Appendices to

Economic Analysis of the January 2001 California Department of Pesticide Regulation Regulations on Strawberry Field Fumigation

Report prepared for California Department of Food and Agriculture

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APPENDIX 1. DATA QUALITY

For this analysis, we collected copies of work plans and, in some cases, permits from five counties: Monterey, Orange, Santa Barbara, Santa Cruz, and Ventura. Samples of each county’s work plan and DPRs suggested format follow. There are a number of factors that affect the value of the collected data for our analysis. Some vary across counties, and some are general.

I. GENERAL CONSIDERATIONS

Since we evaluate the effect of the 2001 DPR regulations on growers’ fumigation decisions, we used information from the work plans, rather than from PUR reports from the counties to DPR. Thus, our information may not correspond to PUR totals. While this deprives us of a cross-check, it allows our application information to be consistent with the other information associated with each grower when he submitted his work plan.

Table 12 reports the total strawberry acreage collected using the permits and work plans from the county agricultural commissioner offices. The acres are compared to district production acres for the 2001 crop year, obtained from the California Strawberry Commission. There are two obvious reasons to expect the acreages to differ. First, permit acres were for 2002 production, so there is likely to be some year to year differences. Second, we collected permits by county, rather than district, so that acreage in adjoining counties would not be included. The latter factor is likely most important for the Santa Maria production region. A significant share of this region is in San Luis Obispo county, whereas we only evaluate Santa Barbara. It seems unlikely, however, that these factors account for all of the acreage difference. We are uncertain of the reasons underlying remaining acreage differences.

Table 12. Collected Permit Data by County Versus 2001 Production Acreage by District

<table>
<thead>
<tr>
<th>Permits</th>
<th>Production</th>
<th>Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orange, San Diego</td>
<td>Orange</td>
<td>2445</td>
</tr>
<tr>
<td>Oxnard</td>
<td></td>
<td>7777</td>
</tr>
<tr>
<td>Santa Maria</td>
<td></td>
<td>3816.5</td>
</tr>
<tr>
<td>Watsonville</td>
<td></td>
<td>10758.6</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>24797.1</td>
</tr>
</tbody>
</table>

For our inner buffer analysis, we entered field dimensions when we could determine measurements with a reasonable degree of confidence. For example, if we had information regarding the length of a rectangular field and its acreage, we could
calculate the width. When we could not determine field dimensions, we did not include fields in the analysis. No counties explicitly required information regarding field dimensions in their work plans. Similarly, we had to make decisions regarding the information regarding notifications in the work plans.

Table 13 summarizes the fields analyzed in the simulation program, and compares them to the total fields collected by collecting work plans and permits from the county agricultural commissioner offices. Santa Barbara had the lowest percentages. This is due in part to our exclusion of fields using non-isolated blocks.

Table 13. Optimal Fumigation Program Coverage Summary

<table>
<thead>
<tr>
<th>County</th>
<th>Permit fields</th>
<th>Sim. fields</th>
<th>Sim. fields %</th>
<th>Total permit acres</th>
<th>Total sim. acres</th>
<th>Sim. acres %</th>
<th>Average permit acres</th>
<th>Average sim. Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monterey</td>
<td>134</td>
<td>25</td>
<td>18.7%</td>
<td>5401.2</td>
<td>634.5</td>
<td>11.7%</td>
<td>40.6</td>
<td>25.4</td>
</tr>
<tr>
<td>Orange</td>
<td>44</td>
<td>22</td>
<td>50.0%</td>
<td>1484.3</td>
<td>610.8</td>
<td>41.2%</td>
<td>33.7</td>
<td>27.8</td>
</tr>
<tr>
<td>Santa Barbara</td>
<td>80</td>
<td>13</td>
<td>16.3%</td>
<td>2824.8</td>
<td>370.5</td>
<td>13.1%</td>
<td>35.3</td>
<td>28.5</td>
</tr>
<tr>
<td>Santa Cruz</td>
<td>59</td>
<td>14</td>
<td>23.7%</td>
<td>1798.7</td>
<td>432.4</td>
<td>24.0%</td>
<td>28.1</td>
<td>30.9</td>
</tr>
<tr>
<td>Ventura</td>
<td>98</td>
<td>28</td>
<td>28.6%</td>
<td>5984.0</td>
<td>1371.2</td>
<td>22.9%</td>
<td>61.1</td>
<td>49.0</td>
</tr>
<tr>
<td>Total</td>
<td>415</td>
<td>102</td>
<td>17493.0</td>
<td>3419.4</td>
<td></td>
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</tr>
</tbody>
</table>

II. COUNTY-SPECIFIC CONSIDERATIONS

II.1. Monterey County.

Monterey County had no specific data considerations.

II.2. Orange County

In Orange County, growers were not required to report the number of people notified. Instead, they simply indicated whether or not they had to notify people. While this does not affect our acreage loss analysis, it does affect our analysis of notification costs. Only a few growers reported the number of individuals notified, so we do not have enough information to estimate notification costs reliably. In the text, we estimate a lower bound based on available information, since three of the observations seem much higher than average.
II.3. Santa Barbara County

Unlike other counties, Santa Barbara had a significant number of fields that included non-isolated fumigation blocks. We did not incorporate any of these fields into our analysis. Santa Barbara also had a relatively larger number of fields with inner buffers larger than 50 feet, due in part to the more extensive use of bed fumigation in this county. For all other counties, a 50 foot buffer for all analyzed fields approximated acreage losses reasonably well. Regarding notification information, in some cases it was difficult to determine whether any notifications were necessary from the work plans alone. It was especially difficult to do so for the renotifications of people who wished to be informed within 48 hours of the actual fumigation. Accordingly, we excluded 48 hour pre-fumigation notices from our notification cost analysis for Santa Barbara.

II.4. Santa Cruz County

The Santa Cruz County Agricultural Commissioner’s office graciously provided us with GIS maps that included all strawberry fields in the county. This increased our ability to estimate field dimensions.

II.5. Ventura County

In Ventura County, growers were not required to report the number of people notified. Instead, they simply indicated whether or not they had to notify people. According to growers, a notification requirement was in place prior to the 2001 DPR regulations, which may explain this county decision. While this does not affect our acreage loss analysis, it does affect our analysis of notification costs.
APPENDIX 2: COUNTY WORK PLANS

This appendix contains copies of the work plan forms from the five counties, and the suggested work plan format prepared by DPR.

A2.1. Monterey County
A2.2. Orange County
A2.3. Santa Barbara County
A2.4. Santa Cruz County
A2.5. Ventura County
A2.6. DPR suggested work plan format
WORKSITE PLAN
MONTEREY COUNTY

PERMITTEE: 

PERMIT NUMBER: SITE NUMBER: 

RANCH NAME & LOT #: 

PEST CONTROL BUSINESS: 

APPLICATION METHOD: APPLICATION RATE: 

TOTAL NUMBER OF ACRES TO BE FUMIGATED: 

NOTIFICATION REQUIREMENT: FT 

CONTACT THE PEST CONTROL BUSINESS TO GET THE INFORMATION TO DETERMINE THE NOTIFICATION REQUIREMENT. ALL PROPERTIES WITHIN THIS AREA MUST RECEIVE INITIAL NOTIFICATION. MAKE SURE THAT THIS AREA IS BIG ENOUGH BECAUSE FAILURE TO NOTIFY SOMEONE WILL DELAY THE APPLICATION FOR 7 DAYS. THE FOLLOWING TABLE IS SUPPLIED TO MAKE THE CALCULATIONS EASIER:

<table>
<thead>
<tr>
<th>LARGEST # OF ACRES TO BE FUMIGATED IN 48 HRS</th>
<th>RATE LESLAC</th>
<th>% H2</th>
<th>EMISSION RATIO</th>
<th>EMISSION RATE</th>
<th>OUTER BUFFER ZONE</th>
<th>NOTIFICATION REQ (OUTER BUFFER ZONE = 300 FEET)</th>
</tr>
</thead>
<tbody>
<tr>
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</table>

DATE OF APPROVAL: APPROVED BY: 

ATTACH THE FOLLOWING:

1. MAP - A map of the site must be included as part of the worksite plan. The map must have the neighboring properties numbered. Measurements must be made from the field to be fumigated to the property lines of all the surrounding properties where there are residences or sensitive sites. These measurements must be on the map. (See example map).

