



# Department of Pesticide Regulation



Mary-Ann Warmerdam  
Director

Arnold Schwarzenegger  
Governor

January 18, 2008

Mr. Robin Westin  
Ameribrom, Inc  
95 Mac Corkle Ave. Sw  
South Charleston, West Virginia 25303

Dear Mr. Westin:

Pursuant to Article 8, Subchapter 1, Chapter 2, Division 6 of Title 3 of the California Code of Regulations, the Director of the Department of Pesticide Regulation (DPR) notices her decision to begin a reevaluation of certain pesticide products intended for use in field fumigation and containing the following active ingredients: methyl bromide, 1,3-dichloropropene, chloropicrin, metam-sodium, metam-potassium, dazomet, and sodium tetrathiocarbonate, including the following products:

Product Brand Name, EPA Reg. No.	Active Ingredient
98-2 CONTAINS 2% CHLOROPICRIN, EPA Reg. No. 8622-12-AA	METHYL BROMIDE
67-33 PREPLANT SOIL FUMIGANT, EPA Reg. No. 8622-13-AA	CHLOROPICRIN
	METHYL BROMIDE
75-25, EPA Reg. No. 8622-15-AA	CHLOROPICRIN
	METHYL BROMIDE
METABROM 99, EPA Reg. No. 8622-17-AA	METHYL BROMIDE
50-50, EPA Reg. No. 8622-39-AA	CHLOROPICRIN
	METHYL BROMIDE
57-43, EPA Reg. No. 8622-40-AA	CHLOROPICRIN
	METHYL BROMIDE
METAPICRIN, EPA Reg. No. 8622-43-AA	CHLOROPICRIN
80-20, EPA Reg. No. 8622-44-AA	CHLOROPICRIN
	METHYL BROMIDE

DPR is required to investigate all reported pesticide episodes and information received indicating that a pesticide may have caused, or is likely to cause, a significant adverse impact. If the Director finds from the investigation that a significant adverse effect has occurred or is likely to occur; the pesticide involved shall be reevaluated. Therefore, certain field fumigants, including the above products, are being reevaluated.



### BASIS FOR REEVALUATION

Pesticide volatile organic compounds (VOCs) contribute to the formation of ground-level ozone, which is harmful to human health and vegetation when present in high concentrations. The federal Clean Air Act requires each state to submit a state implementation plan (SIP) for achieving and maintaining federal ambient air quality standards, including the ozone standard. Fumigants are among the highest pesticide VOC contributors due to both their high levels of use and their high-emission potentials. Fumigants account for more than 50 percent of the pesticide VOC emissions in the San Joaquin Valley nonattainment (NAA) area, 80 percent in the Southeast Desert NAA area, and 90 percent in the Ventura NAA area. Additional data relating to the use of the fumigant products is essential to the formulation of regulatory measures to reduce VOC emissions from fumigant use and mitigate the associated detrimental impact on human health and the environment. Further, it is needed to facilitate meeting the state's obligations under the SIP.

In accordance with the SIP, DPR maintains an inventory of pesticide VOC emissions for the May-October ozone season for specified ozone NAA areas of the State. The SIP specifies certain emission reductions to be achieved, and the reductions are expressed as some percentage of the 1990/1991 base year emissions. For the purposes of the inventory, DPR has historically assumed 100 percent of applied fumigants volatilize to the air. However, field-monitoring data shows that fumigant emissions are less than 100 percent and vary with application method. Therefore, DPR requires measured emission data to quantify actual emissions and thereby improve the accuracy of emission estimates.

Establishing the most accurate VOC emission values for fumigant applications is important for two reasons. First, it is important for DPR's emission inventory to be as accurate as possible because pesticide use/management decisions are based upon the findings presented in the inventory. Second, DPR is currently considering two regulation strategies to achieve pesticide VOC reductions from fumigants in air quality NAA areas. One strategy is to require use of "low-emission" fumigant application methods and/or prohibit certain "high-emission" fumigant application methods. A second strategy is to establish limits on VOC emissions from fumigants within NAA areas. Regulations that incorporate one or both of these strategies will go into effect in 2008.

In May 2007, DPR proposed regulations to reduce smog-producing emissions from fumigant pesticides. The regulations focus on both limiting the total pounds of pesticide emissions and reducing the amount of fumigant emitted from each application. Based on comments received, DPR revised the proposed regulations in October 2007.

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The proposed regulations (as revised in October 2007) would:

- Limit fumigant emissions from May to October in certain NAA areas. In those areas, DPR would develop emission benchmarks and set limits on emissions from fumigant applications by individual growers. Growers could choose to limit emissions in various ways, such as reducing application rates, using lower-emission application methods, or treating less acreage.
- Require reporting of field fumigant application methods in five NAA areas.
- Define specific requirements on how field fumigations must be done, prohibiting some high-emission methods and setting limits on others.
- Set up new statewide licensing and other requirements for companies that do field fumigations.

More information on DPR's proposed regulations (DPR regulation 07-002) is located on DPR's Web site at: <<http://www.cdpr.ca.gov/docs/legbills/rulepkgs.htm#rulepkgs07002>>.

#### REEVALUATION DATA REQUIREMENTS

DPR relies almost exclusively on field measurements to estimate emissions. Additionally, DPR prescribes many of the application procedures and equipment used for the monitoring studies as regulatory requirements. For example, DPR prescribes requirements for maximum application rate, application depth, tarpaulin type, soil moisture, and other critical parameters based on application equipment, procedures, and conditions of the monitoring studies. For purposes of consistency, a "shallow depth" is defined as using tractor shanks to inject the liquid fumigant 6-12 inches below the soil surface. Similarly, a "deep depth" is defined as injecting the liquid fumigant 18-30 inches below the soil surface. A "broadcast" application is an application to a flat field and a "bed" application is an application to a raised portion of the soil where crops will subsequently be placed.

Pursuant to this reevaluation, Ameribrom, Inc. is required to submit the following:

1. Within **30 days** from the date of this letter, a written response acknowledging receipt of this letter. Your response may include (1) a statement of intent to comply with the data requirements as a sole entity or through the formation of a Task Force; (2) identification of any data that you can submit as outlined in items 3 through 5 and in Attachment A; and, (3) any questions or clarifying information you need to comply with these data requirements.

2. Within **60 days** from the date of this letter, submit ambient or direct flux data that you feel may satisfy the requirements of this reevaluation as listed in items 3 through 5 and in Attachment A. If you submit a study, you do not need to submit a protocol as identified below for that data requirement unless notified by DPR.
3. Within **120 days** from the date of this letter, submit study protocols for ambient or direct flux monitoring studies, using products containing the active ingredient **chloropicrin** following prescribed field fumigation application methods as delineated below and in Attachment A. The monitoring studies must be performed in the San Joaquin Valley, Southeast Desert, or Ventura NAA. A final date for submission of the final reports will be established once DPR approves the protocols.

Each study protocol shall include the following:

- a. Identify the specific **chloropicrin** product that you intend to use/monitor for with each application method. When choosing a product, consideration should be given to the product most commonly used with each specified application method.
  - b. Consult with DPR prior to selection of an NAA (San Joaquin Valley, Southeast Desert, or Ventura). NAA selection should best represent each application method.
  - c. Monitoring must include any VOC breakdown products or inert ingredients that account for at least five percent of the amount applied.
  - d. Monitoring during the flux studies shall continue until one of the following occurs:
    - i. When all of the samples, for a full 24 hours of measurements, have no detectable concentrations as specified in the approved protocol; or,
    - ii. When the three-day rolling average daily flux is less than one percent of the applied amount and the rolling three-day average shows a declining pattern over three days; or,
    - iii. A period of 14 consecutive days.
4. Within **150 days** from the date of this letter, submit study protocols for ambient or direct flux monitoring studies, using a product containing the active ingredient **methyl bromide** (only) and a product containing the active ingredient **chloropicrin** (only) performed in all three NAAs (San Joaquin Valley, Southeast Desert, and Ventura). A final date for submission of the final reports will be established once DPR approves the protocols.

Each study protocol shall include the following:

- a. Identify the specific **methyl bromide** or **chloropicrin** product that you intend to use/monitor.
- b. From the list below, identify the application method (only one required) that you will be using with each product. The same application method must be used in all three NAAs.

**methyl bromide**

- (1) Nontarpaulin/Shallow/Bed
- (2) Nontarpaulin/Deep/Broadcast
- (3) Tarpaulin/Shallow/Broadcast
- (4) Tarpaulin/Shallow/Bed
- (5) Tarpaulin/Deep/Broadcast
- (6) Drip System - (Hot Gas)

**chloropicrin**

- (1) Nontarpaulin/Shallow/Broadcast or Bed
- (2) Tarpaulin/Shallow/Broadcast or Bed
- (3) Nontarpaulin/Shallow/Broadcast or Bed/Three Post-Fumigation Water Treatments
- (4) Tarpaulin/Shallow/Bed/Three Post-Fumigation Water Treatments
- (5) Nontarpaulin/Deep/Broadcast or Bed
- (6) Tarpaulin/Deep/Broadcast or Bed
- (7) Chemigation (Drip System)/Tarpaulin

- c. Monitoring must include any VOC breakdown products or inert ingredients that account for at least five percent of the amount applied.
  - d. Monitoring during the flux studies shall continue until one of the following occurs:
    - i. When all of the samples, for a full 24 hours of measurements, have no detectable concentrations as specified in the approved protocol; or,
    - ii. When the three-day rolling average daily flux is less than one percent of the applied amount and the rolling three-day average shows a declining pattern over three days; or,
    - iii. A period of 14 consecutive days.
5. Within **150 days** from the date of this letter, submit a study protocol for an ambient or direct flux monitoring study, containing the combined active ingredients **methyl bromide + chloropicrin**, performed in the San Joaquin Valley, Southeast Desert, or Ventura NAA, using one application method. A final date for submission of the final report will be established once DPR approves the protocol.

Your study protocol shall include the following:

- a. Identify the specific **methyl bromide + chloropicrin** product that you intend to use/monitor. The product selected should be close to a 50/50 concentration.
- b. Identify the application method you will be using with the product combination and the NAA in which you will be conducting the study. To allow comparison with single chemical studies done with the same application method, the combination study must be conducted in the same NAA. Choose one of the following application methods listed below:

**methyl bromide + chloropicrin**

Nontarpaulin/Shallow/Bed  
Nontarpaulin/Deep/Broadcast  
Tarpaulin/Shallow/Broadcast  
Tarpaulin/Shallow/Bed  
Tarpaulin/Deep/Broadcast  
Drip System - (Hot Gas)

- c. Monitoring must include any VOC breakdown products or inert ingredients that account for at least five percent of the amount applied.
- d. Monitoring during the flux studies shall continue until one of the following occurs:
  - i. When all of the samples, for a full 24 hours of measurements, have no detectable concentrations as specified in the approved protocol; or,
  - ii. When the three-day rolling average daily flux is less than one percent of the applied amount and the rolling three-day average shows a declining pattern over three days; or,
  - iii. A period of 14 consecutive days.

Based on the results of the above data, additional studies may be required. All studies and protocols submitted to DPR must be formatted in accordance with CA Notice 2006-06, Formatting Requirements for Scientific Data Submitted to the Department of Pesticide Regulation (Revised 08/10/2006). This Notice is located on DPR's Web site at: <http://www.cdpr.ca.gov/docs/registration/canot/2006/ca2006-06.pdf>.

**GENERAL INFORMATION**

Please note that pursuant to Food and Agricultural Code section 12811.5, as revised January 1, 2006, any registrant that does not submit its own data to fulfill a data requirement imposed by the Director to maintain the registration of its pesticide product, and instead relies upon data owned by another company, should be aware that they may have certain obligations, in specifically defined situations, to the owner of the data. For further information, please refer to

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AB 1011 – Consolidated Registration Resources located on DPR’s Web site at:  
<<http://www.cdpr.ca.gov/docs/legbills/ab1011/resource.htm>>. Failure of a registrant to comply with the requirements of this reevaluation, may subject that registrant’s product(s) to cancellation pursuant to Food and Agricultural Code section 12825(h).

### CONTACTS

If you have any questions regarding the reevaluation process, please contact Ms. Denise Webster by e-mail at <[dwebster@cdpr.ca.gov](mailto:dwebster@cdpr.ca.gov)> or by telephone at (916) 324-3522. If you have any questions regarding the required study protocols, please contact Mr. Randy Segawa by e-mail at <[rsegawa@cdpr.ca.gov](mailto:rsegawa@cdpr.ca.gov)> or by telephone at (916) 324-4137.

Sincerely,

*Original signed by*

Charles M. Andrews, Chief  
Pesticide Registration Branch  
(916) 445-4377

Attachment

cc: Mr. Randy Segawa, DPR, Environmental Program Manager I (w/Attachments)  
Ms. Denise Webster, DPR, Program Specialist (w/Attachments)  
Ms. Victoria Hornbaker, DPR, Environmental Specialist (w/Attachments)

Attachment A. Chloropicrin Application Methods for Study Protocol Development

Products containing only Chloropicrin as the active ingredient:

<b>Application Method</b>	<b>Either San Joaquin Valley, Southeast Desert, or Ventura NAA</b>
1. Nontarpaulin/Shallow/Broadcast or Bed	<b>Required</b>
2. Tarpaulin/Shallow/Broadcast or Bed	<b>Required</b>
3. Nontarpaulin/Shallow/Broadcast or Bed/ Three Post-Fumigation Water Treatments	<b>Required</b>
4. Tarpaulin/Shallow/Bed/Three Post-Fumigation Water Treatments	<b>Required</b>
5. Nontarpaulin/Deep/Broadcast or Bed	<b>Required</b>
6. Tarpaulin/Deep/Broadcast or Bed	<b>Required</b>
7. Chemigation (Drip System)/Tarpaulin	<b>Required</b>



# Department of Pesticide Regulation



Mary-Ann Warmerdam  
Director

Arnold Schwarzenegger  
Governor

January 18, 2008

Mr. Jon C. Wood  
Amvac Chemical Corporation  
4695 Mac Arthur Court, Suite 1250  
Newport Beach, California 92660

Dear Mr. Wood:

Pursuant to Article 8, Subchapter 1, Chapter 2, Division 6 of Title 3 of the California Code of Regulations, the Director of the Department of Pesticide Regulation (DPR) notices her decision to begin a reevaluation of certain pesticide products intended for use in field fumigation and containing the following active ingredients: methyl bromide, 1,3-dichloropropene, chloropicrin, metam-sodium, metam-potassium, dazomet, and sodium tetrathiocarbonate, including the following products:

Product Brand Name, EPA Reg. No.	Active Ingredient
METAM SODIUM, EPA Reg. No. 5481-350-ZA	METAM-SODIUM
AMVAC METAM, EPA Reg. No. 5481-420-AA	METAM-SODIUM
METAM 426, EPA Reg. No. 5481-423-AA	METAM-SODIUM
RID-A-VEC II, EPA Reg. No. 5481-423-ZA	METAM-SODIUM
VAPAM, EPA Reg. No. 5481-466-AA	METAM-SODIUM
VAPAM HL SOIL FUMIGANT, EPA Reg. No. 5481-468-AA	METAM-SODIUM
K-PAM HL, EPA Reg. No. 5481-483-AA	METAM-POTASSIUM

DPR is required to investigate all reported pesticide episodes and information received indicating that a pesticide may have caused, or is likely to cause, a significant adverse impact. If the Director finds from the investigation that a significant adverse effect has occurred or is likely to occur; the pesticide involved shall be reevaluated. Therefore, certain field fumigants, including the above products, are being reevaluated.

### BASIS FOR REEVALUATION

Pesticide volatile organic compounds (VOCs) contribute to the formation of ground-level ozone, which is harmful to human health and vegetation when present in high concentrations. The federal Clear Air Act requires each state to submit a state implementation plan (SIP) for achieving and maintaining federal ambient air quality standards, including the ozone standard. Fumigants are among the highest pesticide VOC contributors due to both their high levels of use



and their high-emission potentials. Fumigants account for more than 50 percent of the pesticide VOC emissions in the San Joaquin Valley nonattainment (NAA) area, 80 percent in the Southeast Desert NAA area, and 90 percent in the Ventura NAA area. Additional data relating to the use of the fumigant products is essential to the formulation of regulatory measures to reduce VOC emissions from fumigant use and mitigate the associated detrimental impact on human health and the environment. Further, it is needed to facilitate meeting the state's obligations under the SIP.

In accordance with the SIP, DPR maintains an inventory of pesticide VOC emissions for the May-October ozone season for specified ozone NAA areas of the State. The SIP specifies certain emission reductions to be achieved, and the reductions are expressed as some percentage of the 1990/1991 base year emissions. For the purposes of the inventory, DPR has historically assumed 100 percent of applied fumigants volatilize to the air. However, field-monitoring data shows that fumigant emissions are less than 100 percent and vary with application method. Therefore, DPR requires measured emission data to quantify actual emissions and thereby improve the accuracy of emission estimates.

Establishing the most accurate VOC emission values for fumigant applications is important for two reasons. First, it is important for DPR's emission inventory to be as accurate as possible because pesticide use/management decisions are based upon the findings presented in the inventory. Second, DPR is currently considering two regulation strategies to achieve pesticide VOC reductions from fumigants in air quality NAA areas. One strategy is to require use of "low-emission" fumigant application methods and/or prohibit certain "high-emission" fumigant application methods. A second strategy is to establish limits on VOC emissions from fumigants within NAA areas. Regulations that incorporate one or both of these strategies will go into effect in 2008.

In May 2007, DPR proposed regulations to reduce smog-producing emissions from fumigant pesticides. The regulations focus on both limiting the total pounds of pesticide emissions and reducing the amount of fumigant emitted from each application. Based on comments received, DPR revised the proposed regulations in October 2007.

The proposed regulations (as revised in October 2007) would:

- Limit fumigant emissions from May to October in certain NAA areas. In those areas, DPR would develop emission benchmarks and set limits on emissions from fumigant applications by individual growers. Growers could choose to limit emissions in various ways, such as reducing application rates, using lower-emission application methods, or treating less acreage.
- Require reporting of field fumigant application methods in five NAA areas.

- Define specific requirements on how field fumigations must be done, prohibiting some high-emission methods and setting limits on others.
- Set up new statewide licensing and other requirements for companies that do field fumigations.

More information on DPR's proposed regulations (DPR regulation 07-002) is located on DPR's Web site at: <<http://www.cdpr.ca.gov/docs/legbills/rulepkgs.htm#rulepkgs07002>>.

### REEVALUATION DATA REQUIREMENTS

DPR relies almost exclusively on field measurements to estimate emissions. Additionally, DPR prescribes many of the application procedures and equipment used for the monitoring studies as regulatory requirements. For example, DPR prescribes requirements for maximum application rate, application depth, tarpaulin type, soil moisture, and other critical parameters based on application equipment, procedures, and conditions of the monitoring studies. For purposes of consistency, a "shallow depth" is defined as using tractor shanks to inject the liquid fumigant 6-12 inches below the soil surface. Similarly, a "deep depth" is defined as injecting the liquid fumigant 18-30 inches below the soil surface. A "broadcast" application is an application to a flat field and a "bed" application is an application to a raised portion of the soil where crops will subsequently be placed.

Pursuant to this reevaluation, Amvac Chemical Corporation is required to submit the following:

1. Within **30 days** from the date of this letter, a written response acknowledging receipt of this letter. Your response may include (1) a statement of intent to comply with the data requirements as a sole entity or through the formation of a Task Force; (2) identification of any data that you can submit as outlined in items 3, 4 and in Attachment A; and, (3) any questions or clarifying information you need to comply with these data requirements.
2. Within **60 days** from the date of this letter, submit ambient or direct flux data that you feel may satisfy the requirements of this reevaluation as listed items 3, 4 and in Attachment A. If you submit a study, you do not need to submit a protocol as identified below for that data requirement unless notified by DPR.
3. Within **120 days** from the date of this letter, submit study protocols for ambient or direct flux monitoring studies, using a product containing the active ingredient **metam-sodium** (only) and a product containing the active ingredient **metam-potassium** (only) for their breakdown products (i.e., MITC) following prescribed field fumigation application methods, monitoring separately for day and night applications, as delineated below and in Attachment A. A final date for submission of the final reports will be established once DPR approves the protocols.

Each study protocol shall include the following:

- a. Identify the specific **metam-sodium** or **metam-potassium** product that you intend to use/monitor for with each application method. When choosing a product, consideration should be given to the product most commonly used with each specified application method.
  - b. Both day and night application monitoring are required. Day application monitoring shall be conducted in one of the three NAAs (San Joaquin Valley, Southeast Desert, or Ventura). Consult with DPR prior to selection of an NAA. NAA selection should best represent each application method. Night application monitoring must be conducted in the San Joaquin Valley NAA.
  - c. Monitoring must include any VOC breakdown products or inert ingredients that account for at least five percent of the amount applied.
  - d. Monitoring during the flux studies shall continue until one of the following occurs:
    - i. When all of the samples, for a full 24 hours of measurements, have no detectable concentrations as specified in the approved protocol; or,
    - ii. When the three-day rolling average daily flux is less than one percent of the applied amount and the rolling three-day average shows a declining pattern over three days; or,
    - iii. A period of 14 consecutive days.
4. Within **150 days** from the date of this letter, submit study protocols for ambient or direct flux monitoring studies, using a product containing the active ingredient **metam-sodium** (only) and a product containing the active ingredient **metam-potassium** (only) performed in all three NAAs (San Joaquin Valley, Southeast Desert, and Ventura). A final date for submission of the final reports will be established once DPR approves the protocols.

