine the correct dosages of Vikane® gas fumigant to use in fumigation; not use the device to determine dosages for any other fumigant; not use the device to extract or “reverse engineer” any of the proprietary information therein; and not let any other person use the device to determine dosage for any other fumigant or to extract or “reverse engineer” the proprietary information therein. The user agrees this device contains trade secrets and copyrighted material of company. The user shall not disclose, provide, or otherwise make available such trade secrets and copyrighted material in any form to any third party without the prior written consent of Company, and agrees to immediately notify Company if unauthorized use of the device is suspected or confirmed. This Agreement is effective until terminated in writing by Company.

Q. What are the advantages of using a new or upgraded Fumiguide electronic calculator to determine ounces of CP to apply?

A. The new/upgraded Fumiguide calculator will offer fumigators a wider range of CP dose rates to apply. These rates include more precise low doses based on volume of fumigated space, underseal, and exposure time. Therefore, fumigators will have more flexibility to select an appropriate CP dose for the structure to be fumigated based on local conditions including CP sorptive load and temperature.

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AAA

Chloropicrin

- Must be used with releasing sulfuryl fluoride
- Used as a warning agent - acts as a warning agent for 22-24 hours
- Released 5-10 minutes prior to the fumigation
- PPE – Chemical resistant gloves and full face shield or goggles
- Corrosive to metal - Never use a metal container made of magnesium or aluminum or their alloys
- Place the pan in the air stream of the fan – typically 1-2 feet behind the fan
- 3 oz maximum per container
- 1 oz per every 10-15,000 cubic feet (Mcf)
- 1 introduction site per 20,000 to 45,000 cubic feet
- Gas is very heavy – hard to desorb, aeration is slow
- Not combustible or flammable
- Clear color
- If in eyes, wash with water for 30 minutes
- 2.3 ppm – eye tearing
- Do not use with food (commodity fumigations)