2. NOTIFICATION LOG - A notification log must be included as part of the worksite plan. The Monterey County form must be used and the gray areas must be completed. (Attached).

3. TARP REPAIR AND CUTTING PLAN - A tarpaulin repair response plan and tarp cutting plan must be included as part of the worksite plan. The Monterey County form must be completed and used. (Attached)
TARP REPAIR RESPONSE PLAN

DURING THE FUMIGATION INJECTION THE TARP WILL BE REPAIRED BY:

☐ The Pest Control Business
  Business Name: ________________________________
  Authorized Representative: ________________________
  Name: ____________________________ PA Cert: __________

☐ The grower and the grower’s employees.
  Name: _______________________________ PA Cert: __________

AFTER THE PEST CONTROL BUSINESS HAS FINISHED THE APPLICATION AND LEFT THE FIELD, THE FIELD WILL BE MONITORED FOR DAMAGE BY:

☐ The Pest Control Business
  Business Name: ________________________________
  Authorized Representative: ________________________
  Name: ____________________________ PA Cert: __________

☐ The grower and the grower’s employees.
  Name: _______________________________ PA Cert: __________

HOW OFTEN WILL THE FIELD WILL BE MONITORED FOR DAMAGE DURING THE FIRST 24 HOURS:

☐ hourly
☐ every two hours
☐ every four hours
☐ every six hours
☐ other __________________


☐ Call the pest control business at this phone number: ____________________
  Someone from the pest control business will test the ambient air in the damaged area while wearing an SCBA, in order to determine if the damage can be repaired by someone without wearing an SCBA. If the concentration in the damaged area is less than 5 ppm, the repair can be made without wearing an SCBA.

☐ Some other plan: ____________________________
TARP CUTTING AND REMOVAL PLAN

THE TARP WILL BE CUT AND REMOVED BY:

☐ A tarp removal company. Name of company:

☐ The grower and the grower's employees. The following equipment will be used for cutting the tarps (either an all-terrain vehicle or a tractor with a cutting wheel. The tarps cannot be cut by hand):

Names of grower and employees:

__________________________________________

__________________________________________
# RESTRICTED MATERIAL PERMIT SUPPLEMENT

**Methyl Bromide (With Chloropicrin)**  
**Field Soil Fumigation**  
**County of Orange**

<table>
<thead>
<tr>
<th>Site Location</th>
<th>Commodity</th>
<th>Acres / Unit</th>
<th>Pesticides</th>
<th>Site Hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
<td>Methyl Bromide Chloropicrin</td>
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<td>2.</td>
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<td>8.</td>
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Additional Locations: Attach Separate Sheets

A COPY OF THIS PERMIT SHALL BE AT THE JOB SITE.

Attachments:

___ A. Orange County Permit Conditions.

___ B. Worksite Plan.

___ C. Site Maps.

___ D. Notification to Nearby Properties.

___ E. Tarps Gin Repair and Response Plan.

___ F. Tarps Gin Removal Plan.

Applicant Signature: __________________________ Date: __________

Issued By: __________________________ Date: __________
RESTRICTED MATERIAL PERMIT SUPPLEMENT
Methyl Bromide (With Chloropicrin)
Field Soil Fumigation
County of Orange

Pre Control Business Applied: yes  no
Name: __________________________

Grower Applied: yes  no
Name: __________________________

BUFFER ZONE DETERMINATION

Brand Name: _______________________
Application Rate: ___________________
Number of Acres: ___________________
Fumigation Method: ___________________

<table>
<thead>
<tr>
<th>Field/Block No.</th>
<th>Commodity</th>
<th>Acreage</th>
<th>App. Rate (Lbs/Acre)</th>
<th>Method No.</th>
<th>Emission Rate</th>
<th>Buffer Zone</th>
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<tbody>
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</table>
RESTRICTED MATERIAL PERMIT SUPPLEMENT
Methyl Bromide (With Chloropicrin)
Fumigated Soil Fumigation
County of Orange

PERMIT CONDITIONS:

___ A. APPLICATIONS SHALL NOT BE MADE WITHIN 500 FEET OF OCCUPIED PROPERTIES AFTER 2:00 P.M.

___ B. OPERATIONS SHALL BE SUSPENDED UPON NOTIFICATION THAT A STAGE II AIR POLLUTION ALERT IS FORCASTED.

___ C. APPLICATION TO FIELDS ADJACENT TO SCHOOL PROPERTY AND IS WITHIN 100 FEET OF THE PERIMETER OF THE OUTER BUFFER ZONE, THE INJECTION SHALL BE COMPLETED 24 HOURS PRIOR TO THE START OF A SCHOOL SESSION. SCHOOL SESSION SHALL BE THOSE TIMES WHEN STUDENTS ARE ATTENDING SCHEDULED CLASSES.

DATE: __________________________

CONDITIONS: ____________________

___ D. THE REGULATIONS PROHIBIT AN EMPLOYEE FROM WORKING IN FUMIGATION HANDLING ACTIVITIES MORE THAN THE HOURS SPECIFIED IN A 24-HOUR PERIOD, DURING THE INJECTION PERIOD AND DURING THE BEL. AN EMPLOYEE CAN WORK IN MORE THAN ONE WORK TASK AND/OR FUMIGATION METHOD IN A 24-HOUR PERIOD, AS LONG AS THE EMPLOYEES TOTAL WORK HOURS DO NOT EXCEED THE LOWEST TOTAL HOURS SPECIFIED.

Activities/maximum Work hours in a 24-Hour Period

<table>
<thead>
<tr>
<th>Activity/Equipment Driver</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copists</td>
<td></td>
</tr>
<tr>
<td>Shovelers</td>
<td></td>
</tr>
<tr>
<td>Tarpaulin Cutters</td>
<td></td>
</tr>
<tr>
<td>Tarpaulin Removers</td>
<td></td>
</tr>
</tbody>
</table>

EMPLOYER RECORD KEEPING

Regulations 6784 (b)(2) requires employers to maintain records for all employees involved in methyl bromide field soil fumigation handling activities. These records must be maintained at a central location for two years and be made available to the commissioner on request. The information must include:

1) Identity of the person involved in fumigation handling
2) Work activity (Shovelers, Copists, Driver, Tarpaulin Cutter or Removers)
3) Date(s) worked in any of these activities
4) Duration worked in any of these activities
5) U.S. EPA Registration Number for specific methyl bromide product(s) handled and Brand name of specific methyl bromide product(s) handled
E. THE APPLICATION BLOCK RESTRICTED ENTRY INTERVAL SHALL END AT COMPLETION OF TARPAILIN REMOVAL AND SHALL BE AT LEAST ___ DAYS.

F. NOTIFICATION TO THE COMMISSIONER:

The operator of the property to be treated is required by section 6450.1(a) to provide notification (Notice of Intent - NOI) to the county agricultural commissioner at least 48 hours prior to Commencing fumigation. The NOI must include the following information:
1) Hour the fumigation is intended to commence,
2) Notice of Intent information specified in section 6434(b):
   a) permit number
   b) name and address of permittee and applicator
   c) location of area to be treated and name of farm (property) operator
   d) site to be treated
   e) acres to be treated
   f) fumigation method
   g) pesticide(s)
   h) volume per acre and dosage
   i) pest to be controlled
   j) date intended fumigation is to commence
   k) location and identity of areas which may be impacted

For multiple application blocks to be fumigated sequentially, the commissioner may allow one NOI that includes a fumigation schedule for all blocks in lieu of a separate NOI for each application block to be fumigated.