Each study protocol shall include the following:

- a. Identify the specific **metam-sodium** or **metam-potassium** product that you intend to use/monitor.
- b. From the list below, identify the application method (only one required) that you will be using with each product. The same application method must be used in all three NAAs.
  - (1) Sprinkler/Broadcast or Bed/One Post-Fumigation Water Treatment
  - (2) Sprinkler/Broadcast or Bed/Two Post-Fumigation Water Treatments
  - (3) Sprinkler/Broadcast or Bed/Three Post-Fumigation Water Treatments
  - (4) Nontarpaulin/Shallow/Broadcast or Bed/One Post-Fumigation Water Treatment
  - (5) Nontarpaulin/Shallow/Broadcast or Bed/Two Post-Fumigation Water Treatments

- (6) Nontarpaulin/Shallow/Broadcast or Bed/Three Post-Fumigation Water Treatments
  - (7) Chemigation (Drip System)
  - (8)(a) Rotary Tiller
  - (8)(b) Power Mulcher
  - (8)(c) Soil Capping
  - (8)(d) Spray Blade
  - (9) Flood
- c. Monitoring must include any VOC breakdown products or inert ingredients that account for at least five percent of the amount applied.
- d. Monitoring during the flux studies shall continue until one of the following occurs:
- i. When all of the samples, for a full 24 hours of measurements, have no detectable concentrations as specified in the approved protocol; or,
  - ii. When the three-day rolling average daily flux is less than one percent of the applied amount and the rolling three-day average shows a declining pattern over three days; or,
  - iii. A period of 14 consecutive days.

Based on the results of the above data, additional studies may be required. All studies and protocols submitted to DPR must be formatted in accordance with CA Notice 2006-06, Formatting Requirements for Scientific Data Submitted to the Department of Pesticide Regulation (Revised 08/10/2006). This Notice is located on DPR's Web site at: <http://www.cdpr.ca.gov/docs/registration/canot/2006/ca2006-06.pdf>.

#### GENERAL INFORMATION

Please note that pursuant to Food and Agricultural Code section 12811.5, as revised January 1, 2006, any registrant that does not submit its own data to fulfill a data requirement imposed by the Director to maintain the registration of its pesticide product, and instead relies upon data owned by another company, should be aware that they may have certain obligations, in specifically defined situations, to the owner of the data. For further information, please refer to AB 1011 – Consolidated Registration Resources located on DPR's Web site at: <http://www.cdpr.ca.gov/docs/legbills/ab1011/resource.htm>. Failure of a registrant to comply with the requirements of this reevaluation, may subject that registrant's product(s) to cancellation pursuant to Food and Agricultural Code section 12825(h).

Mr. Jon C. Wood  
January 18, 2008  
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### CONTACTS

If you have any questions regarding the reevaluation process, please contact Ms. Denise Webster by e-mail at <dwebster@cdpr.ca.gov> or by telephone at (916) 324-3522. If you have any questions regarding the required study protocols, please contact Mr. Randy Segawa by e-mail at <rsegawa@cdpr.ca.gov> or by telephone at (916) 324-4137.

Sincerely,

*Original signed by*

Charles M. Andrews, Chief  
Pesticide Registration Branch  
(916) 445-4377

Attachment

cc: Mr. Randy Segawa, DPR, Environmental Program Manager I (w/Attachment)  
Ms. Denise Webster, DPR, Program Specialist (w/Attachment)  
Ms. Victoria Hornbaker, DPR, Environmental Specialist (w/Attachment)

Attachment A. Metam-Sodium and Metam-Potassium  
(Fumigant action and VOC emissions due to the hydrolysis product MITC)  
Application Methods for Study Protocol Development

Table 1. Products containing Metam-Sodium as the active ingredient:

<b>Application Method</b>	<b>Either San Joaquin Valley, Southeast Desert, or Ventura NAA Day</b>	<b>Only San Joaquin Valley NAA Night</b>
1. Sprinkler/Broadcast or Bed/One Post-Fumigation Water Treatment	<b>NR</b>	<b>Required</b>
2. Sprinkler/Broadcast or Bed/Two Post-Fumigation Water Treatments	<b>NR</b>	<b>NR</b>
3. Sprinkler/Broadcast or Bed/Three Post-Fumigation Water Treatments	<b>NR</b>	<b>Required</b>
4. Nontarpaulin/Shallow/Broadcast or Bed/One Post-Fumigation Water Treatment	<b>NR</b>	<b>Required</b>
5. Nontarpaulin/Shallow/Broadcast or Bed/Two Post-Fumigation Water Treatments	<b>NR</b>	<b>Required</b>
6. Nontarpaulin/Shallow/Broadcast or Bed/Three Post-Fumigation Water Treatments	<b>NR</b>	<b>Required</b>
7. Chemigation (Drip System)	<b>NR</b>	<b>Required</b>
8. a) Rotary Tiller	<b>Required</b>	<b>Required</b>
b) Power Mulcher	<b>Required</b>	<b>Required</b>
c) Soil Capping	<b>Required</b>	<b>Required</b>
d) Spray Blade	<b>Required</b>	<b>Required</b>
9. Flood	<b>Required</b>	<b>Required</b>

**NR** = Not a required study.

Table 2. Products containing Metam-Potassium as the active ingredient:

<b>Application Method</b>	<b>Either San Joaquin Valley, Southeast Desert, or Ventura NAA Day</b>	<b>Only San Joaquin Valley NAA Night</b>
1. Sprinkler/Broadcast or Bed/One Post-Fumigation Water Treatment	<b>Required</b>	<b>Required</b>
2. Sprinkler/Broadcast or Bed/Two Post-Fumigation Water Treatments	<b>Required</b>	<b>Required</b>
3. Sprinkler/Broadcast or Bed/Three Post-Fumigation Water Treatments	<b>Required</b>	<b>Required</b>
4. Nontarpaulin/Shallow/Broadcast or Bed/One Post-Fumigation Water Treatment	<b>Required</b>	<b>Required</b>
5. Nontarpaulin/Shallow/Broadcast or Bed/Two Post-Fumigation Water Treatments	<b>Required</b>	<b>Required</b>
6. Nontarpaulin/Shallow/Broadcast or Bed/Three Post-Fumigation Water Treatments	<b>Required</b>	<b>Required</b>
7. Chemigation (Drip System)	<b>Required</b>	<b>Required</b>
8. a) Rotary Tiller	<b>Required</b>	<b>Required</b>
b) Power Mulcher	<b>Required</b>	<b>Required</b>
c) Soil Capping	<b>Required</b>	<b>Required</b>
d) Spray Blade	<b>Required</b>	<b>Required</b>
9. Flood	<b>Required</b>	<b>Required</b>



Mary-Ann Warmerdam  
Director

Arnold Schwarzenegger  
Governor

January 18, 2008

Mr. Ephi Gur  
Arysta Lifescience North America Corp.  
15401 Weston Parkway, Suite 150  
Cary, North Carolina 27513

Dear Mr. Gur:

Pursuant to Article 8, Subchapter 1, Chapter 2, Division 6 of Title 3 of the California Code of Regulations, the Director of the Department of Pesticide Regulation (DPR) notices her decision to begin a reevaluation of certain pesticide products intended for use in field fumigation and containing the following active ingredients: methyl bromide, 1,3-dichloropropene, chloropicrin, metam-sodium, metam-potassium, dazomet, and sodium tetrathiocarbonate, including the following products:

Product Brand Name, EPA Reg. No.	Active Ingredient
NUTRAPIC, EPA Reg. No. 66330-47-ZA	CHLOROPICRIN
ENZONE, EPA Reg. No. 66330-69-AA	SODIUM TETRATHIOCARBONATE

DPR is required to investigate all reported pesticide episodes and information received indicating that a pesticide may have caused, or is likely to cause, a significant adverse impact. If the Director finds from the investigation that a significant adverse effect has occurred or is likely to occur; the pesticide involved shall be reevaluated. Therefore, certain field fumigants, including the above products, are being reevaluated.

### BASIS FOR REEVALUATION

Pesticide volatile organic compounds (VOCs) contribute to the formation of ground-level ozone, which is harmful to human health and vegetation when present in high concentrations. The federal Clear Air Act requires each state to submit a state implementation plan (SIP) for achieving and maintaining federal ambient air quality standards, including the ozone standard. Fumigants are among the highest pesticide VOC contributors due to both their high levels of use and their high-emission potentials. Fumigants account for more than 50 percent of the pesticide VOC emissions in the San Joaquin Valley nonattainment (NAA) area, 80 percent in the Southeast Desert NAA area, and 90 percent in the Ventura NAA area. Additional data relating to the use of the fumigant products is essential to the formulation of regulatory measures to reduce VOC emissions from fumigant use and mitigate the associated detrimental impact on human



health and the environment. Further, it is needed to facilitate meeting the state's obligations under the SIP.

In accordance with the SIP, DPR maintains an inventory of pesticide VOC emissions for the May-October ozone season for specified ozone NAA areas of the State. The SIP specifies certain emission reductions to be achieved, and the reductions are expressed as some percentage of the 1990/1991 base year emissions. For the purposes of the inventory, DPR has historically assumed 100 percent of applied fumigants volatilize to the air. However, field-monitoring data shows that fumigant emissions are less than 100 percent and vary with application method. Therefore, DPR requires measured emission data to quantify actual emissions and thereby improve the accuracy of emission estimates.

Establishing the most accurate VOC emission values for fumigant applications is important for two reasons. First, it is important for DPR's emission inventory to be as accurate as possible because pesticide use/management decisions are based upon the findings presented in the inventory. Second, DPR is currently considering two regulation strategies to achieve pesticide VOC reductions from fumigants in air quality NAA areas. One strategy is to require use of "low-emission" fumigant application methods and/or prohibit certain "high-emission" fumigant application methods. A second strategy is to establish limits on VOC emissions from fumigants within NAA areas. Regulations that incorporate one or both of these strategies will go into effect in 2008.

In May 2007, DPR proposed regulations to reduce smog-producing emissions from fumigant pesticides. The regulations focus on both limiting the total pounds of pesticide emissions and reducing the amount of fumigant emitted from each application. Based on comments received, DPR revised the proposed regulations in October 2007.

The proposed regulations (as revised in October 2007) would:

- Limit fumigant emissions from May to October in certain NAA areas. In those areas, DPR would develop emission benchmarks and set limits on emissions from fumigant applications by individual growers. Growers could choose to limit emissions in various ways, such as reducing application rates, using lower-emission application methods, or treating less acreage.
- Require reporting of field fumigant application methods in five NAA areas.
- Define specific requirements on how field fumigations must be done, prohibiting some high-emission methods and setting limits on others.
- Set up new statewide licensing and other requirements for companies that do field fumigations.

More information on DPR's proposed regulations (DPR regulation 07-002) is located on DPR's Web site at: <<http://www.cdpr.ca.gov/docs/legbills/rulepkgs.htm#rulepkgs07002>>.

### REEVALUATION DATA REQUIREMENTS

DPR relies almost exclusively on field measurements to estimate emissions. Additionally, DPR prescribes many of the application procedures and equipment used for the monitoring studies as regulatory requirements. For example, DPR prescribes requirements for maximum application rate, application depth, tarpaulin type, soil moisture, and other critical parameters based on application equipment, procedures, and conditions of the monitoring studies. For purposes of consistency, a "shallow depth" is defined as using tractor shanks to inject the liquid fumigant 6-12 inches below the soil surface. Similarly, a "deep depth" is defined as injecting the liquid fumigant 18-30 inches below the soil surface. A "broadcast" application is an application to a flat field and a "bed" application is an application to a raised portion of the soil where crops will subsequently be placed.

Pursuant to this reevaluation, Arysta Lifescience North America Corp. is required to submit the following:

1. Within **30 days** from the date of this letter, a written response acknowledging receipt of this letter. Your response may include (1) a statement of intent to comply with the data requirements as a sole entity or through the formation of a Task Force; (2) identification of any data that you can submit as outlined in items 3 through 5 and in Attachment A; and, (3) any questions or clarifying information you need to comply with these data requirements.
2. Within **60 days** from the date of this letter, submit ambient or direct flux data that you feel may satisfy the requirements of this reevaluation as listed in items 3 through 5 and in Attachment A. If you submit a study, you do not need to submit a protocol as identified below for that data requirement unless notified by DPR.
3. Within **120 days** from the date of this letter, submit study protocols for ambient or direct flux monitoring studies, using products containing the active ingredient **chloropicrin** following prescribed field fumigation application methods as delineated below and in Attachment A. The monitoring studies must be performed in the San Joaquin Valley, Southeast Desert, or Ventura NAA. A final date for submission of the final reports will be established once DPR approves the protocols.

Each study protocol shall include the following:

- a. Identify the specific **chloropicrin** product that you intend to use/monitor for with each application method. When choosing a product, consideration should be given to the product most commonly used with each specified application method.
  - b. Consult with DPR prior to selection of an NAA (San Joaquin Valley, Southeast Desert, or Ventura). NAA selection should best represent each application method.
  - c. Monitoring must include any VOC breakdown products or inert ingredients that account for at least five percent of the amount applied.
  - d. Monitoring during the flux studies shall continue until one of the following occurs:
    - i. When all of the samples, for a full 24 hours of measurements, have no detectable concentrations as specified in the approved protocol; or,
    - ii. When the three-day rolling average daily flux is less than one percent of the applied amount and the rolling three-day average shows a declining pattern over three days; or,
    - iii. A period of 14 consecutive days.
4. Within **120 days** from the date of this letter, submit study protocols for ambient or direct flux monitoring studies, using products containing the active ingredient **sodium tetrathiocarbonate** for their breakdown products (i.e., carbon disulfide) following prescribed field fumigation application methods as delineated below and in Attachment A. The monitoring studies must be performed in the San Joaquin Valley, Southeast Desert, or Ventura NAA. A final date for submission of the final reports will be established once DPR approves the protocols.

Each study protocol shall include the following:

- a. Identify the specific **sodium tetrathiocarbonate** product that you intend to use/monitor for with each application method. When choosing a product, consideration should be given to the product most commonly used with each specified application method.
- b. Consult with DPR prior to selection of an NAA (San Joaquin Valley, Southeast Desert, or Ventura). NAA selection should best represent each application method.
- c. Monitoring must include any VOC breakdown products or inert ingredients that account for at least five percent of the amount applied.
- d. Monitoring during the flux studies shall continue until one of the following occurs:
  - i. When all of the samples, for a full 24 hours of measurements, have no detectable concentrations as specified in the approved protocol; or,

- ii. When the three-day rolling average daily flux is less than one percent of the applied amount and the rolling three-day average shows a declining pattern over three days; or,
  - iii. A period of 14 consecutive days.
5. Within **150 days** from the date of this letter, submit study protocols for ambient or direct flux monitoring studies, using a product containing the active ingredient **chloropicrin** (only) and a product containing the active ingredient **sodium tetrathiocarbonate** (only) performed in all three NAAs (San Joaquin Valley, Southeast Desert, and Ventura). A final date for submission of the final reports will be established once DPR approves the protocols.

Each study protocol shall include the following:

- a. Identify the specific **chloropicrin** or **sodium tetrathiocarbonate** product that you intend to use/monitor.
- b. From the list below, identify the application method (only one required) that you will be using with each product. The same application method must be used in all three NAAs.

**chloropicrin**

- (1) Nontarpaulin/Shallow/Broadcast or Bed
- (2) Tarpaulin/Shallow/Broadcast or Bed
- (3) Nontarpaulin/Shallow/Broadcast or Bed/Three Post-Fumigation Water Treatments
- (4) Tarpaulin/Shallow/Bed/Three Post-Fumigation Water Treatments
- (5) Nontarpaulin/Deep/Broadcast or Bed
- (6) Tarpaulin/Deep/Broadcast or Bed
- (7) Chemigation (Drip System)/Tarpaulin

**sodium tetrathiocarbonate**

- (1) Chemigation (Drip System)
- (2) Chemigation (Mini-Sprinkler)
- (3) Chemigation (Flood/Furrow)

- c. Monitoring must include any VOC breakdown products or inert ingredients that account for at least five percent of the amount applied.
- d. Monitoring during the flux studies shall continue until one of the following occurs:
  - i. When all of the samples, for a full 24 hours of measurements, have no detectable concentrations as specified in the approved protocol; or,

Mr. Ephi Gur  
January 18, 2008  
Page 6

- ii. When the three-day rolling average daily flux is less than one percent of the applied amount and the rolling three-day average shows a declining pattern over three days; or,
- iii. A period of 14 consecutive days.

Based on the results of the above data, additional studies may be required. All studies and protocols submitted to DPR must be formatted in accordance with CA Notice 2006-06, Formatting Requirements for Scientific Data Submitted to the Department of Pesticide Regulation (Revised 08/10/2006). This Notice is located on DPR's Web site at: <<http://www.cdpr.ca.gov/docs/registration/canot/2006/ca2006-06.pdf>>.

#### GENERAL INFORMATION

Please note that pursuant to Food and Agricultural Code section 12811.5, as revised January 1, 2006, any registrant that does not submit its own data to fulfill a data requirement imposed by the Director to maintain the registration of its pesticide product, and instead relies upon data owned by another company, should be aware that they may have certain obligations, in specifically defined situations, to the owner of the data. For further information, please refer to AB 1011 – Consolidated Registration Resources located on DPR's Web site at: <<http://www.cdpr.ca.gov/docs/legbills/ab1011/resource.htm>>. Failure of a registrant to comply with the requirements of this reevaluation, may subject that registrant's product(s) to cancellation pursuant to Food and Agricultural Code section 12825(h).

#### CONTACTS

If you have any questions regarding the reevaluation process, please contact Ms. Denise Webster by e-mail at <[dwebster@cdpr.ca.gov](mailto:dwebster@cdpr.ca.gov)> or by telephone at (916) 324-3522. If you have any questions regarding the required study protocols, please contact Mr. Randy Segawa by e-mail at <[rsegawa@cdpr.ca.gov](mailto:rsegawa@cdpr.ca.gov)> or by telephone at (916) 324-4137.

Sincerely,

*Original signed by*

Charles M. Andrews, Chief  
Pesticide Registration Branch  
(916) 445-4377

Attachment

Mr. Ephi Gur  
January 18, 2008  
Page 7

cc: Mr. Randy Segawa, DPR, Environmental Program Manager I (w/Attachments)  
Ms. Denise Webster, DPR, Program Specialist (w/Attachments)  
Ms. Victoria Hornbaker, DPR, Environmental Specialist (w/Attachments)

Attachment A.

Table 1. Chloropicrin Application Methods for Study Protocol Development:

<b>Application Method</b>	<b>Either San Joaquin Valley, Southeast Desert, or Ventura NAA</b>
1. Nontarpaulin/Shallow/Broadcast or Bed	<b>Required</b>
2. Tarpaulin/Shallow/Broadcast or Bed	<b>Required</b>
3. Nontarpaulin/Shallow/Broadcast or Bed/ Three Post-Fumigation Water Treatments	<b>Required</b>
4. Tarpaulin/Shallow/Bed/Three Post-Fumigation Water Treatments	<b>Required</b>
5. Nontarpaulin/Deep/Broadcast or Bed	<b>Required</b>
6. Tarpaulin/Deep/Broadcast or Bed	<b>Required</b>
7. Chemigation (Drip System)/Tarpaulin	<b>Required</b>

Table 2. Sodium Tetrathiocarbonate Application Methods for Study Protocol Development  
((Fumigant action and VOC emissions due to the hydrolysis product carbon disulfide):

<b>Application Method</b>	<b>Either San Joaquin Valley, Southeast Desert, or Ventura NAA</b>
1. Chemigation (Drip System)	<b>Required</b>
2. Chemigation (Mini-Sprinkler)	<b>Required</b>
3. Chemigation (Flood/Furrow)	<b>Required</b>

Note: 1996 flux study was conducted in Pomona, CA (vol 51031-093).



# Department of Pesticide Regulation



Mary-Ann Warmerdam  
Director

Arnold Schwarzenegger  
Governor

January 18, 2008

Ms. Zofia C. Schmidt  
Buckman Laboratories, Inc.  
1256 North Mclean Blvd.  
Memphis, Tennessee 38108

Dear Ms. Schmidt:

Pursuant to Article 8, Subchapter 1, Chapter 2, Division 6 of Title 3 of the California Code of Regulations, the Director of the Department of Pesticide Regulation (DPR) notices her decision to begin a reevaluation of certain pesticide products intended for use in field fumigation and containing the following active ingredients: methyl bromide, 1,3-dichloropropene, chloropicrin, metam-sodium, metam-potassium, dazomet, and sodium tetrathiocarbonate, including the following products:

Product Brand Name, EPA Reg. No.	Active Ingredient
BUSAN 1020, EPA Reg. No. 1448-85-AA	METAM-SODIUM
BUSAN 1236, EPA Reg. No. 1448-361-AA	METAM-SODIUM
BUSAN 1180, EPA Reg. No. 1448-362-AA	METAM-POTASSIUM

DPR is required to investigate all reported pesticide episodes and information received indicating that a pesticide may have caused, or is likely to cause, a significant adverse impact. If the Director finds from the investigation that a significant adverse effect has occurred or is likely to occur; the pesticide involved shall be reevaluated. Therefore, certain field fumigants, including the above products, are being reevaluated.

### BASIS FOR REEVALUATION

Pesticide volatile organic compounds (VOCs) contribute to the formation of ground-level ozone, which is harmful to human health and vegetation when present in high concentrations. The federal Clear Air Act requires each state to submit a state implementation plan (SIP) for achieving and maintaining federal ambient air quality standards, including the ozone standard. Fumigants are among the highest pesticide VOC contributors due to both their high levels of use and their high-emission potentials. Fumigants account for more than 50 percent of the pesticide VOC emissions in the San Joaquin Valley nonattainment (NAA) area, 80 percent in the Southeast Desert NAA area, and 90 percent in the Ventura NAA area. Additional data relating to the use of the fumigant products is essential to the formulation of regulatory measures to reduce VOC emissions from fumigant use and mitigate the associated detrimental impact on human



health and the environment. Further, it is needed to facilitate meeting the state's obligations under the SIP.