G. NOTIFICATION TO NEIGHBORING PROPERTY OPERATORS:

The purpose of the (optional) notification is to provide an opportunity to persons who reside on certain properties to receive information that a permit has been issued by the commissioner. Regulations section 6450.1(b) require the operator of the property (grower) to be treated to assure that the operator of the property for the following types of properties that are within 300 feet of the outer buffer zone receive the initial notification information:
1) Schools
2) Residences
3) Hospitals
4) Convalescent homes
5) Onsite employee housing
6) Similar areas identified by the commissioner

Operator of the property includes any person who owns the property and/or is legally entitled to possess or use the property through terms of a lease, rental contract, trust, or other management arrangement. Examples include: a principal of a school, a tenant of an apartment complex, a tenant of a single-family dwelling, the administrator of a convalescent home.
The initial notification must be in writing, or by other means approved by the commissioner, and must be delivered at least 7 days prior to the submission of the NOI to the commissioner. The notification must include:

1) Name of the pesticide(s)
2) Name, business address, and business telephone number of the operator of the property to be treated
3) Name, business address, and business telephone of the commissioner
4) Earliest and latest dates that the fumigation will start
5) How to request subsequent notification of the specific date and time of the fumigation

For persons who received the initial notification and who request subsequent notification, the operator of the property to be treated must ensure that those persons receive specific notification of the date and time of the start of the fumigation and anticipated expiration of the buffer zone. This notification must be provided at least 48 hours prior to the start of the fumigation.

1) If a request for subsequent notification is received after submission of the NOI and before the fumigation begins, the specific notice must be provided prior to starting the fumigation, but the 48-hour requirement does not apply.
2) If fumigation of the application block doesn't commence within the time frame specified on the Notice of Intent (no sooner than the intended starting time or later than 12 hours after the intended starting time specified on the NOI) then a new notification must be provided to those persons who requested the subsequent notice, but the 48-hour requirement does not apply.

Method of Notification:

Copy of Notification:

Date(s) of Notification:

Map(s) Showing Neighboring Properties Notified:

H. TARPOLIN REPAIR RESPONSE AND TARPOLIN REMOVAL PLANS

The operator of the property to be treated must include in the Work Site Plan specific information about the tarpaulin repair and tarpaulin removal procedures that are to be followed at the fumigation site. The Tarpaulin Repair Response Plan must identify the responsibilities of the licensed pest control business and/or the permittee with regard to tarpaulin damage and repair activities.

The following information should be included in the tarpaulin repair response plan:

1) Person(s) responsible for repair
2) Person(s) certified to test ambient air concentrations of methyl bromide
3) Schedule for checking tarpaulins
4) Minimum distance(s) from sensitive sites that tarpaulins will be repaired
5) Minimum time following injection that tarpaulins will be repaired
6) Minimum time of damage that will be repaired
7) Other factors used to determine when tarpaulin repair will be conducted such as, hazard to the public, residents or workers, proximity to occupied structures, feasibility of repair, and environmental factors such as wind speed and direction.
Tarpaulin Cutting and Removal Procedures

Regulation section 6784 (b) (3) requires tarpaulin cutting and tarpaulin removal to be discontinued if the presence of gas is readily evident (must of eye irritation or odor). Also tarpaulins used for broadcast fumigation, must be cutting only mechanical methods (all terrain vehicle or a tractor with a cutting wheel), and that each panel be cut lengthwise. Employees must not be allowed to use hand-tools such as, shovels or knives to cut the tarpaulins.

Cutting Transit Areas (Roads) Prior to tarpaulin Removal

Tarpaulin covered fields that have been fumigated must not be disturbed by cutting roads through them prior to tarpaulin removal. The practice cannot be construed as nervous and is not consistent with section 6450.3. This section contains the only criteria accepted (legal) fumigation methods and procedures for field fumigation in California.

Tarpaulin Repair and Response Plans: ________________________________

Tarpaulin Removal Plan: ________________________________

1. Fumigation Field Postings

The operator of the property shall ensure that signs are posted around the treated fields (section 6779).

Where the inner buffer zone extends into the adjoining agricultural property and the adjoining property operator gives written permission and allows the operator of the property to be treated to post the inner buffer zone boundary on the adjoining property with signs. If such written permission is given, the operator of the property to be treated shall assure that:

The inner buffer zone boundaries on the adjoining property are posted with signs while the buffer zone is in effect.

The signs are posted so that the wording is clearly visible, to persons with normal vision, from a distance of 60 feet and shall contain the following words: "METHYL BROMIDE INNER BUFFER ZONE" and "KEEP OUT" and "NO ENTRY".

The signs are posted at intervals not exceeding 500 feet.

Inner buffer zone posting required ________________________________

Written permission provided ________________________________

I verify that I understand and agree to comply with the Methyl Bromide Field Fumigation Regulations and Permit Conditions.

Permit Applicant: ________________________ Title: ______________________ Date: ________________

6-01  6
A2.2. Orange County (page 7 of 10)

Methyl Bromide (with chloropicrin)
Field Soil Fumigation
County of Orange

WORKSITE PLAN

Property Operator (field to be treated)

Name:
Address:
Phone Number:
Contact Person:
Restricted Material Permit Number:
Site Number:
Site Location:

Pest Control Business

Name:
Address:
Phone Number:
Contact Person:

Methyl Bromide with Chloropicrin Fumigation

Brand Name:
Manufacturer:
Registration Number:
Application Rate:
Number of Acres:
Fumigation Method:
Type of Tarps in Stein Approved Lists:
Earliest Date of Fumigation:
Latest Date of Fumigation:
Field Postings:
Description of Activities within the Buffer Zones:
(Detailed Map Showing Field Location, Field Dimensions,
On-Site and Off-Site Housing, Schools, Hospitals, Convalescent Homes
And other Sensitive Areas).
Notification to Nearby Properties

Method of Notification: ____________________________
Copy of Notification: ____________________________
Date(s) of Notification: __________________________
Map showing properties notified: __________________
(List addresses)

Tarpaulin Repair and Response Plans

Person(s) Responsible: __________________________

Person(s) Certified to test Air Concentrations of Methyl Bromide

Schedule For Checking Tarpaulins:

Minimum Time Following Injection that Tarpaulin Will Be Repaired:

Minimum Size of Damage that will be repaired:

Other Factors Used to Determine when Tarpaulin Repair will be conducted such as:
- Hazard to the Public, Residents or Workers
- proximity to Occupied Structures
- Feasibility of Repair
- and Environmental Factors such as Wind Speed and Direction

Type of Testing Device Used To Measure Air Concentrations:

Type and Number of Respiratory Protection Devices Available at Site:

Person(s) trained in the use of Respiratory Devices:

Tarpaulin Removal Plan:

Person(s) Responsible:

Equipment Used To Cut Tarpaulins:

Method Used To Cut Tarpaulins:

Schedule for Cutting Tarpaulins:

Schedule for Removing Tarpaulins:

Trained Fumigation Crew (list Names)

Applicator/Driver:

Coptrol:

Shoaler(s):
Plan Work Hours in a 24-Hour Period

Applicato/Driver: ____________________________________________
Copilot: ____________________________________________________
Shovelers(s): ________________________________________________
Tarpaulin Cutters: ____________________________________________
Tarpaulin Removers: __________________________________________

Fumigation Buffer Zones

Methyl Bromide Product: ______________________________________
Number of Acres: ____________________________________________
Application Method: __________________________________________
Application Rate: _____________________________________________
Emission Rate: ______________________________________________

Block 1 - Day

Available Inner Buffer Zone = _________________________________
Max Acreage = _____________________________________________
Block Size = _______________________________________________
Outer Buffer Zone = _________________________________________
Buffer Duration = __________________________________________

Block 2 - Day

Available Inner Buffer Zone = _________________________________
Max Acreage = _____________________________________________
Block Size = _______________________________________________
Outer Buffer Zone = _________________________________________
Buffer Duration = __________________________________________

Block 3 - Day

Available Inner Buffer Zone = _________________________________
Max Acreage = _____________________________________________
Block Size = _______________________________________________
Outer Buffer Zone = _________________________________________
Buffer Duration = __________________________________________
Block 4 - Day

Available Inner Buffer Zone = 
Max Acreage = 
Block Size = 
Outer Buffer Zone = 
Buffer Duration = 

Block 5 - Day

Available Inner Buffer Zone = 
Max Acreage = 
Block Size = 
Outer Buffer Zone = 
Buffer Duration = 

Block 6 - Day

Available Inner Buffer Zone = 
Max Acreage = 
Block Size = 
Outer Buffer Zone = 
Buffer Duration = 

Block 7 - Day

Available Inner Buffer Zone = 
Max Acreage = 
Block Size = 
Outer Buffer Zone = 
Buffer Duration = 

Block 8 - Day

Available Inner Buffer Zone = 
Max Acreage = 
Block Size = 
Outer Buffer Zone = 
Buffer Duration = 
2002 PERMIT CONDITIONS FOR METHYL BROMIDE SOIL FUMIGATION

A. The Worksite Plan is part of the permit conditions and must be submitted at least 7 days prior to submitting a Notice of Intent to fumigate. The Worksite Plan must also be verified and explicitly approved prior to permit issuance. Do not deviate from the Worksite Plan.

B. The application block shall not exceed 40 acres in any 24 hour time period and must comply with all conditions listed in Table 1. For tarped applications, the tarp must remain on the block for a minimum of 5 days (120 hours). Only tarps on the DPR approved list of manufacturers shall be used.

C. A Notice of Intent must be submitted 48 hours prior to fumigation. The Notification Log must accompany the Notice of Intent.

D. Buffer Zones. All Inner and Outer Buffer Zones must be calculated on the Buffer Zone worksheet and listed on the Worksite plan prior to obtaining a permit. Buffer zones are a condition of the permit. You must obtain written permission for your buffer zones to extend onto other properties. The inner buffer zones may extend onto other ag property only if there are no occupied residences within the buffer zone. The outer buffer zones may extend onto other property only if there are no schools, hospitals, convalescence centers, day care centers or other sensitive sites as designated by the Commissioner. Proof of written permission from adjoining property operators must be submitted to the Ag Commissioner and become part of the permit conditions.

E. Initial notification must be given to properties containing residences that are within 300 feet of an outer buffer zone. This notification must be given at least 7 days prior to submitting a Notice of Intent to fumigate. Specific notice must be given to those property operators requesting it according to §65011(b). Specific notice must also be given to the property operators of adjoining properties into which a buffer zone(s) extend. A copy of the general notification and the notification log must be submitted to the Ag Commissioner and become conditions of the permit.

F. The restricted entry interval (REI) for a broadcast application is a minimum of 5 days from the end of the MBF injection and is over after the tarp has been removed. For bailed applications, when roads are cut in the block, the REI shall be a minimum of 8 days from the end of the MBF injection and is over after the last 24 hour sanation period. Otherwise, the REI shall be 14 days and the air under the tarp must test at less than 5 ppm before planting.
G. Work Schedules: Review the work hours worksheet to determine the maximum work hours assigned to each task an employee may be required to perform. An employee may work on multiple tasks as long as the total work hours do not exceed the lowest total allowed.

<table>
<thead>
<tr>
<th>Task</th>
<th># of hours allowed</th>
<th>Task</th>
<th># of hours allowed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tractor</td>
<td></td>
<td>Trap Center</td>
<td></td>
</tr>
<tr>
<td>Loader</td>
<td></td>
<td>Trap Puller</td>
<td></td>
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<tr>
<td>Shovel</td>
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</tbody>
</table>

H. Warning signs shall be posted on each block fumigated in a 24 hour period and shall include the words, “DANGER/Peligro”, “Area under fumigation”, the name of the fumigator, the date and time of the application, and the name, address and telephone number of the applicator. The signs shall be removed after the restricted entry interval has elapsed and prior to allowing workers to enter the application block. Additional signs indicating the IBZ shall be posted when an IBZ extends onto adjoining ag property. These warning signs shall be posted every 200 feet and shall include the words, “Methyl Bromide Inner Buffer Zone” “Keep Out/No Entry”.

I. Exposure records shall be kept for all employees involved in application, saturation, tarp repair, and tarp removal. The record shall identify the person, date, work activity and duration, pesticide brand name, and the US EPA Registration Number. These records shall be kept for 7 years.

Supervisors, applicators, copilots, shovelers, persons performing tarp repair, and saturation activities prior to the completion of saturation are considered pesticide handlers. Employers are required to comply with all worker safety regulations covering pesticide handlers, which include but are not limited to: pesticide safety training, hazard communication, decontamination facilities, emergency medical care posting, and personal protective equipment.

J. Tarps cut for broadcast applications may begin after the tarp has been in place for 5 days (120 hrs). The tarp must be cut mechanically and the ground saturated for 24 hours prior to removing the tarp. The completed tarp removal plan must be submitted prior to obtaining a permit and becomes a condition of the permit.

K. The decision to repair the tarp must be made by a certified applicator. The Tarp Repair Response Plan must be submitted prior to obtaining a permit and becomes a condition of the permit.

Treated areas to be repaired must have the air tested by the certified applicator, wearing an SCBA, and shown to be less than 5 ppm of methyl bromide in the area before unprotected, trained employees are allowed to enter to conduct tarp repair for up to 1 hour. If the MBR concentration is greater than 5 ppm, the person conducting the repair must wear an SCBA.

L. If the air temperature is 85°F or above, the application must be discontinued.
### Fumigation Timeline

Please use the table below to plan your fumigation. Fill in the dates, remembering that the day after an event occurs starts the clock ticking. For example, if you deliver general notification on Monday (day 0) then the first day you could submit an NOI would be the following Monday (day 7).

<table>
<thead>
<tr>
<th>Day 0</th>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
<th>Day 4</th>
<th>Day 5</th>
<th>Day 6</th>
<th>Day 7</th>
<th>Day 8</th>
<th>Day 9</th>
<th>Day 10</th>
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</thead>
<tbody>
<tr>
<td>0</td>
<td>3 hrs</td>
<td>4 hrs</td>
<td>7 hrs</td>
<td>9 hrs</td>
<td>13 hrs</td>
<td>14 hrs</td>
<td>16 hrs</td>
<td>24 hrs</td>
<td>48 hrs</td>
<td>Inject</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Comments</th>
<th>Worksite plan must be verified prior to permitting.</th>
<th>Notification must be delivered at least 7 days (128 hrs) prior to NOI submission</th>
<th>Specific notice must be delivered at least 48 hrs before injection</th>
<th>&quot;Late&quot; notice &amp; employee notice must be delivered before injection begins</th>
<th>Fumigation Property Operator</th>
<th>Worksite plan submitted at least 7 days before NOI submitted Date</th>
<th>General notification Delivered Date</th>
<th>Submit NOI &amp; Deliver specific notification to those requesting it and adjusting properties Time</th>
<th>&quot;Late&quot; notification delivered Date</th>
<th>Begin Fumigation Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>C&amp;G</td>
<td>Worksite plan approved Date</td>
<td>Permit Issued Date</td>
<td>Approves NOI Date</td>
<td>GCP Employees, FCPA's, FLG's</td>
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<tr>
<td>Other Property Operators</td>
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The following documents are attached as part of these permit conditions:

- WORKSITE PLAN WORKSHEET
- MAI
- BUFFER ZONE CALCULATION SHEET
- EXAMPLE OF COMPLETED NOTIFICATION
- NOTIFICATION LOG SHEET
- TARP REPAIR/REMOVAL PLAN

Permit Date

Other Conditions:

---

23
COUNTY OF SANTA BARBARA
OFFICE OF AGRICULTURAL COMMISSIONER
SANTA BARBARA SANTA MARIA LOMPOC SOLVANG CARPINTERIA

METHYL BROMIDE WORK SITE PLAN FOR SOIL FUMIGATION

This form is to be used for calculating your Work Site Plan for the application of methyl bromide. You must fill in all applicable spaces and draw a map (see attached map form). If information is omitted, the Work Site Plan will be denied. The Work Site Plan must be submitted and verified prior to obtaining a permit. If you require help in completing this form, please call 805-966-6200, or stop by 825 W. Foster Road, Santa Maria, CA 93458.