In accordance with the SIP, DPR maintains an inventory of pesticide VOC emissions for the May-October ozone season for specified ozone NAA areas of the State. The SIP specifies certain emission reductions to be achieved, and the reductions are expressed as some percentage of the 1990/1991 base year emissions. For the purposes of the inventory, DPR has historically assumed 100 percent of applied fumigants volatilize to the air. However, field-monitoring data shows that fumigant emissions are less than 100 percent and vary with application method. Therefore, DPR requires measured emission data to quantify actual emissions and thereby improve the accuracy of emission estimates.

Establishing the most accurate VOC emission values for fumigant applications is important for two reasons. First, it is important for DPR's emission inventory to be as accurate as possible because pesticide use/management decisions are based upon the findings presented in the inventory. Second, DPR is currently considering two regulation strategies to achieve pesticide VOC reductions from fumigants in air quality NAA areas. One strategy is to require use of "low-emission" fumigant application methods and/or prohibit certain "high-emission" fumigant application methods. A second strategy is to establish limits on VOC emissions from fumigants within NAA areas. Regulations that incorporate one or both of these strategies will go into effect in 2008.

In May 2007, DPR proposed regulations to reduce smog-producing emissions from fumigant pesticides. The regulations focus on both limiting the total pounds of pesticide emissions and reducing the amount of fumigant emitted from each application. Based on comments received, DPR revised the proposed regulations in October 2007.

The proposed regulations (as revised in October 2007) would:

- Limit fumigant emissions from May to October in certain NAA areas. In those areas, DPR would develop emission benchmarks and set limits on emissions from fumigant applications by individual growers. Growers could choose to limit emissions in various ways, such as reducing application rates, using lower-emission application methods, or treating less acreage.
- Require reporting of field fumigant application methods in five NAA areas.
- Define specific requirements on how field fumigations must be done, prohibiting some high-emission methods and setting limits on others.
- Set up new statewide licensing and other requirements for companies that do field fumigations.

More information on DPR's proposed regulations (DPR regulation 07-002) is located on DPR's Web site at: <<http://www.cdpr.ca.gov/docs/legbills/rulepkgs.htm#rulepkgs07002>>.

### REEVALUATION DATA REQUIREMENTS

DPR relies almost exclusively on field measurements to estimate emissions. Additionally, DPR prescribes many of the application procedures and equipment used for the monitoring studies as regulatory requirements. For example, DPR prescribes requirements for maximum application rate, application depth, tarpaulin type, soil moisture, and other critical parameters based on application equipment, procedures, and conditions of the monitoring studies. For purposes of consistency, a "shallow depth" is defined as using tractor shanks to inject the liquid fumigant 6-12 inches below the soil surface. Similarly, a "deep depth" is defined as injecting the liquid fumigant 18-30 inches below the soil surface. A "broadcast" application is an application to a flat field and a "bed" application is an application to a raised portion of the soil where crops will subsequently be placed.

Pursuant to this reevaluation, Buckman Laboratories, Inc. is required to submit the following:

1. Within **30 days** from the date of this letter, a written response acknowledging receipt of this letter. Your response may include (1) a statement of intent to comply with the data requirements as a sole entity or through the formation of a Task Force; (2) identification of any data that you can submit as outlined in items 3, 4 and in Attachment A; and, (3) any questions or clarifying information you need to comply with these data requirements.
2. Within **60 days** from the date of this letter, submit ambient or direct flux data that you feel may satisfy the requirements of this reevaluation as listed items 3, 4 and in Attachment A. If you submit a study, you do not need to submit a protocol as identified below for that data requirement unless notified by DPR.
3. Within **120 days** from the date of this letter, submit study protocols for ambient or direct flux monitoring studies, using a product containing the active ingredient **metam-sodium** and a product containing the active ingredient **metam-potassium** for their breakdown products (i.e., MITC) following prescribed field fumigation application methods, monitoring separately for day and night applications, as delineated below and in Attachment A. A final date for submission of the final reports will be established once DPR approves the protocols.

Each study protocol shall include the following:

- a. Identify the specific **metam-sodium** or **metam-potassium** product that you intend to use/monitor for with each application method. When choosing a product, consideration should be given to the product most commonly used with each specified application method.
  - b. Both day and night application monitoring are required. Day application monitoring shall be conducted in one of the three NAAs (San Joaquin Valley, Southeast Desert, or Ventura). Consult with DPR prior to selection of an NAA. NAA selection should best represent each application method. Night application monitoring must be conducted in the San Joaquin Valley NAA.
  - c. Monitoring must include any VOC breakdown products or inert ingredients that account for at least five percent of the amount applied.
  - d. Monitoring during the flux studies shall continue until one of the following occurs:
    - i. When all of the samples, for a full 24 hours of measurements, have no detectable concentrations as specified in the approved protocol; or,
    - ii. When the three-day rolling average daily flux is less than one percent of the applied amount and the rolling three-day average shows a declining pattern over three days; or,
    - iii. A period of 14 consecutive days.
4. Within **150 days** from the date of this letter, submit study protocols for ambient or direct flux monitoring studies, using a product containing the active ingredient **metam-sodium** and a product containing the active ingredient **metam-potassium** performed in all three NAAs (San Joaquin Valley, Southeast Desert, and Ventura). A final date for submission of the final reports will be established once DPR approves the protocols.

Each study protocol shall include the following:

- a. Identify the specific **metam-sodium** or **metam-potassium** product that you intend to use/monitor.
- b. From the list below, identify the application method (only one required) that you will be using with each product. The same application method must be used in all three NAAs.
  - (1) Sprinkler/Broadcast or Bed/One Post-Fumigation Water Treatment
  - (2) Sprinkler/Broadcast or Bed/Two Post-Fumigation Water Treatments
  - (3) Sprinkler/Broadcast or Bed/Three Post-Fumigation Water Treatments
  - (4) Nontarpaulin/Shallow/Broadcast or Bed/One Post-Fumigation Water Treatment
  - (5) Nontarpaulin/Shallow/Broadcast or Bed/Two Post-Fumigation Water Treatments

- (6) Nontarpaulin/Shallow/Broadcast or Bed/Three Post-Fumigation Water Treatments
  - (7) Chemigation (Drip System)
  - (8)(a) Rotary Tiller
  - (8)(b) Power Mulcher
  - (8)(c) Soil Capping
  - (8)(d) Spray Blade
  - (9) Flood
- c. Monitoring must include any VOC breakdown products or inert ingredients that account for at least five percent of the amount applied.
- d. Monitoring during the flux studies shall continue until one of the following occurs:
- i. When all of the samples, for a full 24 hours of measurements, have no detectable concentrations as specified in the approved protocol; or,
  - ii. When the three-day rolling average daily flux is less than one percent of the applied amount and the rolling three-day average shows a declining pattern over three days; or,
  - iii. A period of 14 consecutive days.

Based on the results of the above data, additional studies may be required. All studies and protocols submitted to DPR must be formatted in accordance with CA Notice 2006-06, Formatting Requirements for Scientific Data Submitted to the Department of Pesticide Regulation (Revised 08/10/2006). This Notice is located on DPR's Web site at: <http://www.cdpr.ca.gov/docs/registration/canot/2006/ca2006-06.pdf>.

#### GENERAL INFORMATION

Please note that pursuant to Food and Agricultural Code section 12811.5, as revised January 1, 2006, any registrant that does not submit its own data to fulfill a data requirement imposed by the Director to maintain the registration of its pesticide product, and instead relies upon data owned by another company, should be aware that they may have certain obligations, in specifically defined situations, to the owner of the data. For further information, please refer to AB 1011 – Consolidated Registration Resources located on DPR's Web site at: <http://www.cdpr.ca.gov/docs/legbills/ab1011/resource.htm>. Failure of a registrant to comply with the requirements of this reevaluation, may subject that registrant's product(s) to cancellation pursuant to Food and Agricultural Code section 12825(h).

Ms. Zofia C. Schmidt  
January 18, 2008  
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### CONTACTS

If you have any questions regarding the reevaluation process, please contact Ms. Denise Webster by e-mail at <dwebster@cdpr.ca.gov> or by telephone at (916) 324-3522. If you have any questions regarding the required study protocols, please contact Mr. Randy Segawa by e-mail at <rsegawa@cdpr.ca.gov> or by telephone at (916) 324-4137.

Sincerely,

*Original signed by*

Charles M. Andrews, Chief  
Pesticide Registration Branch  
(916) 445-4377

Attachment

cc: Mr. Randy Segawa, DPR, Environmental Program Manager I (w/Attachment)  
Ms. Denise Webster, DPR, Program Specialist (w/Attachment)  
Ms. Victoria Hornbaker, DPR, Environmental Specialist (w/Attachment)

Attachment A. Metam-Sodium and Metam-Potassium  
(Fumigant action and VOC emissions due to the hydrolysis product MITC)  
Application Methods for Study Protocol Development

Table 1. Products containing Metam-Sodium as the active ingredient:

<b>Application Method</b>	<b>Either San Joaquin Valley, Southeast Desert, or Ventura NAA Day</b>	<b>Only San Joaquin Valley NAA Night</b>
1. Sprinkler/Broadcast or Bed/One Post-Fumigation Water Treatment	<b>NR</b>	<b>Required</b>
2. Sprinkler/Broadcast or Bed/Two Post-Fumigation Water Treatments	<b>NR</b>	<b>NR</b>
3. Sprinkler/Broadcast or Bed/Three Post-Fumigation Water Treatments	<b>NR</b>	<b>Required</b>
4. Nontarpaulin/Shallow/Broadcast or Bed/One Post-Fumigation Water Treatment	<b>NR</b>	<b>Required</b>
5. Nontarpaulin/Shallow/Broadcast or Bed/Two Post-Fumigation Water Treatments	<b>NR</b>	<b>Required</b>
6. Nontarpaulin/Shallow/Broadcast or Bed/Three Post-Fumigation Water Treatments	<b>NR</b>	<b>Required</b>
7. Chemigation (Drip System)	<b>NR</b>	<b>Required</b>
8. a) Rotary Tiller	<b>Required</b>	<b>Required</b>
b) Power Mulcher	<b>Required</b>	<b>Required</b>
c) Soil Capping	<b>Required</b>	<b>Required</b>
d) Spray Blade	<b>Required</b>	<b>Required</b>
9. Flood	<b>Required</b>	<b>Required</b>

**NR** = Not a required study.

Table 2. Products containing Metam-Potassium as the active ingredient:

<b>Application Method</b>	<b>Either San Joaquin Valley, Southeast Desert, or Ventura NAA Day</b>	<b>Only San Joaquin Valley NAA Night</b>
1. Sprinkler/Broadcast or Bed/One Post-Fumigation Water Treatment	<b>Required</b>	<b>Required</b>
2. Sprinkler/Broadcast or Bed/Two Post-Fumigation Water Treatments	<b>Required</b>	<b>Required</b>
3. Sprinkler/Broadcast or Bed/Three Post-Fumigation Water Treatments	<b>Required</b>	<b>Required</b>
4. Nontarpaulin/Shallow/Broadcast or Bed/One Post-Fumigation Water Treatment	<b>Required</b>	<b>Required</b>
5. Nontarpaulin/Shallow/Broadcast or Bed/Two Post-Fumigation Water Treatments	<b>Required</b>	<b>Required</b>
6. Nontarpaulin/Shallow/Broadcast or Bed/Three Post-Fumigation Water Treatments	<b>Required</b>	<b>Required</b>
7. Chemigation (Drip System)	<b>Required</b>	<b>Required</b>
8. a) Rotary Tiller	<b>Required</b>	<b>Required</b>
b) Power Mulcher	<b>Required</b>	<b>Required</b>
c) Soil Capping	<b>Required</b>	<b>Required</b>
d) Spray Blade	<b>Required</b>	<b>Required</b>
9. Flood	<b>Required</b>	<b>Required</b>



# Department of Pesticide Regulation



Mary-Ann Warmerdam  
Director

Arnold Schwarzenegger  
Governor

January 18, 2008

Ms. Christine A. Dively  
Certis USA LLC  
9145 Guilford Road, Suite 175  
Columbia, Maryland 21046

Dear Ms. Dively:

Pursuant to Article 8, Subchapter 1, Chapter 2, Division 6 of Title 3 of the California Code of Regulations, the Director of the Department of Pesticide Regulation (DPR) notices her decision to begin a reevaluation of certain pesticide products intended for use in field fumigation and containing the following active ingredients: methyl bromide, 1,3-dichloropropene, chloropicrin, metam-sodium, metam-potassium, dazomet, and sodium tetrathiocarbonate, including the following product:

Product Brand Name, EPA Reg. No.	Active Ingredient
BASAMID G, EPA Reg. No. 70051-101-AA	DAZOMET

DPR is required to investigate all reported pesticide episodes and information received indicating that a pesticide may have caused, or is likely to cause, a significant adverse impact. If the Director finds from the investigation that a significant adverse effect has occurred or is likely to occur; the pesticide involved shall be reevaluated. Therefore, certain field fumigants, including the above product, are being reevaluated.

### BASIS FOR REEVALUATION

Pesticide volatile organic compounds (VOCs) contribute to the formation of ground-level ozone, which is harmful to human health and vegetation when present in high concentrations. The federal Clear Air Act requires each state to submit a state implementation plan (SIP) for achieving and maintaining federal ambient air quality standards, including the ozone standard. Fumigants are among the highest pesticide VOC contributors due to both their high levels of use and their high-emission potentials. Fumigants account for more than 50 percent of the pesticide VOC emissions in the San Joaquin Valley nonattainment (NAA) area, 80 percent in the Southeast Desert NAA area, and 90 percent in the Ventura NAA area. Additional data relating to the use of the fumigant products is essential to the formulation of regulatory measures to reduce VOC emissions from fumigant use and mitigate the associated detrimental impact on human health and the environment. Further, it is needed to facilitate meeting the state's obligations under the SIP.



In accordance with the SIP, DPR maintains an inventory of pesticide VOC emissions for the May-October ozone season for specified ozone NAA areas of the State. The SIP specifies certain emission reductions to be achieved, and the reductions are expressed as some percentage of the 1990/1991 base year emissions. For the purposes of the inventory, DPR has historically assumed 100 percent of applied fumigants volatilize to the air. However, field-monitoring data shows that fumigant emissions are less than 100 percent and vary with application method. Therefore, DPR requires measured emission data to quantify actual emissions and thereby improve the accuracy of emission estimates.

Establishing the most accurate VOC emission values for fumigant applications is important for two reasons. First, it is important for DPR's emission inventory to be as accurate as possible because pesticide use/management decisions are based upon the findings presented in the inventory. Second, DPR is currently considering two regulation strategies to achieve pesticide VOC reductions from fumigants in air quality NAA areas. One strategy is to require use of "low-emission" fumigant application methods and/or prohibit certain "high-emission" fumigant application methods. A second strategy is to establish limits on VOC emissions from fumigants within NAA areas. Regulations that incorporate one or both of these strategies will go into effect in 2008.

In May 2007, DPR proposed regulations to reduce smog-producing emissions from fumigant pesticides. The regulations focus on both limiting the total pounds of pesticide emissions and reducing the amount of fumigant emitted from each application. Based on comments received, DPR revised the proposed regulations in October 2007.

The proposed regulations (as revised in October 2007) would:

- Limit fumigant emissions from May to October in certain NAA areas. In those areas, DPR would develop emission benchmarks and set limits on emissions from fumigant applications by individual growers. Growers could choose to limit emissions in various ways, such as reducing application rates, using lower-emission application methods, or treating less acreage.
- Require reporting of field fumigant application methods in five NAA areas.
- Define specific requirements on how field fumigations must be done, prohibiting some high-emission methods and setting limits on others.
- Set up new statewide licensing and other requirements for companies that do field fumigations.

More information on DPR's proposed regulations (DPR regulation 07-002) is located on DPR's Web site at: <<http://www.cdpr.ca.gov/docs/legbills/rulepkgs.htm#rulepkgs07002>>.

### REEVALUATION DATA REQUIREMENTS

DPR relies almost exclusively on field measurements to estimate emissions. Additionally, DPR prescribes many of the application procedures and equipment used for the monitoring studies as regulatory requirements. For example, DPR prescribes requirements for maximum application rate, application depth, tarpaulin type, soil moisture, and other critical parameters based on application equipment, procedures, and conditions of the monitoring studies. For purposes of consistency, a “shallow depth” is defined as using tractor shanks to inject the liquid fumigant 6-12 inches below the soil surface. Similarly, a “deep depth” is defined as injecting the liquid fumigant 18-30 inches below the soil surface. A “broadcast” application is an application to a flat field and a “bed” application is an application to a raised portion of the soil where crops will subsequently be placed.

Pursuant to this reevaluation, Certis USA LLC is required to submit the following:

1. Within **30 days** from the date of this letter, a written response acknowledging receipt of this letter. Your response may include (1) a statement of intent to comply with the data requirements as a sole entity or through the formation of a Task Force; (2) identification of any data that you can submit as outlined in items 3, 4 and in Attachment A; and, (3) any questions or clarifying information you need to comply with these data requirements.
2. Within **60 days** from the date of this letter, submit ambient or direct flux data that you feel may satisfy the requirements of this reevaluation as listed in items 3, 4 and in Attachment A. If you submit a study, you do not need to submit a protocol as identified below for that data requirement unless notified by DPR.
3. Within **120 days** from the date of this letter, submit study protocols for ambient or direct flux monitoring studies, using a product containing the active ingredient **dazomet** for its breakdown products (i.e., MITC) following prescribed field fumigation application methods, monitoring for night applications in the San Joaquin Valley NAA, as delineated below and in Attachment A. A final date for submission of the final reports will be established once DPR approves the protocols.

Each study protocol shall include the following:

- a. Identify the specific **dazomet** product that you intend to use/monitor for with each application method. When choosing a product, consideration should be given to the product most commonly used with each specified application method.
- b. Only night application monitoring is required in the San Joaquin Valley NAA.
- c. Monitoring must include any VOC breakdown products or inert ingredients that account for at least five percent of the amount applied.

- d. Monitoring during the flux studies shall continue until one of the following occurs:
  - i. When all of the samples, for a full 24 hours of measurements, have no detectable concentrations as specified in the approved protocol; or,
  - ii. When the three-day rolling average daily flux is less than one percent of the applied amount and the rolling three-day average shows a declining pattern over three days; or,
  - iii. A period of 14 consecutive days.
4. Within **150 days** from the date of this letter, submit a study protocol for a daytime ambient or direct flux monitoring study, using a product containing the active ingredient **dazomet** using one application method performed in all three NAAs (San Joaquin Valley, Southeast Desert, and Ventura). A final date for submission of the final report will be established once DPR approves the protocol.

Your study protocol shall include the following:

- a. Identify the specific **dazomet** product that you intend to use/monitor.
- b. From the list below, identify the application method that you will be using. The same application method must be used in all three NAAs.
  - (1) Soil Surface/Post-Fumigation Water Treatments
  - (2) Soil Incorporated/Post-Fumigation Water Treatments
- c. Identify the specific location within each NAA where you will be conducting the monitoring. Note: Monitoring studies have already been conducted in the San Joaquin Valley NAA.
- d. Monitoring must include any VOC breakdown products or inert ingredients that account for at least five percent of the amount applied.
- e. Monitoring during the flux studies shall continue until one of the following occurs:
  - i. When all of the samples, for a full 24 hours of measurements, have no detectable concentrations as specified in the approved protocol; or,
  - ii. When the three-day rolling average daily flux is less than one percent of the applied amount and the rolling three-day average shows a declining pattern over three days; or,
  - iii. A period of 14 consecutive days.

Based on the results of the above data, additional studies may be required. All studies and protocols submitted to DPR must be formatted in accordance with CA Notice 2006-06, Formatting Requirements for Scientific Data Submitted to the Department of Pesticide

Ms. Christine A. Dively  
January 18, 2008  
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Regulation (Revised 08/10/2006). This Notice is located on DPR's Web site at:  
<<http://www.cdpr.ca.gov/docs/registration/canot/2006/ca2006-06.pdf>>.

### GENERAL INFORMATION

Please note that pursuant to Food and Agricultural Code section 12811.5, as revised January 1, 2006, any registrant that does not submit its own data to fulfill a data requirement imposed by the Director to maintain the registration of its pesticide product, and instead relies upon data owned by another company, should be aware that they may have certain obligations, in specifically defined situations, to the owner of the data. For further information, please refer to AB 1011 – Consolidated Registration Resources located on DPR's Web site at: <<http://www.cdpr.ca.gov/docs/legbills/ab1011/resource.htm>>. Failure of a registrant to comply with the requirements of this reevaluation, may subject that registrant's product(s) to cancellation pursuant to Food and Agricultural Code section 12825(h).

### CONTACTS

If you have any questions regarding the reevaluation process, please contact Ms. Denise Webster by e-mail at <[dwebster@cdpr.ca.gov](mailto:dwebster@cdpr.ca.gov)> or by telephone at (916) 324-3522. If you have any questions regarding the required study protocols, please contact Mr. Randy Segawa by e-mail at <[rsegawa@cdpr.ca.gov](mailto:rsegawa@cdpr.ca.gov)> or by telephone at (916) 324-4137.

Sincerely,

*Original signed by*

Charles M. Andrews, Chief  
Pesticide Registration Branch  
(916) 445-4377

Attachment

cc: Mr. Randy Segawa, DPR, Environmental Program Manager I (w/Attachment)  
Ms. Denise Webster, DPR, Program Specialist (w/Attachment)  
Ms. Victoria Hornbaker, DPR, Environmental Specialist (w/Attachment)

Attachment A. Dazomet Application Methods for Study Protocol Development  
(Fumigant action and VOC emissions due to the hydrolysis product MITC)

Products containing Dazomet as the active ingredient:

<b>Application Method</b>	<b>Either San Joaquin Valley, Southeast Desert, or Ventura NAA <u>Day</u></b>	<b>Only San Joaquin Valley NAA <u>Night</u></b>
1. Soil Surface/Post-Fumigation Water Treatments	<b>NR</b>	<b>Required</b>
2. Soil Incorporated/Post-Fumigation Water Treatments	<b>NR</b>	<b>Required</b>

**NR** = Not a required study.



# Department of Pesticide Regulation



Mary-Ann Warmerdam  
Director

Arnold Schwarzenegger  
Governor

January 18, 2008

Mr. Brian L. Bret, Ph.D.  
Dow AgroSciences LLC  
9330 Zionsville Road  
Indianapolis, Indiana 46268-1054

Dear Dr. Bret:

Pursuant to Article 8, Subchapter 1, Chapter 2, Division 6 of Title 3 of the California Code of Regulations, the Director of the Department of Pesticide Regulation (DPR) notices her decision to begin a reevaluation of certain pesticide products intended for use in field fumigation and containing the following active ingredients: methyl bromide, 1,3-dichloropropene, chloropicrin, metam-sodium, metam-potassium, dazomet, and sodium tetrathiocarbonate, including the following products:

Product Brand Name, EPA Reg. No.	Active Ingredient
TELONE C-17, EPA Reg. No. 62719-12-ZA	1,3-DICHLOROPROPENE
	CHLOROPICRIN
TELONE C-17 CA, EPA Reg. No. 62719-12-ZB	1,3-DICHLOROPROPENE
	CHLOROPICRIN
TELONE II, EPA Reg. No. 62719-32-ZA	1,3-DICHLOROPROPENE
TELONE II CA, EPA Reg. No. 62719-32-ZB	1,3-DICHLOROPROPENE
TELONE C-35, EPA Reg. No. 62719-302-AA	1,3-DICHLOROPROPENE
	CHLOROPICRIN
TELONE C-35 CA, EPA Reg. No. 62719-302-ZA	1,3-DICHLOROPROPENE
	CHLOROPICRIN
TELONE EC, EPA Reg. No. 62719-321-AA	1,3-DICHLOROPROPENE
INLINE, EPA Reg. No. 62719-348-AA	1,3-DICHLOROPROPENE
	CHLOROPICRIN

DPR is required to investigate all reported pesticide episodes and information received indicating that a pesticide may have caused, or is likely to cause, a significant adverse impact. If the Director finds from the investigation that a significant adverse effect has occurred or is likely to occur; the pesticide involved shall be reevaluated. Therefore, certain field fumigants, including the above products, are being reevaluated.



### BASIS FOR REEVALUATION

Pesticide volatile organic compounds (VOCs) contribute to the formation of ground-level ozone, which is harmful to human health and vegetation when present in high concentrations. The federal Clean Air Act requires each state to submit a state implementation plan (SIP) for achieving and maintaining federal ambient air quality standards, including the ozone standard. Fumigants are among the highest pesticide VOC contributors due to both their high levels of use and their high-emission potentials. Fumigants account for more than 50 percent of the pesticide VOC emissions in the San Joaquin Valley nonattainment (NAA) area, 80 percent in the Southeast Desert NAA area, and 90 percent in the Ventura NAA area. Additional data relating to the use of the fumigant products is essential to the formulation of regulatory measures to reduce VOC emissions from fumigant use and mitigate the associated detrimental impact on human health and the environment. Further, it is needed to facilitate meeting the state's obligations under the SIP.

In accordance with the SIP, DPR maintains an inventory of pesticide VOC emissions for the May-October ozone season for specified ozone NAA areas of the State. The SIP specifies certain emission reductions to be achieved, and the reductions are expressed as some percentage of the 1990/1991 base year emissions. For the purposes of the inventory, DPR has historically assumed 100 percent of applied fumigants volatilize to the air. However, field-monitoring data shows that fumigant emissions are less than 100 percent and vary with application method. Therefore, DPR requires measured emission data to quantify actual emissions and thereby improve the accuracy of emission estimates.

Establishing the most accurate VOC emission values for fumigant applications is important for two reasons. First, it is important for DPR's emission inventory to be as accurate as possible because pesticide use/management decisions are based upon the findings presented in the inventory. Second, DPR is currently considering two regulation strategies to achieve pesticide VOC reductions from fumigants in air quality NAA areas. One strategy is to require use of "low-emission" fumigant application methods and/or prohibit certain "high-emission" fumigant application methods. A second strategy is to establish limits on VOC emissions from fumigants within NAA areas. Regulations that incorporate one or both of these strategies will go into effect in 2008.

In May 2007, DPR proposed regulations to reduce smog-producing emissions from fumigant pesticides. The regulations focus on both limiting the total pounds of pesticide emissions and reducing the amount of fumigant emitted from each application. Based on comments received, DPR revised the proposed regulations in October 2007.

Mr. Brian L. Bret, Ph.D.  
January 18, 2008  
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The proposed regulations (as revised in October 2007) would:

- Limit fumigant emissions from May to October in certain NAA areas. In those areas, DPR would develop emission benchmarks and set limits on emissions from fumigant applications by individual growers. Growers could choose to limit emissions in various ways, such as reducing application rates, using lower-emission application methods, or treating less acreage.
- Require reporting of field fumigant application methods in five NAA areas.
- Define specific requirements on how field fumigations must be done, prohibiting some high-emission methods and setting limits on others.
- Set up new statewide licensing and other requirements for companies that do field fumigations.

More information on DPR's proposed regulations (DPR regulation 07-002) is located on DPR's Web site at: <<http://www.cdpr.ca.gov/docs/legbills/rulepkgs.htm#rulepkgs07002>>.

#### REEVALUATION DATA REQUIREMENTS

DPR relies almost exclusively on field measurements to estimate emissions. Additionally, DPR prescribes many of the application procedures and equipment used for the monitoring studies as regulatory requirements. For example, DPR prescribes requirements for maximum application rate, application depth, tarpaulin type, soil moisture, and other critical parameters based on application equipment, procedures, and conditions of the monitoring studies. For purposes of consistency, a "shallow depth" is defined as using tractor shanks to inject the liquid fumigant 6-12 inches below the soil surface. Similarly, a "deep depth" is defined as injecting the liquid fumigant 18-30 inches below the soil surface. A "broadcast" application is an application to a flat field and a "bed" application is an application to a raised portion of the soil where crops will subsequently be placed.

Pursuant to this reevaluation, Dow AgroSciences LLC is required to submit the following:

1. Within **30 days** from the date of this letter, a written response acknowledging receipt of this letter. Your response may include (1) a statement of intent to comply with the data requirements as a sole entity or through the formation of a Task Force; (2) identification of any data that you can submit as outlined in items 3 through 5 and in Attachment A; and, (3) any questions or clarifying information you need to comply with these data requirements.

Mr. Brian L. Bret, Ph.D.

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2. Within **60 days** from the date of this letter, submit ambient or direct flux data that you feel may satisfy the requirements of this reevaluation as listed in items 3 through 5 and in Attachment A. If you submit a study, you do not need to submit a protocol as identified below for that data requirement unless notified by DPR.
3. Within **120 days** from the date of this letter, submit study protocols for ambient or direct flux monitoring studies, using products containing the active ingredient **1,3-dichloropropene** following prescribed field fumigation application methods as delineated below and in Attachment A. The monitoring studies must be performed in the San Joaquin Valley, Southeast Desert, or Ventura NAA. A final date for submission of the final reports will be established once DPR approves the protocols.

Each study protocol shall include the following:

- a. Identify the specific **1,3-dichloropropene** product that you intend to use/monitor for with each application method. When choosing a product, consideration should be given to the product most commonly used with each specified application method.
  - b. Consult with DPR prior to selection of an NAA (San Joaquin Valley, Southeast Desert, or Ventura). NAA selection should best represent each application method.
  - c. Monitoring must include any VOC breakdown products or inert ingredients that account for at least five percent of the amount applied.
  - d. Monitoring during the flux studies shall continue until one of the following occurs:
    - i. When all of the samples, for a full 24 hours of measurements, have no detectable concentrations as specified in the approved protocol; or,
    - ii. When the three-day rolling average daily flux is less than one percent of the applied amount and the rolling three-day average shows a declining pattern over three days; or,
    - iii. A period of 14 consecutive days.
4. Within **150 days** from the date of this letter, submit a study protocol for an ambient or direct flux monitoring study, using a product containing the active ingredient **1,3-dichloropropene** (only) performed in all three NAAs (San Joaquin Valley, Southeast Desert, and Ventura). A final date for submission of the final report will be established once DPR approves the protocol.

Your study protocol shall include the following:

- a. Identify the specific **1,3-dichloropropene** product that you intend to use/monitor.
- b. From the list below, identify the application method (only one required) that you will be using. The same application method must be used in all three NAAs.

Mr. Brian L. Bret, Ph.D.

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- (1) Nontarpaulin/Shallow/Broadcast or Bed
  - (2) Tarpaulin/Shallow/Broadcast or Bed
  - (3) Nontarpaulin/Shallow/Broadcast or Bed/Three Post-Fumigation Water Treatments
  - (4) Tarpaulin/Shallow/Bed/Three Post-Fumigation Water Treatments
  - (5) Nontarpaulin/Deep/Broadcast or Bed
  - (6) Tarpaulin/Deep/Broadcast or Bed
  - (7) Chemigation (Drip System)/Tarpaulin
- c. Monitoring must include any VOC breakdown products or inert ingredients that account for at least five percent of the amount applied.
- d. Monitoring during the flux studies shall continue until one of the following occurs:
- i. When all of the samples, for a full 24 hours of measurements, have no detectable concentrations as specified in the approved protocol; or,
  - ii. When the three-day rolling average daily flux is less than one percent of the applied amount and the rolling three-day average shows a declining pattern over three days; or,
  - iii. A period of 14 consecutive days.
5. Within **150 days** from the date of this letter, submit a study protocol an for ambient or direct flux monitoring study, containing the active ingredients **1,3-dichloropropene + chloropicrin**, performed in the San Joaquin Valley, Southeast Desert, or Ventura NAA, using one application method. A final date for submission of the final report will be established once DPR approves the protocol.

Your study protocol shall include the following:

- a. Identify the specific **1,3-dichloropropene + chloropicrin** product that you intend to use/monitor. The product selected should be close to a 50/50 concentration.
- b. Identify the application method you will be using with the product combination and the NAA in which you will be conducting the study. To allow comparison with single chemical studies done with the same application method, the combination study must be conducted in the same NAA. Choose one of the following application methods:

**1,3-dichloropropene + chloropicrin**

Nontarpaulin/Shallow/Broadcast or Bed

Tarpaulin/Shallow/Broadcast or Bed

Nontarpaulin/Shallow/Broadcast or Bed/Three Post-Fumigation

Water Treatments

Tarpaulin/Shallow/Bed/Three Post-Fumigation Water Treatments  
Nontarpaulin/Deep/Broadcast or Bed  
Tarpaulin/Deep/Broadcast or Bed  
Chemigation (Drip System)/Tarpaulin

- c. Monitoring must include any VOC breakdown products or inert ingredients that account for at least five percent of the amount applied.
- d. Monitoring during the flux studies shall continue until one of the following occurs:
  - i. When all of the samples, for a full 24 hours of measurements, have no detectable concentrations as specified in the approved protocol; or,
  - ii. When the three-day rolling average daily flux is less than one percent of the applied amount and the rolling three-day average shows a declining pattern over three days; or,
  - iii. A period of 14 consecutive days.

Based on the results of the above data, additional studies may be required. All studies and protocols submitted to DPR must be formatted in accordance with CA Notice 2006-06, Formatting Requirements for Scientific Data Submitted to the Department of Pesticide Regulation (Revised 08/10/2006). This Notice is located on DPR's Web site at: <http://www.cdpr.ca.gov/docs/registration/canot/2006/ca2006-06.pdf>.

#### GENERAL INFORMATION

Please note that pursuant to Food and Agricultural Code section 12811.5, as revised January 1, 2006, any registrant that does not submit its own data to fulfill a data requirement imposed by the Director to maintain the registration of its pesticide product, and instead relies upon data owned by another company, should be aware that they may have certain obligations, in specifically defined situations, to the owner of the data. For further information, please refer to AB 1011 – Consolidated Registration Resources located on DPR's Web site at: <http://www.cdpr.ca.gov/docs/legbills/ab1011/resource.htm>. Failure of a registrant to comply with the requirements of this reevaluation, may subject that registrant's product(s) to cancellation pursuant to Food and Agricultural Code section 12825(h).

#### CONTACTS

If you have any questions regarding the reevaluation process, please contact Ms. Denise Webster by e-mail at [dwebster@cdpr.ca.gov](mailto:dwebster@cdpr.ca.gov) or by telephone at (916) 324-3522. If you have any questions regarding the required study protocols, please contact Mr. Randy Segawa by e-mail at [rsegawa@cdpr.ca.gov](mailto:rsegawa@cdpr.ca.gov) or by telephone at (916) 324-4137.

Mr. Brian L. Bret, Ph.D.  
January 18, 2008  
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Sincerely,

*Original signed by*

Charles M. Andrews, Chief  
Pesticide Registration Branch  
(916) 445-4377

Attachment

cc: Mr. Randy Segawa, DPR, Environmental Program Manager I (w/Attachments)  
Ms. Denise Webster, DPR, Program Specialist (w/Attachments)  
Ms. Victoria Hornbaker, DPR, Environmental Specialist (w/Attachments)

Attachment A. 1,3-Dichloropropene Application Methods for  
Study Protocol Development

Products containing only 1,3-Dichloropropene as the active ingredient:

<b>Application Method</b>	<b>Either San Joaquin Valley, Southeast Desert, or Ventura NAA</b>
1. Nontarpaulin/Shallow/Broadcast or Bed	<b>Required</b>
2. Tarpaulin/Shallow/Broadcast or Bed	<b>Required</b>
3. Nontarpaulin/Shallow/Broadcast or Bed/ Three Post-Fumigation Water Treatments	<b>Required</b>
4. Tarpaulin/Shallow/Bed/Three Post-Fumigation Water Treatments	<b>Required</b>
5. Nontarpaulin/Deep/Broadcast or Bed	<b>NR</b>
6. Tarpaulin/Deep/Broadcast or Bed	<b>Required</b>
7. Chemigation (Drip System)/Tarpaulin	<b>Required</b>

**NR** = Not a required study.

Note: Rotondardo (2004) drip study location was not stated in the report and Beard (1996) studies were all in AZ or WA.



# Department of Pesticide Regulation



Mary-Ann Warmerdam  
Director

Arnold Schwarzenegger  
Governor

January 18, 2008

Ms. Miriam Carr  
Entek Corporation  
P.O. Box 30, S300/427  
Newark, Delaware 19714-0030

Dear Ms. Carr:

Pursuant to Article 8, Subchapter 1, Chapter 2, Division 6 of Title 3 of the California Code of Regulations, the Director of the Department of Pesticide Regulation (DPR) notices her decision to begin a reevaluation of certain pesticide products intended for use in field fumigation and containing the following active ingredients: methyl bromide, 1,3-dichloropropene, chloropicrin, metam-sodium, metam-potassium, dazomet, and sodium tetrathiocarbonate, including the following products:

Product Brand Name, EPA Reg. No.	Active Ingredient
ENZONE, EPA Reg. No. 68891-2-AA	SODIUM TETRATHIOCARBONATE
ETK-1101, EPA Reg. No. 68891-9-AA	SODIUM TETRATHIOCARBONATE

DPR is required to investigate all reported pesticide episodes and information received indicating that a pesticide may have caused, or is likely to cause, a significant adverse impact. If the Director finds from the investigation that a significant adverse effect has occurred or is likely to occur; the pesticide involved shall be reevaluated. Therefore, certain field fumigants, including the above products, are being reevaluated.

### BASIS FOR REEVALUATION

Pesticide volatile organic compounds (VOCs) contribute to the formation of ground-level ozone, which is harmful to human health and vegetation when present in high concentrations. The federal Clear Air Act requires each state to submit a state implementation plan (SIP) for achieving and maintaining federal ambient air quality standards, including the ozone standard. Fumigants are among the highest pesticide VOC contributors due to both their high levels of use and their high-emission potentials. Fumigants account for more than 50 percent of the pesticide VOC emissions in the San Joaquin Valley nonattainment (NAA) area, 80 percent in the Southeast Desert NAA area, and 90 percent in the Ventura NAA area. Additional data relating to the use of the fumigant products is essential to the formulation of regulatory measures to reduce VOC emissions from fumigant use and mitigate the associated detrimental impact on human

health and the environment. Further, it is needed to facilitate meeting the state's obligations under the SIP.

In accordance with the SIP, DPR maintains an inventory of pesticide VOC emissions for the May-October ozone season for specified ozone NAA areas of the State. The SIP specifies certain emission reductions to be achieved, and the reductions are expressed as some percentage of the 1990/1991 base year emissions. For the purposes of the inventory, DPR has historically assumed 100 percent of applied fumigants volatilize to the air. However, field-monitoring data shows that fumigant emissions are less than 100 percent and vary with application method. Therefore, DPR requires measured emission data to quantify actual emissions and thereby improve the accuracy of emission estimates.

Establishing the most accurate VOC emission values for fumigant applications is important for two reasons. First, it is important for DPR's emission inventory to be as accurate as possible because pesticide use/management decisions are based upon the findings presented in the inventory. Second, DPR is currently considering two regulation strategies to achieve pesticide VOC reductions from fumigants in air quality NAA areas. One strategy is to require use of "low-emission" fumigant application methods and/or prohibit certain "high-emission" fumigant application methods. A second strategy is to establish limits on VOC emissions from fumigants within NAA areas. Regulations that incorporate one or both of these strategies will go into effect in 2008.

In May 2007, DPR proposed regulations to reduce smog-producing emissions from fumigant pesticides. The regulations focus on both limiting the total pounds of pesticide emissions and reducing the amount of fumigant emitted from each application. Based on comments received, DPR revised the proposed regulations in October 2007.

The proposed regulations (as revised in October 2007) would:

- Limit fumigant emissions from May to October in certain NAA areas. In those areas, DPR would develop emission benchmarks and set limits on emissions from fumigant applications by individual growers. Growers could choose to limit emissions in various ways, such as reducing application rates, using lower-emission application methods, or treating less acreage.
- Require reporting of field fumigant application methods in five NAA areas.
- Define specific requirements on how field fumigations must be done, prohibiting some high-emission methods and setting limits on others.
- Set up new statewide licensing and other requirements for companies that do field fumigations.

More information on DPR's proposed regulations (DPR regulation 07-002) is located on DPR's Web site at: <<http://www.cdpr.ca.gov/docs/legbills/rulepkgs.htm#rulepkgs07002>>.

### REEVALUATION DATA REQUIREMENTS

DPR relies almost exclusively on field measurements to estimate emissions. Additionally, DPR prescribes many of the application procedures and equipment used for the monitoring studies as regulatory requirements. For example, DPR prescribes requirements for maximum application rate, application depth, tarpaulin type, soil moisture, and other critical parameters based on application equipment, procedures, and conditions of the monitoring studies. For purposes of consistency, a "shallow depth" is defined as using tractor shanks to inject the liquid fumigant 6-12 inches below the soil surface. Similarly, a "deep depth" is defined as injecting the liquid fumigant 18-30 inches below the soil surface. A "broadcast" application is an application to a flat field and a "bed" application is an application to a raised portion of the soil where crops will subsequently be placed.

Pursuant to this reevaluation, Entek Corporation is required to submit the following:

1. Within **30 days** from the date of this letter, a written response acknowledging receipt of this letter. Your response may include (1) a statement of intent to comply with the data requirements as a sole entity or through the formation of a Task Force; (2) identification of any data that you can submit as outlined in items 3, 4 and in Attachment A; and, (3) any questions or clarifying information you need to comply with these data requirements.
2. Within **60 days** from the date of this letter, submit ambient or direct flux data that you feel may satisfy the requirements of this reevaluation as listed in items 3, 4 and in Attachment A. If you submit a study, you do not need to submit a protocol as identified below for that data requirement unless notified by DPR.
3. Within **120 days** from the date of this letter, submit study protocols for ambient or direct flux monitoring studies, using products containing the active ingredient **sodium tetrathiocarbonate** for their breakdown products (i.e., carbon disulfide) following prescribed field fumigation application methods as delineated below and in Attachment A. The monitoring studies must be performed in the San Joaquin Valley, Southeast Desert, or Ventura NAA. A final date for submission of the final reports will be established once DPR approves the protocols.

Each study protocol shall include the following:

- a. Identify the specific **sodium tetrathiocarbonate** product that you intend to use/monitor for with each application method. When choosing a product, consideration should be given to the product most commonly used with each specified application method.
  - b. Consult with DPR prior to selection of an NAA (San Joaquin Valley, Southeast Desert, or Ventura). NAA selection should best represent each application method.
  - c. Monitoring must include any VOC breakdown products or inert ingredients that account for at least five percent of the amount applied.
  - d. Monitoring during the flux studies shall continue until one of the following occurs:
    - i. When all of the samples, for a full 24 hours of measurements, have no detectable concentrations as specified in the approved protocol; or,
    - ii. When the three-day rolling average daily flux is less than one percent of the applied amount and the rolling three-day average shows a declining pattern over three days; or,
    - iii. A period of 14 consecutive days.
4. Within **150 days** from the date of this letter, submit a study protocol for an ambient or direct flux monitoring study, using a product containing the active ingredient **sodium tetrathiocarbonate** performed in all three NAAs (San Joaquin Valley, Southeast Desert, and Ventura). A final date for submission of the final report will be established once DPR approves the protocol.