<table>
<thead>
<tr>
<th>Property Operator</th>
<th>Property Owner Address</th>
<th>Property Owner</th>
<th>Phone Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Address</td>
<td>City, State, Zip</td>
<td>Phone Number</td>
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<table>
<thead>
<tr>
<th>Fumigation Site Information</th>
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<tbody>
<tr>
<td>Location</td>
<td></td>
<td></td>
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<tr>
<td>Post Center Address</td>
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<tr>
<td>Phone</td>
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<thead>
<tr>
<th>Methyl Bromide Formulation</th>
<th>Application Rate</th>
<th>Method</th>
<th>Eradication Rate</th>
<th>Eliminate Rate</th>
<th>Type of Fumigation</th>
<th>Start of Treatment Date</th>
<th>Last Treatment Date</th>
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<thead>
<tr>
<th>Description of Activities in Buffer Zones</th>
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<table>
<thead>
<tr>
<th>Method of Notification</th>
<th>Copy of Notification</th>
<th>Date of Notification</th>
<th>Map/List of properties notified</th>
<th>Attached</th>
<th>V</th>
<th>N</th>
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<td>V</td>
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</tbody>
</table>

Table: Summary of Fumigation

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Site ID</th>
<th>Instigated?</th>
<th>Acres</th>
<th>% MB active ingredient</th>
<th>RB</th>
<th>Buffer zone location</th>
<th>OB2 Distance</th>
<th>IB2 Distance</th>
<th>Buffer zone safety</th>
<th>Details</th>
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Submitted by: ___________________________ Date: ___________________________

Received by: ___________________________ Date: ___________________________

Verified by: ___________________________ approved: [ ] denied: [ ]
NOTIFICATION LOG FOR

Submit to Ag Com:

General Notification that a methyl bromide permit has been issued to schools that are within 100 feet of the center buffer zone of the farm. Date and time of fumigation injection and anticipated expiration of the buffer indicate the date the specific notice was given and the expiration of it.

Fumigant Injection: Date __________________________ Time __________________________
Expiration of Buffer Zones (date & time) __________________________________________

<table>
<thead>
<tr>
<th>Property Address/Location/Name/Phone</th>
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</table>

Noticer with Notice of Intent

must be given to properties that have houses, hospitals, convalescent homes or

teen. Additionally, for persons requesting it, specific notification of the data
r zones may be given by telephone, hand delivered flyer, or in person. Please

<table>
<thead>
<tr>
<th>Date of Initial Notice</th>
<th>Request Specific Notice (Y/N)</th>
<th>Date of Specific Notice</th>
<th>Method of Specific Notice</th>
</tr>
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<tbody>
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</tbody>
</table>
Identify the field location, dimensions and any residences. Include the fumigated area edges, distance to the fumigated property line and specify the property lines of adjoining ag land, occupied residences, daycare centers, hospitals, convalescent homes, schools and other sensitive sites that may adjoin or lie within 300 feet of the fumigated property line (not the edge of the fumigated area). Other sensitive sites may include playgrounds, office buildings, other dwellings (including labor camps), parks, lakes, waterways, estuaries, reservoirs, livestock/barns and crops.
Buffer Zone Distance and Duration Calculations
And Buffer Zone Permission Log

Use this sheet to calculate your buffer zone distances and durations and whether you may need permission to
adjacent property operators. Submit to the Agricultural Commissioner with your worksite plan.

Buffer Zones. The Inner buffer zone (IBZ) and the outer buffer zone (OBZ) are determined by which application
method is used, the rate per acre of MB, the formulation and the number of acres fumigated. The IBZ is the area
surrounding an application block outside of which people not involved in the application may walk or occupy
while the buffer zone is in effect. The OBZ is the area surrounding an application block outside of which people
may dwell while the buffer zone is in effect. In all situations, the buffer zones are measured from the
application edge to the edge of the adjoining property line. If the adjoining property operators do not give their
permission for your buffer zone to extend onto their property, then the application must be amended so that the
buffer zones will lie outside of the adjoining property lines.

Buffer zone distances are calculated by determining if the block is isolated or non-isolated and by calculating
the emission rate and applying this rate to Tables 2, 3, or 4.

1. Determine if the application block is isolated or non-isolated, using Fig. 1.
2. Calculate the emission rate using the following steps:

For isolated blocks:

Look up the emission ratio listed in Table 1 and calculate the active ingredient rate per acre (total pounds per acre x
% methyl bromide). The emission rate = emission ratio x active ingredient application rate. To determine the outer
buffer zone look up the intersection of the appropriate emission rate and acreage in Table 2. The inner buffer zone
is where the emission rate and the acreage intersect in Table 4. Use Table 3 when you are using a
tarp/ shallow/broad area/No Fly at 10 acres or less with 235 lbs. or less of methyl bromide. When an exact
emission rate is not listed on the table, round up to the nearest number.

\[
\text{Emission rate} = \frac{\text{Rate/acre} \times \% \text{Active Ingredient}}{x} = \frac{\text{rate Al/acre}}{x} = \text{emission rate}
\]

Look up intersection of the emission rate and the acreage on Table 2, 3, or 4.

For non-isolated blocks:

Follow the steps above to determine the emission rate for each block. Calculate the aggregate acreage by adding the
acreage of the 2 blocks under consideration. If there are more than 2 non-isolated blocks, the aggregate acreage
would be calculated by adding the acreage of the block under consideration and the next largest block. To
determine the outer buffer zone, look up the intersection of the appropriate emission rate and total acreage of both
blocks in Table 2. The inner buffer zone is where the emission rate and the total acreage of both blocks intersect in
Table 4. Use Table 3 when you are using a tarp/shallow/broad area/No Fly at 10 acres or less with 235 lbs. or
less of methyl bromide. Note: The first day’s scheduled block will only have a buffer zone associated with the
first day’s acreage.

\[
\frac{\text{Rate/acre} \times \% \text{Active Ingredient}}{x} = \frac{(\text{rate Al/acre})}{x} = \text{emission rate}
\]

Block 1 + Block 2 = intersection of total acreage at emission rate

Look up intersection on Table 2, 3, or 4.
Buffer Zone Duration

Buffer Zone Duration: Buffer zone durations are determined by the application method, rate per acre, and the number of acres quarantined. Use the appropriate intersection area on Tables 5A, 5B and 5C.

Buffer Zones duration

Buffer Zone Permission

Written permission is required when your buffer zones extend onto adjoining land. Buffer zones may not extend onto other properties that contain schools, hospitals, convalescent centers, daycare centers or other sensitive sites designated by the Commissioner.

Does your IBZ extend onto adjoining property? _____ Distance N: _____ S: _____ E: _____ W: _____

North Permission: ________________________
South Permission: ________________________
East Permission: ________________________
West Permission: ________________________

Does your OBZ extend onto adjoining property? _____ Distance N: _____ S: _____ E: _____ W: _____

North Permission: ________________________
South Permission: ________________________
East Permission: ________________________
West Permission: ________________________
SANTA CRUZ COUNTY

WORKSITE PLAN

PERMITTEE: ________________________

PERMIT NUMBER: _______________ SITE NUMBER: ______

SITE LOCATION DESCRIPTION: ________________________________

PEST CONTROL BUSINESS: ________________________________

APPLICATION METHOD: _______________

APPLICATION RATE: __________________

TOTAL NUMBER OF ACRES TO BE FUMIGATED: __________

INITIAL NOTIFICATION ZONE: (OUTER BUFFER ZONE + 300 FEET).

CONTACT THE PEST CONTROL BUSINESS TO GET THE INFORMATION TO DETERMINE THE NOTIFICATION ZONE. THE TABLE IS INCLUDED ONLY TO MAKE THE CALCULATIONS EASIER:

<table>
<thead>
<tr>
<th>LARGE NUMBER OF ACRES TO BE FUMIGATED IN 48 HRS</th>
<th>RATE</th>
<th>¼ MB</th>
<th>EMISSION RATIO</th>
<th>EMISSION RATE</th>
<th>OUTER BUFFER ZONE</th>
<th>NOTIFICATION ZONE (OUTER BUFFER ZONE + 300 FEET)</th>
</tr>
</thead>
</table>

ATTACH THE FOLLOWING:

1. MAP - A map of the site must be included as part of the worksite plan. The map must have the neighboring properties numbered. If the aerial from the County is not used, measurements must be made from the field to be fumigated to the property lines of all the surrounding properties where there are residences or sensitive sites. These measurements must be on the map.

2. NOTIFICATION LOG - A notification log must be included as part of the worksite plan. The Santa Cruz County form must be used and the required areas must be completed. (Attached)

3. TARP REPAIR AND CUTTING PLAN - A tarpaulin repair response plan and tarp cutting plan must be included as part of the worksite plan. The Santa Cruz County form must be completed and used. (Attached)
NOTIFICATION LOG

The information in the first four columns is required to be submitted with the worksite plan. The other columns are included as an area to document the information for your own use.

Fumigation dates on initial notification: earliest date of fumigation: _______ latest date of fumigation: _______

<table>
<thead>
<tr>
<th>NUMBER ON MAP</th>
<th>ADDRESS OR LOCATION DESCRIPTION (NAME AND PHONE IF AVAILABLE)</th>
<th>DATE OF INITIAL NOTICE</th>
<th>METHOD OF INITIAL NOTICE (mail, door, in person)</th>
<th>REQUESTING SPECIFIC NOTICE (YES)</th>
<th>METHOD REQUESTED FOR NOTIFYING</th>
<th>DATE OF SPECIFIC NOTICE</th>
<th>PERMIT TO ENTER PROPERTY (inside or outside)</th>
<th>METHOD OF SPECIFIC NOTIFICATION (mail, door, in person)</th>
</tr>
</thead>
<tbody>
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</table>
SANTA CRUZ COUNTY

2002 TARP REPAIR RESPONSE PLAN

DURING THE FUMIGATION INJECTION THE TARP WILL BE REPAIRED BY:

☐ The Pest Control Business.
☐ Myself, or my trained employees.

AFTER THE PEST CONTROL BUSINESS HAS FINISHED THE APPLICATION AND LEFT THE FIELD, THE TARP WILL BE MONITORED FOR PROBLEMS AND DAMAGE BY:

☐ The Pest Control Business.
☐ Myself, or my trained employees.

THE TARP WILL BE MONITORED FOR PROBLEMS OR DAMAGE DURING THE FIRST 24 HOURS:

☐ hourly
☐ every two hours
☐ every four hours
☐ every six hours
☐ other

ANY EVIDENCE OF EXCESSIVE GAS ESCAPING, OR ABOUT TO ESCAPE FROM THE TARP, WILL BE IMMEDIATELY EVALUATED AND IMMEDIATELY REPORTED TO BOTH THE PEST CONTROL BUSINESS (BY CALLING: ) AND THE SANTA CRUZ COUNTY AGRICULTURAL COMMISSIONER’S OFFICE (BY CALLING: 255-8080 accessible 24 hours a day / 7 days a week).

EVIDENCE OF EXCESSIVE GAS ESCAPING, OR ABOUT TO ESCAPE FROM THE TARP INCLUDES:

• A HOLE OR RIP IN THE TARP - During the first 24 hours, a hole or tear in the tarp that is larger than 6 inches and is within 100 feet of a property containing an occupied residence will be immediately reported. After the first 24 hours, any damage larger than 6 feet will be reported.

• THE TARP PULLING OUT OF THE SOIL OR FORMING LARGE BUBBLES - During the first 24 hours any large bubbles or the tarp pulling out of the soil will be immediately reported. After the first 24 hours, any tarp pulling out of the soil will be reported.

• COMPLAINTS FROM NEIGHBORS THAT THEY ARE EXPERIENCING SYMPTOMS OF GAS EXPOSURE - Any complaints will be immediately reported.

• MYSELF OR MY EMPLOYEES EXPERIENCING ANY SYMPTOMS - Any symptoms will be immediately reported.

THE PLAN FOR REPAIRING THE TARP IS:

Decisions for repairing the tarp will be made by myself and the pest control business, and will be based on the hazard to the public, residents or workers, the proximity to occupied structures, the size of the damaged area, the timing of the damage, the feasibility of repair, and environmental factors such as wind speed and direction. Someone from the pest control business will respond to the call by coming out to the site as soon as possible. If there is a hole or rip in the tarp, or evidence of gas escaping, the pest control business will test the ambient air while wearing an SCBA, in order to determine if the damage can be repaired by someone without wearing an SCBA. If the concentration in the damaged area is less than 5 ppm, the repairs can be made without wearing an SCBA. Repairs will be made by a trained person using the required safety equipment.

THE TARP WILL BE CUT AND REMOVED BY:

☐ A tarp removal company. Name of company:
☐ The grower and the grower’s employees. The following equipment will be used for cutting the tarp (either an all-terrain vehicle or a tractor with a cutting wheel. The tarp cannot be cut by hand):
A2.5. Ventura County (page 1 of 2)

Ventura County Agricultural Commissioner
Methyl Bromide Field Fumigation Worksite Plan

<table>
<thead>
<tr>
<th>Permittee</th>
<th>Address</th>
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<tbody>
<tr>
<td>City</td>
<td>, CA.</td>
</tr>
<tr>
<td>Contact Person</td>
<td>Permit Number</td>
</tr>
<tr>
<td>Pest Control Operator</td>
<td>Address</td>
</tr>
<tr>
<td>Contact Person</td>
<td>Phone</td>
</tr>
</tbody>
</table>

1. A map of the proposed fumigation block or blocks must be attached to the work site plan. This form is a suggestion only, permittees may submit their own work site plan forms as long as they contain the information required in California Code of Regulations Section 6450 (a).

2. The map must include the actual distances to places where people may live, stay overnight, or work. The map should identify listed structures as to use: such as home, school, packing shed, worker housing, office etc. All places where people may live or work that fall within the buffer zones must be vacated for the length of time the buffer zone is in effect. (Buffer Zones can be in effect from 36 hours to 94 hours depending on the method of application and the site). The Agricultural Commissioner suggests that prior notification be provided to workers or tenants who will be required to vacate their residences during a fumigation. The approximate dates of fumigation can be included in rental agreements for tenants renting housing on agricultural property, who will be required to leave their homes during a fumigation.

<table>
<thead>
<tr>
<th>Site ID No</th>
<th>Acreage</th>
<th>Application Method</th>
<th>Type</th>
<th>REI</th>
<th>Activities Allowed - Outer Buffer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zone</td>
<td></td>
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</table>

Will the outer buffer zone on any application block be within 300 feet of a school, residence, hospital, convalescent home, daycare center or on site employee housing:
Yes ☐ No ☐
If yes for school the fumigation must be completed 36 hours prior to the start of scheduled classes.