Your study protocol shall include the following:

- a. Identify the specific **sodium tetrathiocarbonate** product that you intend to use/monitor.
- b. From the list below, identify the application method (only one required) that you will be using. The same application method must be used in all three NAAs.
  - (1) Chemigation (Drip System)
  - (2) Chemigation (Mini-Sprinkler)
  - (3) Chemigation (Flood/Furrow)
- c. Monitoring must include any VOC breakdown products or inert ingredients that account for at least five percent of the amount applied.
- d. Monitoring during the flux studies shall continue until one of the following occurs:
  - i. When all of the samples, for a full 24 hours of measurements, have no detectable concentrations as specified in the approved protocol; or,

Ms. Miriam Carr  
January 18, 2008  
Page 5

- ii. When the three-day rolling average daily flux is less than one percent of the applied amount and the rolling three-day average shows a declining pattern over three days; or,
- iii. A period of 14 consecutive days.

Based on the results of the above data, additional studies may be required. All studies and protocols submitted to DPR must be formatted in accordance with CA Notice 2006-06, Formatting Requirements for Scientific Data Submitted to the Department of Pesticide Regulation (Revised 08/10/2006). This Notice is located on DPR's Web site at: <<http://www.cdpr.ca.gov/docs/registration/canot/2006/ca2006-06.pdf>>.

#### GENERAL INFORMATION

Please note that pursuant to Food and Agricultural Code section 12811.5, as revised January 1, 2006, any registrant that does not submit its own data to fulfill a data requirement imposed by the Director to maintain the registration of its pesticide product, and instead relies upon data owned by another company, should be aware that they may have certain obligations, in specifically defined situations, to the owner of the data. For further information, please refer to AB 1011 – Consolidated Registration Resources located on DPR's Web site at: <<http://www.cdpr.ca.gov/docs/legbills/ab1011/resource.htm>>.

Failure of a registrant to comply with the requirements of this reevaluation, may subject that registrant's product(s) to cancellation pursuant to Food and Agricultural Code section 12825(h).

#### CONTACTS

If you have any questions regarding the reevaluation process, please contact Ms. Denise Webster by e-mail at <[dwebster@cdpr.ca.gov](mailto:dwebster@cdpr.ca.gov)> or by telephone at (916) 324-3522. If you have any questions regarding the required study protocols, please contact Mr. Randy Segawa by e-mail at <[rsegawa@cdpr.ca.gov](mailto:rsegawa@cdpr.ca.gov)> or by telephone at (916) 324-4137.

Sincerely,

*Original signed by*

Charles M. Andrews, Chief  
Pesticide Registration Branch  
(916) 445-4377

Attachment

Ms. Miriam Carr  
January 18, 2008  
Page 6

cc: Mr. Randy Segawa, DPR, Environmental Program Manager I (w/Attachment)  
Ms. Denise Webster, DPR, Program Specialist (w/Attachment)  
Ms. Victoria Hornbaker, DPR, Environmental Specialist (w/Attachment)

Attachment A. Sodium Tetrathiocarbonate  
(Fumigant action and VOC emissions due to the hydrolysis product carbon disulfide)  
Application Methods for Study Protocol Development

Products containing Sodium Tetrathiocarbonate as the active ingredient:

<b>Application Method</b>	<b>Either San Joaquin Valley, Southeast Desert, or Ventura NAA</b>
1. Chemigation (Drip System)	<b>Required</b>
2. Chemigation (Mini-Sprinkler)	<b>Required</b>
3. Chemigation (Flood/Furrow)	<b>Required</b>

Note: 1996 flux study was conducted in Pomona, CA (vol 51031-093).



# Department of Pesticide Regulation



Mary-Ann Warmerdam  
Director

Arnold Schwarzenegger  
Governor

January 18, 2008

Ms. Nancy Mc Intyre  
Great Lakes Chemical Corp.  
P.O. Box 2200  
West Lafayette, Indiana 47996-2200

Dear Ms. Mc Intyre:

Pursuant to Article 8, Subchapter 1, Chapter 2, Division 6 of Title 3 of the California Code of Regulations, the Director of the Department of Pesticide Regulation (DPR) notices her decision to begin a reevaluation of certain pesticide products intended for use in field fumigation and containing the following active ingredients: methyl bromide, 1,3-dichloropropene, chloropicrin, metam-sodium, metam-potassium, dazomet, and sodium tetrathiocarbonate, including the following products:

Product Brand Name, EPA Reg. No.	Active Ingredient
CHLOR-O-PIC, EPA Reg. No. 5785-17-AA	CHLOROPICRIN
TERR-O-GAS 98, EPA Reg. No. 5785-22-AA	CHLOROPICRIN
	METHYL BROMIDE
TERR-O-GAS 67, EPA Reg. No. 5785-24-AA	CHLOROPICRIN
	METHYL BROMIDE
TERR-O-GAS 57, EPA Reg. No. 5785-28-AA	CHLOROPICRIN
	METHYL BROMIDE
TERR-O-GAS 75, EPA Reg. No. 5785-40-AA	CHLOROPICRIN
	METHYL BROMIDE
BROM-O-GAS 2%, EPA Reg. No. 5785-42-ZA	METHYL BROMIDE
TERR-O-GAS 80, EPA Reg. No. 5785-47-AA	CHLOROPICRIN
	METHYL BROMIDE

DPR is required to investigate all reported pesticide episodes and information received indicating that a pesticide may have caused, or is likely to cause, a significant adverse impact. If the Director finds from the investigation that a significant adverse effect has occurred or is likely to occur; the pesticide involved shall be reevaluated. Therefore, certain field fumigants, including the above products, are being reevaluated.



### BASIS FOR REEVALUATION

Pesticide volatile organic compounds (VOCs) contribute to the formation of ground-level ozone, which is harmful to human health and vegetation when present in high concentrations. The federal Clean Air Act requires each state to submit a state implementation plan (SIP) for achieving and maintaining federal ambient air quality standards, including the ozone standard. Fumigants are among the highest pesticide VOC contributors due to both their high levels of use and their high-emission potentials. Fumigants account for more than 50 percent of the pesticide VOC emissions in the San Joaquin Valley nonattainment (NAA) area, 80 percent in the Southeast Desert NAA area, and 90 percent in the Ventura NAA area. Additional data relating to the use of the fumigant products is essential to the formulation of regulatory measures to reduce VOC emissions from fumigant use and mitigate the associated detrimental impact on human health and the environment. Further, it is needed to facilitate meeting the state's obligations under the SIP.

In accordance with the SIP, DPR maintains an inventory of pesticide VOC emissions for the May-October ozone season for specified ozone NAA areas of the State. The SIP specifies certain emission reductions to be achieved, and the reductions are expressed as some percentage of the 1990/1991 base year emissions. For the purposes of the inventory, DPR has historically assumed 100 percent of applied fumigants volatilize to the air. However, field-monitoring data shows that fumigant emissions are less than 100 percent and vary with application method. Therefore, DPR requires measured emission data to quantify actual emissions and thereby improve the accuracy of emission estimates.

Establishing the most accurate VOC emission values for fumigant applications is important for two reasons. First, it is important for DPR's emission inventory to be as accurate as possible because pesticide use/management decisions are based upon the findings presented in the inventory. Second, DPR is currently considering two regulation strategies to achieve pesticide VOC reductions from fumigants in air quality NAA areas. One strategy is to require use of "low-emission" fumigant application methods and/or prohibit certain "high-emission" fumigant application methods. A second strategy is to establish limits on VOC emissions from fumigants within NAA areas. Regulations that incorporate one or both of these strategies will go into effect in 2008.

In May 2007, DPR proposed regulations to reduce smog-producing emissions from fumigant pesticides. The regulations focus on both limiting the total pounds of pesticide emissions and reducing the amount of fumigant emitted from each application. Based on comments received, DPR revised the proposed regulations in October 2007.

The proposed regulations (as revised in October 2007) would:

- Limit fumigant emissions from May to October in certain NAA areas. In those areas, DPR would develop emission benchmarks and set limits on emissions from fumigant applications by individual growers. Growers could choose to limit emissions in various ways, such as reducing application rates, using lower-emission application methods, or treating less acreage.
- Require reporting of field fumigant application methods in five NAA areas.
- Define specific requirements on how field fumigations must be done, prohibiting some high-emission methods and setting limits on others.
- Set up new statewide licensing and other requirements for companies that do field fumigations.

More information on DPR's proposed regulations (DPR regulation 07-002) is located on DPR's Web site at: <<http://www.cdpr.ca.gov/docs/legbills/rulepkgs.htm#rulepkgs07002>>.

#### REEVALUATION DATA REQUIREMENTS

DPR relies almost exclusively on field measurements to estimate emissions. Additionally, DPR prescribes many of the application procedures and equipment used for the monitoring studies as regulatory requirements. For example, DPR prescribes requirements for maximum application rate, application depth, tarpaulin type, soil moisture, and other critical parameters based on application equipment, procedures, and conditions of the monitoring studies. For purposes of consistency, a "shallow depth" is defined as using tractor shanks to inject the liquid fumigant 6-12 inches below the soil surface. Similarly, a "deep depth" is defined as injecting the liquid fumigant 18-30 inches below the soil surface. A "broadcast" application is an application to a flat field and a "bed" application is an application to a raised portion of the soil where crops will subsequently be placed.

Pursuant to this reevaluation, Great Lakes Chemical Corp. is required to submit the following:

1. Within **30 days** from the date of this letter, a written response acknowledging receipt of this letter. Your response may include (1) a statement of intent to comply with the data requirements as a sole entity or through the formation of a Task Force; (2) identification of any data that you can submit as outlined in items 3 through 5 and in Attachment A; and, (3) any questions or clarifying information you need to comply with these data requirements.
2. Within **60 days** from the date of this letter, submit ambient or direct flux data that you feel may satisfy the requirements of this reevaluation as listed in items 3 through 5 and in

Attachment A. If you submit a study, you do not need to submit a protocol as identified below for that data requirement unless notified by DPR.

3. Within **120 days** from the date of this letter, submit study protocols for ambient or direct flux monitoring studies, using products containing the active ingredient **chloropicrin** following prescribed field fumigation application methods as delineated below and in Attachment A. The monitoring studies must be performed in the San Joaquin Valley, Southeast Desert, or Ventura NAA. A final date for submission of the final reports will be established once DPR approves the protocols.

Each study protocol shall include the following:

- a. Identify the specific **chloropicrin** product that you intend to use/monitor for with each application method. When choosing a product, consideration should be given to the product most commonly used with each specified application method.
  - b. Consult with DPR prior to selection of an NAA (San Joaquin Valley, Southeast Desert, or Ventura). NAA selection should best represent each application method.
  - c. Monitoring must include any VOC breakdown products or inert ingredients that account for at least five percent of the amount applied.
  - d. Monitoring during the flux studies shall continue until one of the following occurs:
    - i. When all of the samples, for a full 24 hours of measurements, have no detectable concentrations as specified in the approved protocol; or,
    - ii. When the three-day rolling average daily flux is less than one percent of the applied amount and the rolling three-day average shows a declining pattern over three days; or,
    - iii. A period of 14 consecutive days.
4. Within **150 days** from the date of this letter, submit study protocols for ambient or direct flux monitoring studies, using a product containing the active ingredient **methyl bromide** (only) and a product containing the active ingredient **chloropicrin** (only) performed in all three NAAs (San Joaquin Valley, Southeast Desert, and Ventura). A final date for submission of the final reports will be established once DPR approves the protocols.

Each study protocol shall include the following:

- a. Identify the specific **methyl bromide** or **chloropicrin** product that you intend to use/monitor.
- b. From the list below, identify the application method (only one required) that you will be using with each product. The same application method must be used in all three NAAs.

**methyl bromide**

- (1) Nontarpaulin/Shallow/Bed
- (2) Nontarpaulin/Deep/Broadcast
- (3) Tarpaulin/Shallow/Broadcast
- (4) Tarpaulin/Shallow/Bed
- (5) Tarpaulin/Deep/Broadcast
- (6) Drip System - (Hot Gas)

**chloropicrin**

- (1) Nontarpaulin/Shallow/Broadcast or Bed
- (2) Tarpaulin/Shallow/Broadcast or Bed
- (3) Nontarpaulin/Shallow/Broadcast or Bed/Three Post-Fumigation Water Treatments
- (4) Tarpaulin/Shallow/Bed/Three Post-Fumigation Water Treatments
- (5) Nontarpaulin/Deep/Broadcast or Bed
- (6) Tarpaulin/Deep/Broadcast or Bed
- (7) Chemigation (Drip System)/Tarpaulin

- c. Monitoring must include any VOC breakdown products or inert ingredients that account for at least five percent of the amount applied.
  - d. Monitoring during the flux studies shall continue until one of the following occurs:
    - i. When all of the samples, for a full 24 hours of measurements, have no detectable concentrations as specified in the approved protocol; or,
    - ii. When the three-day rolling average daily flux is less than one percent of the applied amount and the rolling three-day average shows a declining pattern over three days; or,
    - iii. A period of 14 consecutive days.
5. Within **150 days** from the date of this letter, submit a study protocol for an ambient or direct flux monitoring study, containing the combined active ingredients **methyl bromide + chloropicrin**, performed in the San Joaquin Valley, Southeast Desert, or Ventura NAA, using one application method. A final date for submission of the final report will be established once DPR approves the protocol.

Your study protocol shall include the following:

- a. Identify the specific **methyl bromide + chloropicrin** product that you intend to use/monitor. The product selected should be close to a 50/50 concentration.
- b. Identify the application method you will be using with the product combination and the NAA in which you will be conducting the study. To allow comparison with single chemical studies done with the same application method, the

combination study must be conducted in the same NAA. Choose one of the following application methods listed below:

**methyl bromide + chloropicrin**

Nontarpaulin/Shallow/Bed  
Nontarpaulin/Deep/Broadcast  
Tarpaulin/Shallow/Broadcast  
Tarpaulin/Shallow/Bed  
Tarpaulin/Deep/Broadcast  
Drip System - (Hot Gas)

- c. Monitoring must include any VOC breakdown products or inert ingredients that account for at least five percent of the amount applied.
- d. Monitoring during the flux studies shall continue until one of the following occurs:
  - i. When all of the samples, for a full 24 hours of measurements, have no detectable concentrations as specified in the approved protocol; or,
  - ii. When the three-day rolling average daily flux is less than one percent of the applied amount and the rolling three-day average shows a declining pattern over three days; or,
  - iii. A period of 14 consecutive days.

Based on the results of the above data, additional studies may be required. All studies and protocols submitted to DPR must be formatted in accordance with CA Notice 2006-06, Formatting Requirements for Scientific Data Submitted to the Department of Pesticide Regulation (Revised 08/10/2006). This Notice is located on DPR's Web site at: <<http://www.cdpr.ca.gov/docs/registration/canot/2006/ca2006-06.pdf>>.

**GENERAL INFORMATION**

Please note that pursuant to Food and Agricultural Code section 12811.5, as revised January 1, 2006, any registrant that does not submit its own data to fulfill a data requirement imposed by the Director to maintain the registration of its pesticide product, and instead relies upon data owned by another company, should be aware that they may have certain obligations, in specifically defined situations, to the owner of the data. For further information, please refer to AB 1011 – Consolidated Registration Resources located on DPR's Web site at: <<http://www.cdpr.ca.gov/docs/legbills/ab1011/resource.htm>>. Failure of a registrant to comply with the requirements of this reevaluation, may subject that registrant's product(s) to cancellation pursuant to Food and Agricultural Code section 12825(h).

Ms. Nancy Mc Intyre  
January 18, 2008  
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### CONTACTS

If you have any questions regarding the reevaluation process, please contact Ms. Denise Webster by e-mail at <dwebster@cdpr.ca.gov> or by telephone at (916) 324-3522. If you have any questions regarding the required study protocols, please contact Mr. Randy Segawa by e-mail at <rsegawa@cdpr.ca.gov> or by telephone at (916) 324-4137.

Sincerely,

*Original signed by*

Charles M. Andrews, Chief  
Pesticide Registration Branch  
(916) 445-4377

Attachment

cc: Mr. Randy Segawa, DPR, Environmental Program Manager I (w/Attachments)  
Ms. Denise Webster, DPR, Program Specialist (w/Attachments)  
Ms. Victoria Hornbaker, DPR, Environmental Specialist (w/Attachments)

Attachment A. Chloropicrin Application Methods for Study Protocol Development

Products containing only Chloropicrin as the active ingredient:

<b>Application Method</b>	<b>Either San Joaquin Valley, Southeast Desert, or Ventura NAA</b>
1. Nontarpaulin/Shallow/Broadcast or Bed	<b>Required</b>
2. Tarpaulin/Shallow/Broadcast or Bed	<b>Required</b>
3. Nontarpaulin/Shallow/Broadcast or Bed/ Three Post-Fumigation Water Treatments	<b>Required</b>
4. Tarpaulin/Shallow/Bed/Three Post-Fumigation Water Treatments	<b>Required</b>
5. Nontarpaulin/Deep/Broadcast or Bed	<b>Required</b>
6. Tarpaulin/Deep/Broadcast or Bed	<b>Required</b>
7. Chemigation (Drip System)/Tarpaulin	<b>Required</b>



# Department of Pesticide Regulation



Mary-Ann Warmerdam  
Director

Arnold Schwarzenegger  
Governor

January 18, 2008

Mr. Tom Duafala  
Shadow Mountain Products Corp.  
P.O. Box 1327  
Hollister, California 95024

Dear Mr. Duafala:

Pursuant to Article 8, Subchapter 1, Chapter 2, Division 6 of Title 3 of the California Code of Regulations, the Director of the Department of Pesticide Regulation (DPR) notices her decision to begin a reevaluation of certain pesticide products intended for use in field fumigation and containing the following active ingredients: methyl bromide, 1,3-dichloropropene, chloropicrin, metam-sodium, metam-potassium, dazomet, and sodium tetrathiocarbonate, including the following products:

Product Brand Name, EPA Reg. No.	Active Ingredient
TRI-CLOR, EPA Reg. No. 58266-2-AA	CHLOROPICRIN
TRICAL METHYL BROMIDE 99.5%, EPA Reg. No. 58266-3-AA	METHYL BROMIDE
TRI-CLOR EC FUMIGANT, EPA Reg. No. 58266-5-AA	CHLOROPICRIN

DPR is required to investigate all reported pesticide episodes and information received indicating that a pesticide may have caused, or is likely to cause, a significant adverse impact. If the Director finds from the investigation that a significant adverse effect has occurred or is likely to occur; the pesticide involved shall be reevaluated. Therefore, certain field fumigants, including the above products, are being reevaluated.

### BASIS FOR REEVALUATION

Pesticide volatile organic compounds (VOCs) contribute to the formation of ground-level ozone, which is harmful to human health and vegetation when present in high concentrations. The federal Clear Air Act requires each state to submit a state implementation plan (SIP) for achieving and maintaining federal ambient air quality standards, including the ozone standard. Fumigants are among the highest pesticide VOC contributors due to both their high levels of use and their high-emission potentials. Fumigants account for more than 50 percent of the pesticide VOC emissions in the San Joaquin Valley nonattainment (NAA) area, 80 percent in the Southeast Desert NAA area, and 90 percent in the Ventura NAA area. Additional data relating to the use of the fumigant products is essential to the formulation of regulatory measures to reduce



VOC emissions from fumigant use and mitigate the associated detrimental impact on human health and the environment. Further, it is needed to facilitate meeting the state's obligations under the SIP.

In accordance with the SIP, DPR maintains an inventory of pesticide VOC emissions for the May-October ozone season for specified ozone NAA areas of the State. The SIP specifies certain emission reductions to be achieved, and the reductions are expressed as some percentage of the 1990/1991 base year emissions. For the purposes of the inventory, DPR has historically assumed 100 percent of applied fumigants volatilize to the air. However, field-monitoring data shows that fumigant emissions are less than 100 percent and vary with application method. Therefore, DPR requires measured emission data to quantify actual emissions and thereby improve the accuracy of emission estimates.

Establishing the most accurate VOC emission values for fumigant applications is important for two reasons. First, it is important for DPR's emission inventory to be as accurate as possible because pesticide use/management decisions are based upon the findings presented in the inventory. Second, DPR is currently considering two regulation strategies to achieve pesticide VOC reductions from fumigants in air quality NAA areas. One strategy is to require use of "low-emission" fumigant application methods and/or prohibit certain "high-emission" fumigant application methods. A second strategy is to establish limits on VOC emissions from fumigants within NAA areas. Regulations that incorporate one or both of these strategies will go into effect in 2008.

In May 2007, DPR proposed regulations to reduce smog-producing emissions from fumigant pesticides. The regulations focus on both limiting the total pounds of pesticide emissions and reducing the amount of fumigant emitted from each application. Based on comments received, DPR revised the proposed regulations in October 2007.

The proposed regulations (as revised in October 2007) would:

- Limit fumigant emissions from May to October in certain NAA areas. In those areas, DPR would develop emission benchmarks and set limits on emissions from fumigant applications by individual growers. Growers could choose to limit emissions in various ways, such as reducing application rates, using lower-emission application methods, or treating less acreage.
- Require reporting of field fumigant application methods in five NAA areas.
- Define specific requirements on how field fumigations must be done, prohibiting some high-emission methods and setting limits on others.
- Set up new statewide licensing and other requirements for companies that do field fumigations.

More information on DPR's proposed regulations (DPR regulation 07-002) is located on DPR's Web site at: <<http://www.cdpr.ca.gov/docs/legbills/rulepkgs.htm#rulepkgs07002>>.

### REEVALUATION DATA REQUIREMENTS

DPR relies almost exclusively on field measurements to estimate emissions. Additionally, DPR prescribes many of the application procedures and equipment used for the monitoring studies as regulatory requirements. For example, DPR prescribes requirements for maximum application rate, application depth, tarpaulin type, soil moisture, and other critical parameters based on application equipment, procedures, and conditions of the monitoring studies. For purposes of consistency, a "shallow depth" is defined as using tractor shanks to inject the liquid fumigant 6-12 inches below the soil surface. Similarly, a "deep depth" is defined as injecting the liquid fumigant 18-30 inches below the soil surface. A "broadcast" application is an application to a flat field and a "bed" application is an application to a raised portion of the soil where crops will subsequently be placed.

Pursuant to this reevaluation, Shadow Mountain Products Corp. is required to submit the following:

1. Within **30 days** from the date of this letter, a written response acknowledging receipt of this letter. Your response may include (1) a statement of intent to comply with the data requirements as a sole entity or through the formation of a Task Force; (2) identification of any data that you can submit as outlined in items 3, 4 and in Attachment A; and, (3) any questions or clarifying information you need to comply with these data requirements.
2. Within **60 days** from the date of this letter, submit ambient or direct flux data that you feel may satisfy the requirements of this reevaluation as listed in items 3, 4 and in Attachment A. If you submit a study, you do not need to submit a protocol as identified below for that data requirement unless notified by DPR.
3. Within **120 days** from the date of this letter, submit study protocols for ambient or direct flux monitoring studies, using products containing the active ingredient **chloropicrin** following prescribed field fumigation application methods as delineated below and in Attachment A. The monitoring studies must be performed in the San Joaquin Valley, Southeast Desert, or Ventura NAA. A final date for submission of the final reports will be established once DPR approves the protocols.

Each study protocol shall include the following:

- a. Identify the specific **chloropicrin** product that you intend to use/monitor for with each application method. When choosing a product, consideration should be given to the product most commonly used with each specified application method.

- b. Consult with DPR prior to selection of an NAA (San Joaquin Valley, Southeast Desert, or Ventura). NAA selection should best represent each application method.
  - c. Monitoring must include any VOC breakdown products or inert ingredients that account for at least five percent of the amount applied.
  - d. Monitoring during the flux studies shall continue until one of the following occurs:
    - i. When all of the samples, for a full 24 hours of measurements, have no detectable concentrations as specified in the approved protocol; or,
    - ii. When the three-day rolling average daily flux is less than one percent of the applied amount and the rolling three-day average shows a declining pattern over three days; or,
    - iii. A period of 14 consecutive days.
4. Within **150 days** from the date of this letter, submit study protocols for ambient or direct flux monitoring studies, using a product containing the active ingredient **methyl bromide** (only) and a product containing the active ingredient **chloropicrin** (only) using one application method performed in all three NAAs (San Joaquin Valley, Southeast Desert, and Ventura). A final date for submission of the final reports will be established once DPR approves the protocols.

Each study protocol shall include the following:

- a. Identify the specific **methyl bromide** or **chloropicrin** product that you intend to use/monitor.
- b. From the list below, identify the application method that you will be using with each product. The same application method must be used in all three NAAs.

**methyl bromide**

- (1) Nontarpaulin/Shallow/Bed
- (2) Nontarpaulin/Deep/Broadcast
- (3) Tarpaulin/Shallow/Broadcast
- (4) Tarpaulin/Shallow/Bed
- (5) Tarpaulin/Deep/Broadcast
- (6) Drip System - (Hot Gas)

**chloropicrin**

- (1) Nontarpaulin/Shallow/Broadcast or Bed
- (2) Tarpaulin/Shallow/Broadcast or Bed
- (3) Nontarpaulin/Shallow/Broadcast or Bed/Three Post-Fumigation Water Treatments
- (4) Tarpaulin/Shallow/Bed/Three Post-Fumigation Water Treatments

- (5) Nontarpaulin/Deep/Broadcast or Bed
  - (6) Tarpaulin/Deep/Broadcast or Bed
  - (7) Chemigation (Drip System)/Tarpaulin
- c. Monitoring must include any VOC breakdown products or inert ingredients that account for at least five percent of the amount applied.
- d. Monitoring during the flux studies shall continue until one of the following occurs:
- i. When all of the samples, for a full 24 hours of measurements, have no detectable concentrations as specified in the approved protocol; or,
  - ii. When the three-day rolling average daily flux is less than one percent of the applied amount and the rolling three-day average shows a declining pattern over three days; or,
  - iii. A period of 14 consecutive days.

Based on the results of the above data, additional studies may be required. All studies and protocols submitted to DPR must be formatted in accordance with CA Notice 2006-06, Formatting Requirements for Scientific Data Submitted to the Department of Pesticide Regulation (Revised 08/10/2006). This Notice is located on DPR's Web site at: <http://www.cdpr.ca.gov/docs/registration/canot/2006/ca2006-06.pdf>.

#### GENERAL INFORMATION

Please note that pursuant to Food and Agricultural Code section 12811.5, as revised January 1, 2006, any registrant that does not submit its own data to fulfill a data requirement imposed by the Director to maintain the registration of its pesticide product, and instead relies upon data owned by another company, should be aware that they may have certain obligations, in specifically defined situations, to the owner of the data. For further information, please refer to AB 1011 – Consolidated Registration Resources located on DPR's Web site at: <http://www.cdpr.ca.gov/docs/legbills/ab1011/resource.htm>. Failure of a registrant to comply with the requirements of this reevaluation, may subject that registrant's product(s) to cancellation pursuant to Food and Agricultural Code section 12825(h).

#### CONTACTS

If you have any questions regarding the reevaluation process, please contact Ms. Denise Webster by e-mail at [dwebster@cdpr.ca.gov](mailto:dwebster@cdpr.ca.gov) or by telephone at (916) 324-3522. If you have any questions regarding the required study protocols, please contact Mr. Randy Segawa by e-mail at [rsegawa@cdpr.ca.gov](mailto:rsegawa@cdpr.ca.gov) or by telephone at (916) 324-4137.

Mr. Tom Duafala  
January 18, 2008  
Page 6

Sincerely,

*Original signed by*

Charles M. Andrews, Chief  
Pesticide Registration Branch  
(916) 445-4377

Attachment

cc: Mr. Randy Segawa, DPR, Environmental Program Manager I (w/Attachments)  
Ms. Denise Webster, DPR, Program Specialist (w/Attachments)  
Ms. Victoria Hornbaker, DPR, Environmental Specialist (w/Attachments)

Attachment A. Chloropicrin Application Methods for Study Protocol Development

Products containing only Chloropicrin as the active ingredient:

<b>Application Method</b>	<b>Either San Joaquin Valley, Southeast Desert, or Ventura NAA</b>
1. Nontarpaulin/Shallow/Broadcast or Bed	<b>Required</b>
2. Tarpaulin/Shallow/Broadcast or Bed	<b>Required</b>
3. Nontarpaulin/Shallow/Broadcast or Bed/ Three Post-Fumigation Water Treatments	<b>Required</b>
4. Tarpaulin/Shallow/Bed/Three Post-Fumigation Water Treatments	<b>Required</b>
5. Nontarpaulin/Deep/Broadcast or Bed	<b>Required</b>
6. Tarpaulin/Deep/Broadcast or Bed	<b>Required</b>
7. Chemigation (Drip System)/Tarpaulin	<b>Required</b>



# Department of Pesticide Regulation



Mary-Ann Warmerdam  
Director

Arnold Schwarzenegger  
Governor

January 18, 2008

Ms. Mardel Belotinsky  
Soil Chemicals Corporation  
P.O. Box 782  
Hollister, California 95024

Dear Ms. Belotinsky:

Pursuant to Article 8, Subchapter 1, Chapter 2, Division 6 of Title 3 of the California Code of Regulations, the Director of the Department of Pesticide Regulation (DPR) notices her decision to begin a reevaluation of certain pesticide products intended for use in field fumigation and containing the following active ingredients: methyl bromide, 1,3-dichloropropene, chloropicrin, metam-sodium, metam-potassium, dazomet, and sodium tetrathiocarbonate, including the following products:

Product Brand Name, EPA Reg. No.	Active Ingredient
CHLOROPICRIN 100 FUMIGANT, EPA Reg. No. 8536-2-ZA	CHLOROPICRIN
PIC-BROM 33, EPA Reg. No. 8536-5-ZA	CHLOROPICRIN
	METHYL BROMIDE
PIC-BROM 55, EPA Reg. No. 8536-6-ZA	CHLOROPICRIN
	METHYL BROMIDE
PIC-BROM 43, EPA Reg. No. 8536-7-ZA	CHLOROPICRIN
	METHYL BROMIDE
PIC-CLOR-60, EPA Reg. No. 8536-8-AA	1,3-DICHLOROPROPENE
	CHLOROPICRIN
PIC-BROM 50, EPA Reg. No. 8536-9-ZA	CHLOROPICRIN
	METHYL BROMIDE
PIC-BROM 25, EPA Reg. No. 8536-11-ZA	CHLOROPICRIN
	METHYL BROMIDE
METHYL BROMIDE 99.5%, EPA Reg. No. 8536-12-ZA	CHLOROPICRIN
	METHYL BROMIDE
METHYL BROMIDE 98%, EPA Reg. No. 8536-19-ZA	METHYL BROMIDE



Product Brand Name, EPA Reg. No.	Active Ingredient
PIC-BROM 67, EPA Reg. No. 8536-20-ZA	CHLOROPICRIN
	METHYL BROMIDE
PIC-CLOR 15, EPA Reg. No. 8536-21-AA	1,3-DICHLOROPROPENE
	CHLOROPICRIN
PIC-CLOR 30, EPA Reg. No. 8536-22-AA	1,3-DICHLOROPROPENE
	CHLOROPICRIN

DPR is required to investigate all reported pesticide episodes and information received indicating that a pesticide may have caused, or is likely to cause, a significant adverse impact. If the Director finds from the investigation that a significant adverse effect has occurred or is likely to occur; the pesticide involved shall be reevaluated. Therefore, certain field fumigants, including the above products, are being reevaluated.

#### BASIS FOR REEVALUATION

Pesticide volatile organic compounds (VOCs) contribute to the formation of ground-level ozone, which is harmful to human health and vegetation when present in high concentrations. The federal Clear Air Act requires each state to submit a state implementation plan (SIP) for achieving and maintaining federal ambient air quality standards, including the ozone standard. Fumigants are among the highest pesticide VOC contributors due to both their high levels of use and their high-emission potentials. Fumigants account for more than 50 percent of the pesticide VOC emissions in the San Joaquin Valley nonattainment (NAA) area, 80 percent in the Southeast Desert NAA area, and 90 percent in the Ventura NAA area. Additional data relating to the use of the fumigant products is essential to the formulation of regulatory measures to reduce VOC emissions from fumigant use and mitigate the associated detrimental impact on human health and the environment. Further, it is needed to facilitate meeting the state's obligations under the SIP.

In accordance with the SIP, DPR maintains an inventory of pesticide VOC emissions for the May-October ozone season for specified ozone NAA areas of the State. The SIP specifies certain emission reductions to be achieved, and the reductions are expressed as some percentage of the 1990/1991 base year emissions. For the purposes of the inventory, DPR has historically assumed 100 percent of applied fumigants volatilize to the air. However, field-monitoring data shows that fumigant emissions are less than 100 percent and vary with application method. Therefore, DPR requires measured emission data to quantify actual emissions and thereby improve the accuracy of emission estimates.

Establishing the most accurate VOC emission values for fumigant applications is important for two reasons. First, it is important for DPR's emission inventory to be as accurate as possible

because pesticide use/management decisions are based upon the findings presented in the inventory. Second, DPR is currently considering two regulation strategies to achieve pesticide VOC reductions from fumigants in air quality NAA areas. One strategy is to require use of “low-emission” fumigant application methods and/or prohibit certain “high-emission” fumigant application methods. A second strategy is to establish limits on VOC emissions from fumigants within NAA areas. Regulations that incorporate one or both of these strategies will go into effect in 2008.

In May 2007, DPR proposed regulations to reduce smog-producing emissions from fumigant pesticides. The regulations focus on both limiting the total pounds of pesticide emissions and reducing the amount of fumigant emitted from each application. Based on comments received, DPR revised the proposed regulations in October 2007.

The proposed regulations (as revised in October 2007) would:

- Limit fumigant emissions from May to October in certain NAA areas. In those areas, DPR would develop emission benchmarks and set limits on emissions from fumigant applications by individual growers. Growers could choose to limit emissions in various ways, such as reducing application rates, using lower-emission application methods, or treating less acreage.
- Require reporting of field fumigant application methods in five NAA areas.
- Define specific requirements on how field fumigations must be done, prohibiting some high-emission methods and setting limits on others.
- Set up new statewide licensing and other requirements for companies that do field fumigations.

More information on DPR’s proposed regulations (DPR regulation 07-002) is located on DPR’s Web site at: <<http://www.cdpr.ca.gov/docs/legbills/rulepkgs.htm#rulepkgs07002>>.

### REEVALUATION DATA REQUIREMENTS

DPR relies almost exclusively on field measurements to estimate emissions. Additionally, DPR prescribes many of the application procedures and equipment used for the monitoring studies as regulatory requirements. For example, DPR prescribes requirements for maximum application rate, application depth, tarpaulin type, soil moisture, and other critical parameters based on application equipment, procedures, and conditions of the monitoring studies. For purposes of consistency, a “shallow depth” is defined as using tractor shanks to inject the liquid fumigant 6-12 inches below the soil surface. Similarly, a “deep depth” is defined as injecting the liquid fumigant 18-30 inches below the soil surface. A “broadcast” application is an application to a flat field and a “bed” application is an application to a raised portion of the soil where crops will subsequently be placed.

Pursuant to this reevaluation, Soil Chemicals Corporation is required to submit the following:

1. Within **30 days** from the date of this letter, a written response acknowledging receipt of this letter. Your response may include (1) a statement of intent to comply with the data requirements as a sole entity or through the formation of a Task Force; (2) identification of any data that you can submit as outlined in items 3 through 5 and in Attachment A; and, (3) any questions or clarifying information you need to comply with these data requirements.
2. Within **60 days** from the date of this letter, submit ambient or direct flux data that you feel may satisfy the requirements of this reevaluation as listed in items 3 through 5 and in Attachment A. If you submit a study, you do not need to submit a protocol as identified below for that data requirement unless notified by DPR.
3. Within **120 days** from the date of this letter, submit study protocols for ambient or direct flux monitoring studies, using products containing the active ingredient **chloropicrin** following prescribed field fumigation application methods as delineated below and in Attachment A. The monitoring studies must be performed in the San Joaquin Valley, Southeast Desert, or Ventura NAA. A final date for submission of the final reports will be established once DPR approves the protocols.

Each study protocol shall include the following:

- a. Identify the specific **chloropicrin** product that you intend to use/monitor for with each application method. When choosing a product, consideration should be given to the product most commonly used with each specified application method.
- b. Consult with DPR prior to selection of an NAA (San Joaquin Valley, Southeast Desert, or Ventura). NAA selection should best represent each application method.
- c. Monitoring must include any VOC breakdown products or inert ingredients that account for at least five percent of the amount applied.
- d. Monitoring during the flux studies shall continue until one of the following occurs:
  - i. When all of the samples, for a full 24 hours of measurements, have no detectable concentrations as specified in the approved protocol; or,
  - ii. When the three-day rolling average daily flux is less than one percent of the applied amount and the rolling three-day average shows a declining pattern over three days; or,
  - iii. A period of 14 consecutive days.

4. Within **150 days** from the date of this letter, submit study protocols for ambient or direct flux monitoring studies, using a product containing the active ingredient **methyl bromide** (only) and a product containing the active ingredient **chloropicrin** (only) performed in all three NAAs (San Joaquin Valley, Southeast Desert, and Ventura). A final date for submission of the final reports will be established once DPR approves the protocols.

Each study protocol shall include the following:

- a. Identify the specific **methyl bromide** or **chloropicrin** product that you intend to use/monitor.
- b. From the list below, identify the application method (only one required) that you will be using with each product. The same application method must be used in all three NAAs.

**methyl bromide**

- (1) Nontarpaulin/Shallow/Bed
- (2) Nontarpaulin/Deep/Broadcast
- (3) Tarpaulin/Shallow/Broadcast
- (4) Tarpaulin/Shallow/Bed
- (5) Tarpaulin/Deep/Broadcast
- (6) Drip System - (Hot Gas)

**chloropicrin**

- (1) Nontarpaulin/Shallow/Broadcast or Bed
  - (2) Tarpaulin/Shallow/Broadcast or Bed
  - (3) Nontarpaulin/Shallow/Broadcast or Bed/Three Post-Fumigation Water Treatments
  - (4) Tarpaulin/Shallow/Bed/Three Post-Fumigation Water Treatments
  - (5) Nontarpaulin/Deep/Broadcast or Bed
  - (6) Tarpaulin/Deep/Broadcast or Bed
  - (7) Chemigation (Drip System)/Tarpaulin
- c. Monitoring must include any VOC breakdown products or inert ingredients that account for at least five percent of the amount applied.
  - d. Monitoring during the flux studies shall continue until one of the following occurs:
    - i. When all of the samples, for a full 24 hours of measurements, have no detectable concentrations as specified in the approved protocol; or,
    - ii. When the three-day rolling average daily flux is less than one percent of the applied amount and the rolling three-day average shows a declining pattern over three days; or,
    - iii. A period of 14 consecutive days.

5. Within **150 days** from the date of this letter, submit study protocols for ambient or direct flux monitoring studies for each product combination, containing the active ingredients **methyl bromide + chloropicrin** and **1,3-dichloropropene + chloropicrin**, performed in the San Joaquin Valley, Southeast Desert, or Ventura NAA, using one application method. A final date for submission of the final reports will be established once DPR approves the protocols.

Each study protocol shall include the following:

- a. Identify the specific **methyl bromide + chloropicrin** or **1,3-dichloropropene + chloropicrin** product that you intend to use/monitor. The product selected should be close to a 50/50 concentration.
- b. Identify the application method you will be using with each product combination and the NAA in which you will be conducting the study. To allow comparison with single chemical studies done with the same application method, each combination study must be conducted in the same NAA. Choose one of the following application methods for each combination:

**methyl bromide + chloropicrin**

Nontarpaulin/Shallow/Bed  
Nontarpaulin/Deep/Broadcast  
Tarpaulin/Shallow/Broadcast  
Tarpaulin/Shallow/Bed  
Tarpaulin/Deep/Broadcast  
Drip System - (Hot Gas)

**1,3-dichloropropene + chloropicrin**

Nontarpaulin/Shallow/Broadcast or Bed  
Tarpaulin/Shallow/Broadcast or Bed  
Nontarpaulin/Shallow/Broadcast or Bed/Three Post-Fumigation  
Water Treatments  
Tarpaulin/Shallow/Bed/Three Post-Fumigation Water Treatments  
Nontarpaulin/Deep/Broadcast or Bed  
Tarpaulin/Deep/Broadcast or Bed  
Chemigation (Drip System)/Tarpaulin

- c. Monitoring must include any VOC breakdown products or inert ingredients that account for at least five percent of the amount applied.
- d. Monitoring during the flux studies shall continue until one of the following occurs:

Ms. Mardel Belotinsky  
January 18, 2008  
Page 7

- i. When all of the samples, for a full 24 hours of measurements, have no detectable concentrations as specified in the approved protocol; or,
- ii. When the three-day rolling average daily flux is less than one percent of the applied amount and the rolling three-day average shows a declining pattern over three days; or,
- iii. A period of 14 consecutive days.

Based on the results of the above data, additional studies may be required. All studies and protocols submitted to DPR must be formatted in accordance with CA Notice 2006-06, Formatting Requirements for Scientific Data Submitted to the Department of Pesticide Regulation (Revised 08/10/2006). This Notice is located on DPR's Web site at: <<http://www.cdpr.ca.gov/docs/registration/canot/2006/ca2006-06.pdf>>.

#### GENERAL INFORMATION

Please note that pursuant to Food and Agricultural Code section 12811.5, as revised January 1, 2006, any registrant that does not submit its own data to fulfill a data requirement imposed by the Director to maintain the registration of its pesticide product, and instead relies upon data owned by another company, should be aware that they may have certain obligations, in specifically defined situations, to the owner of the data. For further information, please refer to AB 1011 – Consolidated Registration Resources located on DPR's Web site at: <<http://www.cdpr.ca.gov/docs/legbills/ab1011/resource.htm>>. Failure of a registrant to comply with the requirements of this reevaluation, may subject that registrant's product(s) to cancellation pursuant to Food and Agricultural Code section 12825(h).

#### CONTACTS

If you have any questions regarding the reevaluation process, please contact Ms. Denise Webster by e-mail at <[dwebster@cdpr.ca.gov](mailto:dwebster@cdpr.ca.gov)> or by telephone at (916) 324-3522. If you have any questions regarding the required study protocols, please contact Mr. Randy Segawa by e-mail at <[rsegawa@cdpr.ca.gov](mailto:rsegawa@cdpr.ca.gov)> or by telephone at (916) 324-4137.

Sincerely,

*Original signed by*

Charles M. Andrews, Chief  
Pesticide Registration Branch  
(916) 445-4377

Attachment

Ms. Mardel Belotinsky  
January 18, 2008  
Page 8

cc: Mr. Randy Segawa, DPR, Environmental Program Manager I (w/Attachments)  
Ms. Denise Webster, DPR, Program Specialist (w/Attachments)  
Ms. Victoria Hornbaker, DPR, Environmental Specialist (w/Attachments)

Attachment A. Chloropicrin Application Methods for Study Protocol Development

Products containing only Chloropicrin as the active ingredient:

<b>Application Method</b>	<b>Either San Joaquin Valley, Southeast Desert, or Ventura NAA</b>
1. Nontarpaulin/Shallow/Broadcast or Bed	<b>Required</b>
2. Tarpaulin/Shallow/Broadcast or Bed	<b>Required</b>
3. Nontarpaulin/Shallow/Broadcast or Bed/ Three Post-Fumigation Water Treatments	<b>Required</b>
4. Tarpaulin/Shallow/Bed/Three Post-Fumigation Water Treatments	<b>Required</b>
5. Nontarpaulin/Deep/Broadcast or Bed	<b>Required</b>
6. Tarpaulin/Deep/Broadcast or Bed	<b>Required</b>
7. Chemigation (Drip System)/Tarpaulin	<b>Required</b>



# Department of Pesticide Regulation



Mary-Ann Warmerdam  
Director

Arnold Schwarzenegger  
Governor

January 18, 2008

Mr. Rob Adams  
Taminco Inc.  
1950 Lake Park Drive  
Smyrna, Georgia 30080

1/25/08, 10:00AM  
Per telephone conversation with Mr. Stanley Van Vleck  
Address on file at DPR and U.S. EPA is incorrect.  
Mr. Van Vleck is the U.S. agent of record.