If yes describe the method to be used for notifying property operators that a permit to use methyl bromide near their property has been issued by the commissioner. (attach additional sheet if necessary)
A2.5. Ventura County (page 2 of 2)

Tarpsaulin Response Plan

Will the fumigation be done by a licensed PCO yes/no Name of Pest Control Company

Person responsible for tarpaulin repair during fumigation Certification
QAL, QAC, PAC, other

Person responsible for tarpaulin repair after fumigation QAL, QAC, PAC,

Certificate number

Type of testing device

Tarpaulin Repair will be conducted when damage occurs in the following situations:

Schedule for checking tarp
When the damaged area exceeds inches, in minimum 6 inches.
When damage occurs within hours of the end of fumigation and when the wind direction is toward
any of the listed sensitive areas within feet of the damaged area. In 24 hours and 100 feet.
When workers are present adjacent to the application block within hours of the end of the fumigation.
(For example 36 hours)

The following criteria will be considered when making decisions on tarp repair:
1) hazard to public, workers, or residents 2) proximity to occupied structures 3) size of damaged
areas 4) timing of damage, feasibility of repair and environmental factors such as wind speed
and direction.

The ambient air in the areas of the tarpaulin to be repaired must be tested for methyl bromide
concentration by a certified applicator employee of either the PCO or the grower, or by the certified
grower himself. Testing must be done with a device specified on the label of the methyl bromide product
used. The certified applicator must wear an SCBA when conducting these tests.

Tarp Removal:

Person Responsible
Equipment Used to Cut Tarp
Schedule for Cutting Tarp
Schedule for Tarp Removal

Signature of Permittee

Approved by
Commissioner’s Representative
Date of Submital
ATTACHMENT #4

METHYL BROMIDE FIELD FUMIGATE

WORKSITE PLAN

PERMITTEE: ____________________________ PERMIT #: ____________

TELEPHONE #: (____)____-__________ FAX #: (____)____-

SITE LOCATION: ________________________ SITE NUMBER: ______

METHYL BROMIDE FIELD FUMIGATION WORKSITE PLAN must be submitted to the Agricultural Commissioner at 7 days prior to the NOTICE OF INTENT [6450.1(a)].

Methyl Bromide Fumigation Method#: __________ Type of Tarp Used: __________

Percent Methyl Bromide Used: __________ Commodity: __________

<table>
<thead>
<tr>
<th>Outer Buffer</th>
<th>Block</th>
<th>Application</th>
<th>Adjacent Area Acreage</th>
<th>Date(s) of Application</th>
<th>Rate</th>
<th>Emission Rate</th>
<th>Emission Rate</th>
</tr>
</thead>
<tbody>
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Is the applicator a Pest Control Operator? ? Yes ? No

If yes, NAME ______________________________ PHONE ___________________________

ATTACH THE FOLLOWING:
1. **MAP** – A map of the site must be included as part of the worksite plan. The map must have the neighboring properties numbered. Measurements must be made from the field to be fumigated to the property lines of all the surrounding properties where there are residences or sensitive sites. These measurements must be on the map.

2. **NOTIFICATION LOG** – A notification log must be included as part of the worksite plan. The County form or other equivalent form should be used and the unshaded areas must be completed. (Attachment #7)

3. **TARP REPAIR AND REMOVAL PLAN** – A tarpaulin repair response plan and tarp removal plan must be included as part of the worksite plan. The County form must be completed and used. (Attachment #5)
ATTACHMENT # 6

APPLICATION
NOTIFICATION

NOTIFICATION THAT A METHYL BROMIDE PERMIT HAS BEEN ISSUED

Your property is near a farm field where the County Agricultural Commissioner has issued a permit for the use of the pesticide methyl bromide. Growers are required to obtain a permit from the Agricultural Commissioner in order to use this material. The material is applied by a Pest Control Company as a gas, and a tarp is put on the field during the application. There are new regulations governing the use of methyl bromide in California. Growers intending to use this material must notify neighboring residents or property operators of their plans. If the field is fumigated, there will be an area of at least 60 feet to the nearest residential property left unfumigated to provide a buffer. The grower is required to notify any neighbor whose property is within 300 feet of this buffer that a permit to use methyl bromide near their property has been issued by the Agricultural Commissioner. If you would like information about the application, you may contact the grower by calling the number below. You may also ask to be notified of the specific date and time of the fumigation, and the anticipated expiration of the buffer. Do this by calling or writing the grower and leaving your name, address, phone number, and instructions on how you would like to receive the notification (answering machine message, letter, door hanger, etc.). If you request this specific notification, you will receive it at least 48 hours prior to the start of the fumigation.

Grower’s Business Name ______________________________________
Contact Name _____________________________________________
Business Address _________________________________________
Business Telephone Number (___) _____
Fumigation Location _______________________________________
Earliest date that fumigation will start: __/__/__
Latest date that fumigation will start: __/__/__
To receive specific notification of the fumigation 48 hours before the fumigation is started, you must request the information more than 48 hours before that time. If you do not request the notification more than 48 hours before the fumigation is started, you will still receive notification, but you may not be given 48 hours notice.

Information about methyl bromide is available online at: **www.cdpr.ca.gov**.

If you have questions concerning the methyl bromide fumigation or the permit issued to this property operator, you may speak to an inspector at the Agricultural Commissioner's Office.

- Commissioner's name: 
- County: 
- Address: 
- Telephone number: (___) ___-___
- Date of Delivery of this Notice: ___/___/___
**ATTACHMENT #7**

**NOTIFICATION LOG**

The information in the first four columns is required to be submitted with the worksite plan. The other columns (shaded areas) are included as an area to document the information for your own use.

Fumigation Dates on Initial Notification: Earliest date of fumigation: [ ] [ ] Latest date of fumigation: [ ] [ ]

<table>
<thead>
<tr>
<th>Number on Map</th>
<th>Address or Location Description (Name and Phone if Available)</th>
<th>Date of Initial Notice</th>
<th>Method of Initial Notice (mail, door hanger, in person)</th>
<th>Requesting Specific Notice (Y/N)</th>
<th>Method Requested for Notifying</th>
<th>Date of Specific Notice</th>
<th>Method of Specific Notification (mail, door hanger, in person)</th>
<th>Permission to Use Property (inner or outer)</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>
ATTACHMENT #8

PERMISSION FOR THE METHYL BROMIDE BUFFER TO EXTEND ONTO ADJOINING PROPERTY

INNER BUFFER ZONE

THE INNER BUFFER ZONE CAN ONLY EXTEND INTO ADJOINING PROPERTY IF THE ADJOINING PROPERTY IS AGRICULTURAL.

I give my permission for the INNER buffer zone of ____________________ ’s (fumigating permittee) fumigation to extend onto my property. I will allow him/her to post signs on my property at the boundary of the inner buffer zone. I will be responsible for assuring that no one is allowed in the inner buffer zone which is on my property, except to transit. I understand that the operator of the property to be fumigated will notify me, at least 48 hours before the fumigation, of the specific date and time of the start of the fumigation and the anticipated expiration of the buffer zone. I will notify any employees who are working on the site that a buffer zone has been established on the property, and will inform them of the specific date and time of the start of the fumigation and the anticipated expiration of the buffer zone. I understand that this includes my employees, employees of a licensed pest control businesses, and employees of farm labor contractors. I understand that the notification to a farm labor contractor’s employees can be done by giving a written notice to the farm labor contractor who must then give the notice to the employees, and that the operator of the property to be fumigated can provide me with this written notice, but it is my obligation to inform the operator of the property to be fumigated that I will need the notification in writing. I will provide this notice before the employees begin work activity on the property where a buffer zone has been established.

I have read and understand these requirements, and agree to comply with them.

Location of Property (Address or description)

Property Operator’s Signature ____________________________ Date __________

Property Operator’s Printed Name ____________________________ Phone number __________
ATTACHMENT # 9

PERMISSION FOR THE METHYL BROMIDE BUFFER TO EXTEND ONTO ADJOINING PROPERTY

OUTER BUFFER ZONE

VACATING AGREEMENT

I have agreed to move out of my residence during the time of the fumigation so that the outer buffer zone can extend into the area where my house is located. I understand that I must be out of my residence for the duration of the buffer zone (36 to 84 hours). The operator of the property to be fumigated will give me written notification 48 hours before the fumigation, which will specify the actual time that I must be out of my house. I understand that I am not to return to my residence except for __________ (length of time) in order to ___________ (activity).