Dear Mr. Adams:

Pursuant to Article 8, Subchapter 1, Chapter 2, Division 6 of Title 3 of the California Code of Regulations, the Director of the Department of Pesticide Regulation (DPR) notices her decision to begin a reevaluation of certain pesticide products intended for use in field fumigation and containing the following active ingredients: methyl bromide, 1,3-dichloropropene, chloropicrin, metam-sodium, metam-potassium, dazomet, and sodium tetrathiocarbonate, including the following products:

Product Brand Name, EPA Reg. No.	Active Ingredient
METAM CLR 42%, EPA Reg. No. 45728-16-ZA	METAM-SODIUM

DPR is required to investigate all reported pesticide episodes and information received indicating that a pesticide may have caused, or is likely to cause, a significant adverse impact. If the Director finds from the investigation that a significant adverse effect has occurred or is likely to occur; the pesticide involved shall be reevaluated. Therefore, certain field fumigants, including the above products, are being reevaluated.

### BASIS FOR REEVALUATION

Pesticide volatile organic compounds (VOCs) contribute to the formation of ground-level ozone, which is harmful to human health and vegetation when present in high concentrations. The federal Clear Air Act requires each state to submit a state implementation plan (SIP) for achieving and maintaining federal ambient air quality standards, including the ozone standard. Fumigants are among the highest pesticide VOC contributors due to both their high levels of use and their high-emission potentials. Fumigants account for more than 50 percent of the pesticide VOC emissions in the San Joaquin Valley nonattainment (NAA) area, 80 percent in the Southeast Desert NAA area, and 90 percent in the Ventura NAA area. Additional data relating to the use of the fumigant products is essential to the formulation of regulatory measures to reduce VOC emissions from fumigant use and mitigate the associated detrimental impact on human health and the environment. Further, it is needed to facilitate meeting the state's obligations under the SIP.



In accordance with the SIP, DPR maintains an inventory of pesticide VOC emissions for the May-October ozone season for specified ozone NAA areas of the State. The SIP specifies certain emission reductions to be achieved, and the reductions are expressed as some percentage of the 1990/1991 base year emissions. For the purposes of the inventory, DPR has historically assumed 100 percent of applied fumigants volatilize to the air. However, field-monitoring data shows that fumigant emissions are less than 100 percent and vary with application method. Therefore, DPR requires measured emission data to quantify actual emissions and thereby improve the accuracy of emission estimates.

Establishing the most accurate VOC emission values for fumigant applications is important for two reasons. First, it is important for DPR's emission inventory to be as accurate as possible because pesticide use/management decisions are based upon the findings presented in the inventory. Second, DPR is currently considering two regulation strategies to achieve pesticide VOC reductions from fumigants in air quality NAA areas. One strategy is to require use of "low-emission" fumigant application methods and/or prohibit certain "high-emission" fumigant application methods. A second strategy is to establish limits on VOC emissions from fumigants within NAA areas. Regulations that incorporate one or both of these strategies will go into effect in 2008.

In May 2007, DPR proposed regulations to reduce smog-producing emissions from fumigant pesticides. The regulations focus on both limiting the total pounds of pesticide emissions and reducing the amount of fumigant emitted from each application. Based on comments received, DPR revised the proposed regulations in October 2007.

The proposed regulations (as revised in October 2007) would:

- Limit fumigant emissions from May to October in certain NAA areas. In those areas, DPR would develop emission benchmarks and set limits on emissions from fumigant applications by individual growers. Growers could choose to limit emissions in various ways, such as reducing application rates, using lower-emission application methods, or treating less acreage.
- Require reporting of field fumigant application methods in five NAA areas.
- Define specific requirements on how field fumigations must be done, prohibiting some high-emission methods and setting limits on others.
- Set up new statewide licensing and other requirements for companies that do field fumigations.

More information on DPR's proposed regulations (DPR regulation 07-002) is located on DPR's Web site at: <<http://www.cdpr.ca.gov/docs/legbills/rulepkgs.htm#rulepkgs07002>>.

### REEVALUATION DATA REQUIREMENTS

DPR relies almost exclusively on field measurements to estimate emissions. Additionally, DPR prescribes many of the application procedures and equipment used for the monitoring studies as regulatory requirements. For example, DPR prescribes requirements for maximum application rate, application depth, tarpaulin type, soil moisture, and other critical parameters based on application equipment, procedures, and conditions of the monitoring studies. For purposes of consistency, a “shallow depth” is defined as using tractor shanks to inject the liquid fumigant 6-12 inches below the soil surface. Similarly, a “deep depth” is defined as injecting the liquid fumigant 18-30 inches below the soil surface. A “broadcast” application is an application to a flat field and a “bed” application is an application to a raised portion of the soil where crops will subsequently be placed.

Pursuant to this reevaluation, Taminco Inc. is required to submit the following:

1. Within **30 days** from the date of this letter, a written response acknowledging receipt of this letter. Your response may include (1) a statement of intent to comply with the data requirements as a sole entity or through the formation of a Task Force; (2) identification of any data that you can submit as outlined in items 3, 4 and in Attachment A; and, (3) any questions or clarifying information you need to comply with these data requirements.
2. Within **60 days** from the date of this letter, submit ambient or direct flux data that you feel may satisfy the requirements of this reevaluation as listed items 3, 4 and in Attachment A. If you submit a study, you do not need to submit a protocol as identified below for that data requirement unless notified by DPR.
3. Within **120 days** from the date of this letter, submit study protocols for ambient or direct flux monitoring studies, using products containing the active ingredient **metam-sodium** for its breakdown products (i.e., MITC) following prescribed field fumigation application methods, monitoring separately for day and night applications, as delineated below and in Attachment A. A final date for submission of the final reports will be established once DPR approves the protocols.

Each study protocol shall include the following:

- a. Identify the specific **metam-sodium** product that you intend to use/monitor for with each application method. When choosing a product, consideration should be given to the product most commonly used with each specified application method.

- b. Both day and night application monitoring are required. Day application monitoring shall be conducted in one of the three NAAs (San Joaquin Valley, Southeast Desert, or Ventura). Consult with DPR prior to selection of an NAA. NAA selection should best represent each application method. Night application monitoring must be conducted in the San Joaquin Valley NAA.
  - c. Monitoring must include any VOC breakdown products or inert ingredients that account for at least five percent of the amount applied.
  - d. Monitoring during the flux studies shall continue until one of the following occurs:
    - i. When all of the samples, for a full 24 hours of measurements, have no detectable concentrations as specified in the approved protocol; or,
    - ii. When the three-day rolling average daily flux is less than one percent of the applied amount and the rolling three-day average shows a declining pattern over three days; or,
    - iii. A period of 14 consecutive days.
4. Within **150 days** from the date of this letter, submit a study protocol for an ambient or direct flux monitoring study, using a product containing the active ingredient **metam-sodium** performed in all three NAAs (San Joaquin Valley, Southeast Desert, and Ventura). A final date for submission of the final report will be established once DPR approves the protocol.

Your study protocol shall include the following:

- a. Identify the specific **metam-sodium** product that you intend to use/monitor.
- b. From the list below, identify the application method (only one required) that you will be using. The same application method must be used in all three NAAs.
  - (1) Sprinkler/Broadcast or Bed/One Post-Fumigation Water Treatment
  - (2) Sprinkler/Broadcast or Bed/Two Post-Fumigation Water Treatments
  - (3) Sprinkler/Broadcast or Bed/Three Post-Fumigation Water Treatments
  - (4) Nontarpaulin/Shallow/Broadcast or Bed/One Post-Fumigation Water Treatment
  - (5) Nontarpaulin/Shallow/Broadcast or Bed/Two Post-Fumigation Water Treatments
  - (6) Nontarpaulin/Shallow/Broadcast or Bed/Three Post-Fumigation Water Treatments
  - (7) Chemigation (Drip System)
  - (8)(a) Rotary Tiller
  - (8)(b) Power Mulcher
  - (8)(c) Soil Capping
  - (8)(d) Spray Blade

- (9) Flood
- c. Monitoring must include any VOC breakdown products or inert ingredients that account for at least five percent of the amount applied.
  - d. Monitoring during the flux studies shall continue until one of the following occurs:
    - i. When all of the samples, for a full 24 hours of measurements, have no detectable concentrations as specified in the approved protocol; or,
    - ii. When the three-day rolling average daily flux is less than one percent of the applied amount and the rolling three-day average shows a declining pattern over three days; or,
    - iii. A period of 14 consecutive days.

Based on the results of the above data, additional studies may be required. All studies and protocols submitted to DPR must be formatted in accordance with CA Notice 2006-06, Formatting Requirements for Scientific Data Submitted to the Department of Pesticide Regulation (Revised 08/10/2006). This Notice is located on DPR's Web site at: <http://www.cdpr.ca.gov/docs/registration/canot/2006/ca2006-06.pdf>.

#### GENERAL INFORMATION

Please note that pursuant to Food and Agricultural Code section 12811.5, as revised January 1, 2006, any registrant that does not submit its own data to fulfill a data requirement imposed by the Director to maintain the registration of its pesticide product, and instead relies upon data owned by another company, should be aware that they may have certain obligations, in specifically defined situations, to the owner of the data. For further information, please refer to AB 1011 – Consolidated Registration Resources located on DPR's Web site at: <http://www.cdpr.ca.gov/docs/legbills/ab1011/resource.htm>. Failure of a registrant to comply with the requirements of this reevaluation, may subject that registrant's product(s) to cancellation pursuant to Food and Agricultural Code section 12825(h).

#### CONTACTS

If you have any questions regarding the reevaluation process, please contact Ms. Denise Webster by e-mail at [dwebster@cdpr.ca.gov](mailto:dwebster@cdpr.ca.gov) or by telephone at (916) 324-3522. If you have any questions regarding the required study protocols, please contact Mr. Randy Segawa by e-mail at [rsegawa@cdpr.ca.gov](mailto:rsegawa@cdpr.ca.gov) or by telephone at (916) 324-4137.

Mr. Rob Adams  
January 18, 2008  
Page 6

Sincerely,

*Original signed by*

Charles M. Andrews, Chief  
Pesticide Registration Branch  
(916) 445-4377

Attachment

cc: Mr. Randy Segawa, DPR, Environmental Program Manager I (w/Attachment)  
Ms. Denise Webster, DPR, Program Specialist (w/Attachment)  
Ms. Victoria Hornbaker, DPR, Environmental Specialist (w/Attachment)

Attachment A. Metam-Sodium Application Methods for Study Protocol Development  
(Fumigant action and VOC emissions due to the hydrolysis product MITC)

Products containing Metam-Sodium as the active ingredient:

<b>Application Method</b>	<b>Either San Joaquin Valley, Southeast Desert, or Ventura NAA <u>Day</u></b>	<b>Only San Joaquin Valley NAA <u>Night</u></b>
1. Sprinkler/Broadcast or Bed/One Post-Fumigation Water Treatment	<b>NR</b>	<b>Required</b>
2. Sprinkler/Broadcast or Bed/Two Post-Fumigation Water Treatments	<b>NR</b>	<b>NR</b>
3. Sprinkler/Broadcast or Bed/Three Post-Fumigation Water Treatments	<b>NR</b>	<b>Required</b>
4. Nontarpaulin/Shallow/Broadcast or Bed/One Post-Fumigation Water Treatment	<b>NR</b>	<b>Required</b>
5. Nontarpaulin/Shallow/Broadcast or Bed/Two Post-Fumigation Water Treatments	<b>NR</b>	<b>Required</b>
6. Nontarpaulin/Shallow/Broadcast or Bed/Three Post-Fumigation Water Treatments	<b>NR</b>	<b>Required</b>
7. Chemigation (Drip System)	<b>NR</b>	<b>Required</b>
8. a) Rotary Tiller	<b>Required</b>	<b>Required</b>
b) Power Mulcher	<b>Required</b>	<b>Required</b>
c) Soil Capping	<b>Required</b>	<b>Required</b>
d) Spray Blade	<b>Required</b>	<b>Required</b>
9. Flood	<b>Required</b>	<b>Required</b>

**NR** = Not a required study.



Mary-Ann Warmerdam  
Director

Arnold Schwarzenegger  
Governor

January 18, 2008

Mr. Brian Thomassen  
Tessengerlo Kerley, Inc.  
2255 N.44th Street, Suite 300  
Phoenix, Arizona 85008-3279

Dear Mr. Thomassen:

Pursuant to Article 8, Subchapter 1, Chapter 2, Division 6 of Title 3 of the California Code of Regulations, the Director of the Department of Pesticide Regulation (DPR) notices her decision to begin a reevaluation of certain pesticide products intended for use in field fumigation and containing the following active ingredients: methyl bromide, 1,3-dichloropropene, chloropicrin, metam-sodium, metam-potassium, dazomet, and sodium tetrathiocarbonate, including the following products:

Product Brand Name, EPA Reg. No.	Active Ingredient
SECTAGON 42, EPA Reg. No. 61842-6-AA	METAM-SODIUM
SECTAGON-K54, EPA Reg. No. 61842-7-AA	METAM-POTASSIUM

DPR is required to investigate all reported pesticide episodes and information received indicating that a pesticide may have caused, or is likely to cause, a significant adverse impact. If the Director finds from the investigation that a significant adverse effect has occurred or is likely to occur; the pesticide involved shall be reevaluated. Therefore, certain field fumigants, including the above products, are being reevaluated.

BASIS FOR REEVALUATION

Pesticide volatile organic compounds (VOCs) contribute to the formation of ground-level ozone, which is harmful to human health and vegetation when present in high concentrations. The federal Clear Air Act requires each state to submit a state implementation plan (SIP) for achieving and maintaining federal ambient air quality standards, including the ozone standard. Fumigants are among the highest pesticide VOC contributors due to both their high levels of use and their high-emission potentials. Fumigants account for more than 50 percent of the pesticide VOC emissions in the San Joaquin Valley nonattainment (NAA) area, 80 percent in the Southeast Desert NAA area, and 90 percent in the Ventura NAA area. Additional data relating to the use of the fumigant products is essential to the formulation of regulatory measures to reduce VOC emissions from fumigant use and mitigate the associated detrimental impact on human



health and the environment. Further, it is needed to facilitate meeting the state's obligations under the SIP.

In accordance with the SIP, DPR maintains an inventory of pesticide VOC emissions for the May-October ozone season for specified ozone NAA areas of the State. The SIP specifies certain emission reductions to be achieved, and the reductions are expressed as some percentage of the 1990/1991 base year emissions. For the purposes of the inventory, DPR has historically assumed 100 percent of applied fumigants volatilize to the air. However, field-monitoring data shows that fumigant emissions are less than 100 percent and vary with application method. Therefore, DPR requires measured emission data to quantify actual emissions and thereby improve the accuracy of emission estimates.

Establishing the most accurate VOC emission values for fumigant applications is important for two reasons. First, it is important for DPR's emission inventory to be as accurate as possible because pesticide use/management decisions are based upon the findings presented in the inventory. Second, DPR is currently considering two regulation strategies to achieve pesticide VOC reductions from fumigants in air quality NAA areas. One strategy is to require use of "low-emission" fumigant application methods and/or prohibit certain "high-emission" fumigant application methods. A second strategy is to establish limits on VOC emissions from fumigants within NAA areas. Regulations that incorporate one or both of these strategies will go into effect in 2008.

In May 2007, DPR proposed regulations to reduce smog-producing emissions from fumigant pesticides. The regulations focus on both limiting the total pounds of pesticide emissions and reducing the amount of fumigant emitted from each application. Based on comments received, DPR revised the proposed regulations in October 2007.

The proposed regulations (as revised in October 2007) would:

- Limit fumigant emissions from May to October in certain NAA areas. In those areas, DPR would develop emission benchmarks and set limits on emissions from fumigant applications by individual growers. Growers could choose to limit emissions in various ways, such as reducing application rates, using lower-emission application methods, or treating less acreage.
- Require reporting of field fumigant application methods in five NAA areas.
- Define specific requirements on how field fumigations must be done, prohibiting some high-emission methods and setting limits on others.
- Set up new statewide licensing and other requirements for companies that do field fumigations.

Mr. Brian Thomassen  
January 18, 2008  
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More information on DPR's proposed regulations (DPR regulation 07-002) is located on DPR's Web site at: <<http://www.cdpr.ca.gov/docs/legbills/rulepkgs.htm#rulepkgs07002>>.

### REEVALUATION DATA REQUIREMENTS

DPR relies almost exclusively on field measurements to estimate emissions. Additionally, DPR prescribes many of the application procedures and equipment used for the monitoring studies as regulatory requirements. For example, DPR prescribes requirements for maximum application rate, application depth, tarpaulin type, soil moisture, and other critical parameters based on application equipment, procedures, and conditions of the monitoring studies. For purposes of consistency, a "shallow depth" is defined as using tractor shanks to inject the liquid fumigant 6-12 inches below the soil surface. Similarly, a "deep depth" is defined as injecting the liquid fumigant 18-30 inches below the soil surface. A "broadcast" application is an application to a flat field and a "bed" application is an application to a raised portion of the soil where crops will subsequently be placed.

Pursuant to this reevaluation, Tessengerlo Kerley, Inc. is required to submit the following:

1. Within **30 days** from the date of this letter, a written response acknowledging receipt of this letter. Your response may include (1) a statement of intent to comply with the data requirements as a sole entity or through the formation of a Task Force; (2) identification of any data that you can submit as outlined in items 3, 4 and in Attachment A; and, (3) any questions or clarifying information you need to comply with these data requirements.
2. Within **60 days** from the date of this letter, submit ambient or direct flux data that you feel may satisfy the requirements of this reevaluation as listed items 3, 4 and in Attachment A. If you submit a study, you do not need to submit a protocol as identified below for that data requirement unless notified by DPR.
3. Within **120 days** from the date of this letter, submit study protocols for ambient or direct flux monitoring studies, using a product containing the active ingredient **metam-sodium**, and a product containing the active ingredient **metam-potassium** for their breakdown products (i.e., MITC) following prescribed field fumigation application methods, monitoring separately for day and night applications, as delineated below and in Attachment A. A final date for submission of the final reports will be established once DPR approves the protocols.

Each study protocol shall include the following:

- a. Identify the specific **metam-sodium** or **metam-potassium** product that you intend to use/monitor for with each application method. When choosing a product, consideration should be given to the product most commonly used with each specified application method.
  - b. Both day and night application monitoring are required. Day application monitoring shall be conducted in one of the three NAAs (San Joaquin Valley, Southeast Desert, or Ventura). Consult with DPR prior to selection of an NAA. NAA selection should best represent each application method. Night application monitoring must be conducted in the San Joaquin Valley NAA.
  - c. Monitoring must include any VOC breakdown products or inert ingredients that account for at least five percent of the amount applied.
  - d. Monitoring during the flux studies shall continue until one of the following occurs:
    - i. When all of the samples, for a full 24 hours of measurements, have no detectable concentrations as specified in the approved protocol; or,
    - ii. When the three-day rolling average daily flux is less than one percent of the applied amount and the rolling three-day average shows a declining pattern over three days; or,
    - iii. A period of 14 consecutive days.
4. Within **150 days** from the date of this letter, submit study protocols for ambient or direct flux monitoring studies, using a product containing the active ingredient **metam-sodium**, and a product containing the active ingredient **metam-potassium** performed in all three NAAs (San Joaquin Valley, Southeast Desert, and Ventura). A final date for submission of the final reports will be established once DPR approves the protocols.

Each study protocol shall include the following:

- a. Identify the specific **metam-sodium** or **metam-potassium** product that you intend to use/monitor.
- b. From the list below, identify the application method (only one required) that you will be using with each product. The same application method must be used in all three NAAs.
  - (1) Sprinkler/Broadcast or Bed/One Post-Fumigation Water Treatment
  - (2) Sprinkler/Broadcast or Bed/Two Post-Fumigation Water Treatments
  - (3) Sprinkler/Broadcast or Bed/Three Post-Fumigation Water Treatments
  - (4) Nontarpaulin/Shallow/Broadcast or Bed/One Post-Fumigation Water Treatment
  - (5) Nontarpaulin/Shallow/Broadcast or Bed/Two Post-Fumigation Water Treatments

- (6) Nontarpaulin/Shallow/Broadcast or Bed/Three Post-Fumigation Water Treatments
  - (7) Chemigation (Drip System)
  - (8)(a) Rotary Tiller
  - (8)(b) Power Mulcher
  - (8)(c) Soil Capping
  - (8)(d) Spray Blade
  - (9) Flood
- c. Monitoring must include any VOC breakdown products or inert ingredients that account for at least five percent of the amount applied.
- d. Monitoring during the flux studies shall continue until one of the following occurs:
- i. When all of the samples, for a full 24 hours of measurements, have no detectable concentrations as specified in the approved protocol; or,
  - ii. When the three-day rolling average daily flux is less than one percent of the applied amount and the rolling three-day average shows a declining pattern over three days; or,
  - iii. A period of 14 consecutive days.

Based on the results of the above data, additional studies may be required. All studies and protocols submitted to DPR must be formatted in accordance with CA Notice 2006-06, Formatting Requirements for Scientific Data Submitted to the Department of Pesticide Regulation (Revised 08/10/2006). This Notice is located on DPR's Web site at: <http://www.cdpr.ca.gov/docs/registration/canot/2006/ca2006-06.pdf>.

#### GENERAL INFORMATION

Please note that pursuant to Food and Agricultural Code section 12811.5, as revised January 1, 2006, any registrant that does not submit its own data to fulfill a data requirement imposed by the Director to maintain the registration of its pesticide product, and instead relies upon data owned by another company, should be aware that they may have certain obligations, in specifically defined situations, to the owner of the data. For further information, please refer to AB 1011 – Consolidated Registration Resources located on DPR's Web site at: <http://www.cdpr.ca.gov/docs/legbills/ab1011/resource.htm>. Failure of a registrant to comply with the requirements of this reevaluation, may subject that registrant's product(s) to cancellation pursuant to Food and Agricultural Code section 12825(h).

Mr. Brian Thomassen  
January 18, 2008  
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### CONTACTS

If you have any questions regarding the reevaluation process, please contact Ms. Denise Webster by e-mail at <dwebster@cdpr.ca.gov> or by telephone at (916) 324-3522. If you have any questions regarding the required study protocols, please contact Mr. Randy Segawa by e-mail at <rsegawa@cdpr.ca.gov> or by telephone at (916) 324-4137.

Sincerely,

*Original signed by*

Charles M. Andrews, Chief  
Pesticide Registration Branch  
(916) 445-4377

Attachment

cc: Mr. Randy Segawa, DPR, Environmental Program Manager I (w/Attachment)  
Ms. Denise Webster, DPR, Program Specialist (w/Attachment)  
Ms. Victoria Hornbaker, DPR, Environmental Specialist (w/Attachment)

Attachment A. Metam-Sodium and Metam-Potassium  
(Fumigant action and VOC emissions due to the hydrolysis product MITC)  
Application Methods for Study Protocol Development

Table 1. Products containing Metam-Sodium as the active ingredient:

<b>Application Method</b>	<b>Either San Joaquin Valley, Southeast Desert, or Ventura NAA Day</b>	<b>Only San Joaquin Valley NAA Night</b>
1. Sprinkler/Broadcast or Bed/One Post-Fumigation Water Treatment	<b>NR</b>	<b>Required</b>
2. Sprinkler/Broadcast or Bed/Two Post-Fumigation Water Treatments	<b>NR</b>	<b>NR</b>
3. Sprinkler/Broadcast or Bed/Three Post-Fumigation Water Treatments	<b>NR</b>	<b>Required</b>
4. Nontarpaulin/Shallow/Broadcast or Bed/One Post-Fumigation Water Treatment	<b>NR</b>	<b>Required</b>
5. Nontarpaulin/Shallow/Broadcast or Bed/Two Post-Fumigation Water Treatments	<b>NR</b>	<b>Required</b>
6. Nontarpaulin/Shallow/Broadcast or Bed/Three Post-Fumigation Water Treatments	<b>NR</b>	<b>Required</b>
7. Chemigation (Drip System)	<b>NR</b>	<b>Required</b>
8. a) Rotary Tiller	<b>Required</b>	<b>Required</b>
b) Power Mulcher	<b>Required</b>	<b>Required</b>
c) Soil Capping	<b>Required</b>	<b>Required</b>
d) Spray Blade	<b>Required</b>	<b>Required</b>
9. Flood	<b>Required</b>	<b>Required</b>

**NR** = Not a required study.

Table 2. Products containing Metam-Potassium as the active ingredient:

<b>Application Method</b>	<b>Either San Joaquin Valley, Southeast Desert, or Ventura NAA Day</b>	<b>Only San Joaquin Valley NAA Night</b>
1. Sprinkler/Broadcast or Bed/One Post-Fumigation Water Treatment	<b>Required</b>	<b>Required</b>
2. Sprinkler/Broadcast or Bed/Two Post-Fumigation Water Treatments	<b>Required</b>	<b>Required</b>
3. Sprinkler/Broadcast or Bed/Three Post-Fumigation Water Treatments	<b>Required</b>	<b>Required</b>
4. Nontarpaulin/Shallow/Broadcast or Bed/One Post-Fumigation Water Treatment	<b>Required</b>	<b>Required</b>
5. Nontarpaulin/Shallow/Broadcast or Bed/Two Post-Fumigation Water Treatments	<b>Required</b>	<b>Required</b>
6. Nontarpaulin/Shallow/Broadcast or Bed/Three Post-Fumigation Water Treatments	<b>Required</b>	<b>Required</b>
7. Chemigation (Drip System)	<b>Required</b>	<b>Required</b>
8. a) Rotary Tiller	<b>Required</b>	<b>Required</b>
b) Power Mulcher	<b>Required</b>	<b>Required</b>
c) Soil Capping	<b>Required</b>	<b>Required</b>
d) Spray Blade	<b>Required</b>	<b>Required</b>
9. Flood	<b>Required</b>	<b>Required</b>



# Department of Pesticide Regulation



Mary-Ann Warmerdam  
Director

Arnold Schwarzenegger  
Governor

January 18, 2008

Ms. Mardel Rose Belotinsky  
Trical, Inc.  
P.O. Box 1327  
Hollister, California 95024

Dear Ms. Belotinsky:

Pursuant to Article 8, Subchapter 1, Chapter 2, Division 6 of Title 3 of the California Code of Regulations, the Director of the Department of Pesticide Regulation (DPR) notices her decision to begin a reevaluation of certain pesticide products intended for use in field fumigation and containing the following active ingredients: methyl bromide, 1,3-dichloropropene, chloropicrin, metam-sodium, metam-potassium, dazomet, and sodium tetrathiocarbonate, including the following products:

Product Brand Name, EPA Reg. No.	Active Ingredient
TRI-CON 80/20, EPA Reg. No. 58266-1-AA-11220	CHLOROPICRIN
	METHYL BROMIDE
TRI-CAL TRILONE II, EPA Reg. No. 11220-1-ZA	1,3-DICHLOROPROPENE
TRI-CLOR, EPA Reg. No. 58266-2-AA-11220	CHLOROPICRIN
MBC CONCENTRATE SOIL FUMIGANT, EPA Reg. No. 8853-2-AA-11220	METHYL BROMIDE
MBC-33 SOIL FUMIGANT, EPA Reg. No. 8853-3-AA-11220	CHLOROPICRIN
	METHYL BROMIDE
TRI-CON 57/43, EPA Reg. No. 11220-4-AA	CHLOROPICRIN
	METHYL BROMIDE
TRI-CLOR EC FUMIGANT, EPA Reg. No. 58266-5-AA-11220	CHLOROPICRIN
PIC PLUS FUMIGANT, EPA Reg. No. 8853-6-AA-11220	CHLOROPICRIN
TRI-PAN 76/24, EPA Reg. No. 11220-6-AA	CHLOROPICRIN
	METHYL BROMIDE
TRI-CON 75/25, EPA Reg. No. 11220-8-AA	CHLOROPICRIN
	METHYL BROMIDE
TRI-CON 50/50, EPA Reg. No. 11220-10-AA	CHLOROPICRIN
	METHYL BROMIDE



Product Brand Name, EPA Reg. No.	Active Ingredient
TRI-CON 45/55, EPA Reg. No. 11220-11-AA	CHLOROPICRIN
	METHYL BROMIDE
TRI-FORM 40/60, EPA Reg. No. 11220-15-AA	1,3-DICHLOROPROPENE
	CHLOROPICRIN
TRI-BROM, EPA Reg. No. 11220-16-AA	METHYL BROMIDE
METHYL BROMIDE 89.5%, EPA Reg. No. 11220-17-ZA	METHYL BROMIDE
TELONE C-15, EPA Reg. No. 11220-20-ZA	1,3-DICHLOROPROPENE
	CHLOROPICRIN
TRI-FORM 30, EPA Reg. No. 11220-21-AA	1,3-DICHLOROPROPENE
	CHLOROPICRIN
TRI-FORM 35, EPA Reg. No. 11220-22-ZB	1,3-DICHLOROPROPENE
	CHLOROPICRIN

DPR is required to investigate all reported pesticide episodes and information received indicating that a pesticide may have caused, or is likely to cause, a significant adverse impact. If the Director finds from the investigation that a significant adverse effect has occurred or is likely to occur; the pesticide involved shall be reevaluated. Therefore, certain field fumigants, including the above products, are being reevaluated.

#### BASIS FOR REEVALUATION

Pesticide volatile organic compounds (VOCs) contribute to the formation of ground-level ozone, which is harmful to human health and vegetation when present in high concentrations. The federal Clear Air Act requires each state to submit a state implementation plan (SIP) for achieving and maintaining federal ambient air quality standards, including the ozone standard. Fumigants are among the highest pesticide VOC contributors due to both their high levels of use and their high-emission potentials. Fumigants account for more than 50 percent of the pesticide VOC emissions in the San Joaquin Valley nonattainment (NAA) area, 80 percent in the Southeast Desert NAA area, and 90 percent in the Ventura NAA area. Additional data relating to the use of the fumigant products is essential to the formulation of regulatory measures to reduce VOC emissions from fumigant use and mitigate the associated detrimental impact on human health and the environment. Further, it is needed to facilitate meeting the state's obligations under the SIP.

In accordance with the SIP, DPR maintains an inventory of pesticide VOC emissions for the May-October ozone season for specified ozone NAA areas of the State. The SIP specifies certain

emission reductions to be achieved, and the reductions are expressed as some percentage of the 1990/1991 base year emissions. For the purposes of the inventory, DPR has historically assumed 100 percent of applied fumigants volatilize to the air. However, field-monitoring data shows that fumigant emissions are less than 100 percent and vary with application method. Therefore, DPR requires measured emission data to quantify actual emissions and thereby improve the accuracy of emission estimates.

Establishing the most accurate VOC emission values for fumigant applications is important for two reasons. First, it is important for DPR's emission inventory to be as accurate as possible because pesticide use/management decisions are based upon the findings presented in the inventory. Second, DPR is currently considering two regulation strategies to achieve pesticide VOC reductions from fumigants in air quality NAA areas. One strategy is to require use of "low-emission" fumigant application methods and/or prohibit certain "high-emission" fumigant application methods. A second strategy is to establish limits on VOC emissions from fumigants within NAA areas. Regulations that incorporate one or both of these strategies will go into effect in 2008.

In May 2007, DPR proposed regulations to reduce smog-producing emissions from fumigant pesticides. The regulations focus on both limiting the total pounds of pesticide emissions and reducing the amount of fumigant emitted from each application. Based on comments received, DPR revised the proposed regulations in October 2007.

The proposed regulations (as revised in October 2007) would:

- Limit fumigant emissions from May to October in certain NAA areas. In those areas, DPR would develop emission benchmarks and set limits on emissions from fumigant applications by individual growers. Growers could choose to limit emissions in various ways, such as reducing application rates, using lower-emission application methods, or treating less acreage.
- Require reporting of field fumigant application methods in five NAA areas.
- Define specific requirements on how field fumigations must be done, prohibiting some high-emission methods and setting limits on others.
- Set up new statewide licensing and other requirements for companies that do field fumigations.

More information on DPR's proposed regulations (DPR regulation 07-002) is located on DPR's Web site at: <<http://www.cdpr.ca.gov/docs/legbills/rulepkgs.htm#rulepkgs07002>>.

### REEVALUATION DATA REQUIREMENTS

DPR relies almost exclusively on field measurements to estimate emissions. Additionally, DPR prescribes many of the application procedures and equipment used for the monitoring studies as regulatory requirements. For example, DPR prescribes requirements for maximum application rate, application depth, tarpaulin type, soil moisture, and other critical parameters based on application equipment, procedures, and conditions of the monitoring studies. For purposes of consistency, a “shallow depth” is defined as using tractor shanks to inject the liquid fumigant 6-12 inches below the soil surface. Similarly, a “deep depth” is defined as injecting the liquid fumigant 18-30 inches below the soil surface. A “broadcast” application is an application to a flat field and a “bed” application is an application to a raised portion of the soil where crops will subsequently be placed.

Pursuant to this reevaluation, Trical, Inc. is required to submit the following:

1. Within **30 days** from the date of this letter, a written response acknowledging receipt of this letter. Your response may include (1) a statement of intent to comply with the data requirements as a sole entity or through the formation of a Task Force; (2) identification of any data that you can submit as outlined in items 3 through 5 and in Attachment A; and, (3) any questions or clarifying information you need to comply with these data requirements.
2. Within **60 days** from the date of this letter, submit ambient or direct flux data that you feel may satisfy the requirements of this reevaluation as listed in items 3 through 5 and in Attachment A. If you submit a study, you do not need to submit a protocol as identified below for that data requirement unless notified by DPR.
3. Within **120 days** from the date of this letter, submit study protocols for ambient or direct flux monitoring studies, using a product containing the active ingredient **1,3-dichloropropene** (only) and a product containing the active ingredient **chloropicrin** (only) following prescribed field fumigation application methods as delineated below and in Attachment A. The monitoring studies must be performed in the San Joaquin Valley, Southeast Desert, or Ventura NAA. A final date for submission of the final reports will be established once DPR approves the protocols.

Each study protocol shall include the following:

- a. Identify the specific **1,3-dichloropropene** or **chloropicrin** product that you intend to use/monitor for with each application method. When choosing a product, consideration should be given to the product most commonly used with each specified application method.

- b. Consult with DPR prior to selection of an NAA (San Joaquin Valley, Southeast Desert, or Ventura). NAA selection should best represent each application method.
  - c. Monitoring must include any VOC breakdown products or inert ingredients that account for at least five percent of the amount applied.
  - d. Monitoring during the flux studies shall continue until one of the following occurs:
    - i. When all of the samples, for a full 24 hours of measurements, have no detectable concentrations as specified in the approved protocol; or,
    - ii. When the three-day rolling average daily flux is less than one percent of the applied amount and the rolling three-day average shows a declining pattern over three days; or,
    - iii. A period of 14 consecutive days.
4. Within **150 days** from the date of this letter, submit study protocols for ambient or direct flux monitoring studies, using a product containing the active ingredient **methyl bromide** (only), a product containing the active ingredient **1,3-dichloropropene** (only), and a product containing the active ingredient **chloropicrin** (only) performed in all three NAAs (San Joaquin Valley, Southeast Desert, and Ventura). A final date for submission of the final reports will be established once DPR approves the protocols.

Each study protocol shall include the following:

- a. Identify the specific **methyl bromide**, **1,3-dichloropropene** or **chloropicrin** product that you intend to use/monitor.
- b. From the list below, identify the application method (only one required) that you will be using with each product. The same application method must be used in all three NAAs.

**methyl bromide**

- (1) Nontarpaulin/Shallow/Bed
- (2) Nontarpaulin/Deep/Broadcast
- (3) Tarpaulin/Shallow/Broadcast
- (4) Tarpaulin/Shallow/Bed
- (5) Tarpaulin/Deep/Broadcast
- (6) Drip System - (Hot Gas)

**1,3-dichloropropene or chloropicrin**

- (1) Nontarpaulin/Shallow/Broadcast or Bed
- (2) Tarpaulin/Shallow/Broadcast or Bed
- (3) Nontarpaulin/Shallow/Broadcast or Bed/Three Post-Fumigation Water Treatments

- (4) Tarpaulin/Shallow/Bed/Three Post-Fumigation Water Treatments
  - (5) Nontarpaulin/Deep/Broadcast or Bed
  - (6) Tarpaulin/Deep/Broadcast or Bed
  - (7) Chemigation (Drip System)/Tarpaulin
- c. Monitoring must include any VOC breakdown products or inert ingredients that account for at least five percent of the amount applied.
- d. Monitoring during the flux studies shall continue until one of the following occurs:
- i. When all of the samples, for a full 24 hours of measurements, have no detectable concentrations as specified in the approved protocol; or,
  - ii. When the three-day rolling average daily flux is less than one percent of the applied amount and the rolling three-day average shows a declining pattern over three days; or,
  - iii. A period of 14 consecutive days.
5. Within **150 days** from the date of this letter, submit study protocols for ambient or direct flux monitoring studies for each product combination, containing the active ingredients **methyl bromide + chloropicrin** and **1,3-dichloropropene + chloropicrin**, performed in the San Joaquin Valley, Southeast Desert, or Ventura NAA, using one application method. A final date for submission of the final reports will be established once DPR approves the protocols.

Each study protocol shall include the following:

- a. Identify the specific **methyl bromide + chloropicrin** or **1,3-dichloropropene + chloropicrin** product that you intend to use/monitor. The product selected should be close to a 50/50 concentration.
- b. Identify the application method you will be using with each product combination and the NAA in which you will be conducting the study. To allow comparison with single chemical studies done with the same application method, each combination study must be conducted in the same NAA. Choose one of the following application methods for each combination:

**methyl bromide + chloropicrin**

Nontarpaulin/Shallow/Bed  
Nontarpaulin/Deep/Broadcast  
Tarpaulin/Shallow/Broadcast  
Tarpaulin/Shallow/Bed  
Tarpaulin/Deep/Broadcast  
Drip System - (Hot Gas)

**1,3-dichloropropene + chloropicrin**

Nontarpaulin/Shallow/Broadcast or Bed

Tarpaulin/Shallow/Broadcast or Bed

Nontarpaulin/Shallow/Broadcast or Bed/Three Post-Fumigation  
Water Treatments

Tarpaulin/Shallow/Bed/Three Post-Fumigation Water Treatments

Nontarpaulin/Deep/Broadcast or Bed

Tarpaulin/Deep/Broadcast or Bed

Chemigation (Drip System)/Tarpaulin

- c. Monitoring must include any VOC breakdown products or inert ingredients that account for at least five percent of the amount applied.
- d. Monitoring during the flux studies shall continue until one of the following occurs:
  - i. When all of the samples, for a full 24 hours of measurements, have no detectable concentrations as specified in the approved protocol; or,
  - ii. When the three-day rolling average daily flux is less than one percent of the applied amount and the rolling three-day average shows a declining pattern over three days; or,
  - iii. A period of 14 consecutive days.

Based on the results of the above data, additional studies may be required. All studies and protocols submitted to DPR must be formatted in accordance with CA Notice 2006-06, Formatting Requirements for Scientific Data Submitted to the Department of Pesticide Regulation (Revised 08/10/2006). This Notice is located on DPR's Web site at: <http://www.cdpr.ca.gov/docs/registration/canot/2006/ca2006-06.pdf>.

**GENERAL INFORMATION**

Please note that pursuant to Food and Agricultural Code section 12811.5, as revised January 1, 2006, any registrant that does not submit its own data to fulfill a data requirement imposed by the Director to maintain the registration of its pesticide product, and instead relies upon data owned by another company, should be aware that they may have certain obligations, in specifically defined situations, to the owner of the data. For further information, please refer to AB 1011 – Consolidated Registration Resources located on DPR's Web site at: <http://www.cdpr.ca.gov/docs/legbills/ab1011/resource.htm>. Failure of a registrant to comply with the requirements of this reevaluation, may subject that registrant's product(s) to cancellation pursuant to Food and Agricultural Code section 12825(h).

Ms. Mardel Belotinsky  
January 18, 2008  
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### CONTACTS

If you have any questions regarding the reevaluation process, please contact Ms. Denise Webster by e-mail at <dwebster@cdpr.ca.gov> or by telephone at (916) 324-3522. If you have any questions regarding the required study protocols, please contact Mr. Randy Segawa by e-mail at <rsegawa@cdpr.ca.gov> or by telephone at (916) 324-4137.

Sincerely,

*Original signed by*

Charles M. Andrews, Chief  
Pesticide Registration Branch  
(916) 445-4377

Attachment

cc: Mr. Randy Segawa, DPR, Environmental Program Manager I (w/Attachments)  
Ms. Denise Webster, DPR, Program Specialist (w/Attachments)  
Ms. Victoria Hornbaker, DPR, Environmental Specialist (w/Attachments)

Attachment A. 1,3-Dichloropropene and Chloropicrin  
Application Methods for Study Protocol Development

Table 1. Products containing only 1,3-Dichloropropene as the active ingredient:

<b>Application Method</b>	<b>Either San Joaquin Valley, Southeast Desert, or Ventura NAA</b>
1. Nontarpaulin/Shallow/Broadcast or Bed	<b>Required</b>
2. Tarpaulin/Shallow/Broadcast or Bed	<b>Required</b>
3. Nontarpaulin/Shallow/Broadcast or Bed/ Three Post-Fumigation Water Treatments	<b>Required</b>
4. Tarpaulin/Shallow/Bed/Three Post-Fumigation Water Treatments	<b>Required</b>
5. Nontarpaulin/Deep/Broadcast or Bed	<b>NR</b>
6. Tarpaulin/Deep/Broadcast or Bed	<b>Required</b>
7. Chemigation (Drip System)/Tarpaulin	<b>Required</b>

**NR** = Not a required study.

Note: Rotondardo (2004) drip study location was not stated in the report and Beard (1996) studies were all in AZ or WA.

Table 2. Products containing only Chloropicrin as the active ingredient:

<b>Application Method</b>	<b>Either San Joaquin Valley, Southeast Desert, or Ventura NAA</b>
1. Nontarpaulin/Shallow/Broadcast or Bed	<b>Required</b>
2. Tarpaulin/Shallow/Broadcast or Bed	<b>Required</b>
3. Nontarpaulin/Shallow/Broadcast or Bed/ Three Post-Fumigation Water Treatments	<b>Required</b>
4. Tarpaulin/Shallow/Bed/Three Post-Fumigation Water Treatments	<b>Required</b>
5. Nontarpaulin/Deep/Broadcast or Bed	<b>Required</b>
6. Tarpaulin/Deep/Broadcast or Bed	<b>Required</b>
7. Chemigation (Drip System)/Tarpaulin	<b>Required</b>