I have read and understand these requirements, and agree to comply with them.

Location of Property (Address or description)

Property Operator's Signature __________________________ Date ___________

Property Operator’s Printed Name __________________________ Phone number ___________
APPENDIX 3: UC COST AND RETURNS STUDIES

This appendix includes copies of the UC cost and returns studies for three California strawberry production regions, prepared as part of the CDFA contract agreement.

Fresh Market Strawberries, Central Coast 2001, report #ST-CC-01

Fresh Market, Freezer Strawberries, South Coast, Santa Maria Valley 2001, report #ST-SC-01-1

Fresh Market, Freezer Strawberries, South Coast, Ventura County 2001, report # ST-SC-01-2
APPENDIX 4: WEED CONTROL COST EFFICACY OF METHYL BROMIDE ALTERNATIVES

This appendix contains the analysis used as the basis for our evaluation of the cost-effectiveness of methyl bromide alternatives.
WEEDING TIME ESTIMATES IN COMMERCIAL-SCALE FUMIGANT EVALUATIONS AT OXNARD, CA

Steve Fennimore and Rachael Goodhue, UC Davis

The objective of this study is to evaluate commercial-scale strawberry fumigant applications for weed control efficacy and to estimate weeding costs with the alternative fumigants.

I. METHODS

Evaluation of emulsified fumigants was initiated in August 2000 in a fruit production field at Martinez Farms near Oxnard, CA. Emulsified fumigants were applied through two drip lines per bed. Drip-applied treatments were: chloropicrin (PIC EC) at 24 gallons per acre (GPA) and Inline at 32 GPA. Shank-applied materials were Telone C35 (TEL C35) at 400 lb/A and PIC at 200 lb/A and methyl bromide/chloropicrin (MBPIC) at 250 lb/A. A sequential application of metam sodium at 37 GPA was applied to one set of Inline, PIC, PIC EC and TEL C35 plots while no metam was applied to the other set. Metam sodium was applied 5 days after the initial drip- or shank-applied materials were injected. The Inline treatments used VIF tarp; the other treatments used standard tarp. ‘Camarosa’ was planted Oct. 5 to 8, 2000. Each treatment was replicated once and three, one bed wide by 100 ft. long, subplots were established within each plot where weed counts and weeding times were measured. Weed counts and weeding times have been measured on Nov. 30, 2000, Jan. 30, Mar. 29, and May 24, 2001. The study has been completed for the season.

II. RESULTS

Among the drip-applied treatments PIC EC alone was the weakest treatment, but the sequential application of metam sodium significantly reduced the number of weeds per acre and the weeding time. Drip-applied Inline provided an intermediate level of weed control. A sequential application of metam sodium following an Inline application improved weed control and reduced weeding time, but the scale of improvement was not as great as with drip-applied PIC EC. Shank-applied PIC alone provided an intermediate level of weed control was improved by a sequential application of metam sodium, and weeding times were much reduced by the metam sodium. Shank-applied TEL C35 provided good weed control, and TEL C35 followed by metam sodium provided slightly better weed control than the standard MBPIC. MBPIC had the lowest number of weeds per acre and the lowest weeding times.
Table 1. The number of weeds per acre and weeding times in the fumigant evaluation at Oxnard, CA

<table>
<thead>
<tr>
<th>Fumigant</th>
<th>Rate</th>
<th>Metam sodium</th>
<th>No. weeds /A</th>
<th>Weed time hr/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIC drip</td>
<td>24 GPA</td>
<td>none</td>
<td>10,105</td>
<td>47.7</td>
</tr>
<tr>
<td>PIC drip</td>
<td>24 GPA</td>
<td>37 GPA</td>
<td>5,627</td>
<td>37.3</td>
</tr>
<tr>
<td>Inline drip+VIF</td>
<td>32 GPA</td>
<td>none</td>
<td>7,006</td>
<td>35.3</td>
</tr>
<tr>
<td>Inline drip+VIF</td>
<td>32 GPA</td>
<td>37 GPA</td>
<td>4,501</td>
<td>38.1</td>
</tr>
<tr>
<td>PIC shank</td>
<td>200 lb/A</td>
<td>none</td>
<td>7,950</td>
<td>38.4</td>
</tr>
<tr>
<td>PIC shank</td>
<td>200 lb/A</td>
<td>37 GPA</td>
<td>5,264</td>
<td>28.7</td>
</tr>
<tr>
<td>TEL C35 shank</td>
<td>400 lb/A</td>
<td>none</td>
<td>4,102</td>
<td>28.8</td>
</tr>
<tr>
<td>TEL C35 shank</td>
<td>400 lb/A</td>
<td>37 GPA</td>
<td>2,468</td>
<td>27.7</td>
</tr>
<tr>
<td>MBPIC</td>
<td>250 lb/A</td>
<td>none</td>
<td>2,105</td>
<td>26.5</td>
</tr>
<tr>
<td>LSD 0.05</td>
<td></td>
<td></td>
<td>3,320</td>
<td>8.0</td>
</tr>
</tbody>
</table>

Using the per hour wage plus taxes and other costs for field labor from the University of California Cost and Returns study for the Oxnard Plain, $9.38

In Table 2 below, we calculate the weeding costs of each treatment. We pair this cost with the material cost for each fumigant and the tarpaulin costs in order to obtain an estimate of the effect of the treatments on costs per acre. Of course, this calculation ignores differences in application costs, and, potentially, management costs.

Table 2: Costs Per Acre

<table>
<thead>
<tr>
<th>Fumigant</th>
<th>Fumigant cost</th>
<th>Tarp cost</th>
<th>Weeding cost</th>
<th>Total cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIC drip</td>
<td>$559.45</td>
<td>$264.86</td>
<td>$447.43</td>
<td>$1,271.73</td>
</tr>
<tr>
<td>PIC drip+MS</td>
<td>$642.37</td>
<td>$264.86</td>
<td>$349.87</td>
<td>$1,257.10</td>
</tr>
<tr>
<td>Inline drip+VIF Tarp</td>
<td>$525.16</td>
<td>$532.95</td>
<td>$331.11</td>
<td>$1,389.22</td>
</tr>
<tr>
<td>Inline drip+VIF Tarp+MS</td>
<td>$608.08</td>
<td>$532.95</td>
<td>$357.38</td>
<td>$1,498.41</td>
</tr>
<tr>
<td>PIC shank</td>
<td>$480.00</td>
<td>$205.00</td>
<td>$360.19</td>
<td>$1,045.19</td>
</tr>
<tr>
<td>PIC shank+MS</td>
<td>$562.92</td>
<td>$205.00</td>
<td>$269.21</td>
<td>$1,037.13</td>
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<tr>
<td>TEL C35 shank</td>
<td>$1,078.00</td>
<td>$205.00</td>
<td>$270.14</td>
<td>$1,553.14</td>
</tr>
<tr>
<td>TEL C35 shank-MS</td>
<td>$1,160.92</td>
<td>$205.00</td>
<td>$259.83</td>
<td>$1,625.75</td>
</tr>
<tr>
<td>MBPIC</td>
<td>$650.00</td>
<td>$205.00</td>
<td>$248.57</td>
<td>$1,103.57</td>
</tr>
</tbody>
</table>

Source: Fennimore and Goodhue
*Labor cost/hour is $9.38. Obtained from the University of California Cost and Returns study for the Oxnard Plain, 2001.
One interesting finding from these trials is that the application of metam sodium essentially results in no difference in the total analyzed costs in the case of chloropicrin, with a positive contribution of less than two hours of weeding for each treatment. However, weed control tends to be highly variable with chloropicrin alone. Given this, it is possible that metam sodium may reduce total costs in expectation. That is, growers may apply metam sodium in order to avoid the possibility of high weed populations and the resulting high hand weeding costs. The large cost increases for the 1,3-D treatments suggests that a metam sodium treatment is less likely to be cost-effective. In the case of Inline, it is unclear whether the difference is due to the fumigant or the VIF tarp.