### Subsection C.7.3

**Methyl Bromide (Soil Fumigation) Recommended Permit Conditions**

#### Introduction
These permit conditions apply to methyl bromide field soil applications and to greenhouse soil applications. Applicable requirements for field soil applications were previously adopted into 3 CCR sections 6447 through 6447.3. Due to product labeling changes in late-2012, DPR recommends certain additional permit conditions.

The most restrictive requirement, whether it is the label, regulations, or permit conditions, must be followed unless DPR has provided specific guidance about exceptions. In addition, the CAC may place more restrictive conditions based on local conditions.

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Part 7.3.1
Recommended Permit Conditions for Soil Fumigation Within a Greenhouse

I. DEFINITIONS

A. **Application** includes treatment and aeration; it is complete when each application block has been aerated.

B. **Application block** is the actual area within a greenhouse that will be fumigated in any 24-hour period. The application block cannot exceed 50,000 square feet. The maximum square footage may be reduced due to the distance to an occupied structure, previously fumigation application blocks, future greenhouse fumigations, and adjacent workers.

C. **Application rate**, in pounds/acre, is equal to the amount of methyl bromide (active ingredient) in the formulated product.

D. **Application site** is the treatment area within a greenhouse which may be comprised of more than one application block.

E. **Buffer zone** is the area that must be maintained between the application block and those places where people conduct certain activities or practices. Buffer zones are in effect until the tarp has been removed and aerations are complete. For greenhouse soil fumigations, the two types of zones to be considered are:

   1. **Resident Buffer Zone** is the area surrounding an application block outside of which people may “dwell.” See the definition: *dwell*.

   2. **Worker Buffer Zone** is the area surrounding an application block outside of which people may “work or occupy.” See the definition: *work or occupy*.

F. The buffer zone duration for an application block begins at the start of fumigation and ends 48 hours after the tarpaulin has been removed, when aeration is considered complete. The length of this period depends upon the timing and method of tarp removal.

G. **Dwell** means that a person is able to or will occupy a structure for any or all parts of a 24-hour period. This includes, but is not limited to: homes, hospitals, convalescent homes, boarding schools, day schools, parks, hotels, apartment complexes, and other sensitive areas.
I. DEFINITIONS (Continued)

H. **Fieldworkers** are those employees who engage in work activities in an application block **after** aeration is complete.

I. **Frequency of applications** refers to the interval of time elapsed from the beginning of the application of methyl bromide at one application block to the beginning of the application of methyl bromide at another application block.

J. An **isolated block** is one that is 1,300 feet or more from another greenhouse soil fumigation or at least 48 hours has elapsed, or will elapse, before another greenhouse soil fumigation is conducted.

K. A **non-isolated block** is one that is less than 1,300 feet from another greenhouse soil fumigation and less than 48 hours have elapsed, or will elapse, before another greenhouse soil fumigation is conducted.

L. **Pesticide Handler** includes employees involved in fumigation, aeration activities, tarp repair, and tarp removal **prior** to the completion of aeration.

M. **Work or occupy** means that a person is able to or will be at a place for **eight hours or less**. This includes, but is not limited to: fields, offices, warehouses, stores, malls, factories, greenhouses, packing sheds, and workshops.

II. WORKER SAFETY REQUIREMENTS

A. **Restricted Entry and Warning Sign Posting Requirements**

1. As a condition of the permit, warning signs shall be posted around the application block for the duration of the restricted entry interval. Refer to 3 CCR section 6776(b) for the requirements.

2. The restricted entry interval for an application block begins at the start of fumigation and ends when aeration is complete.
RECOMMENDED PERMIT CONDITIONS FOR SOIL FUMIGATION WITHIN A GREENHOUSE

A. Restricted Entry and Warning Sign Posting Requirements (Continued)

3. Aeration is considered complete 48 hours after the tarp has been removed and when the requirements listed in Section VIII, Tarpaulin and Soil Aeration Procedures have been met.

For example, if the tarp is removed from the application block after three days (the minimum required fumigation time) and the soil is aerated for two days (minimum aeration time), then the restricted entry interval lasts for five days from the start of fumigation.

4. Fieldworkers shall not be allowed to enter an application block to perform cultural activities until the restricted entry interval has elapsed and warning signs have been removed.

5. Title 3 of the California Code of Regulations section 6782(c), covering fumigation of enclosed spaces, requires that warning signs be posted on or near all greenhouse entrances until fumigation and ventilation are complete and the premises are safe for reentering. Refer to section 6782(c) for the warning sign requirements.

B. Pesticide Handler and Field Worker Requirements

1. The employer must maintain use records for all employees involved in application, tarp repair, and tarp removal activities. The record shall identify the person, work activity(ies), date(s), duration of handling, U.S. Environmental Protection Agency Registration Number, and brand name of the methyl bromide product handled.

2. The employer must maintain these use records at a central location for two years and make them available to the county agricultural commissioner upon request for review.

C. Tarpaulin Repair

1. The decision to conduct tarp repair must be made by a certified applicator (the permittee, the permittee’s authorized representative, or the pest control operator) on a job-by-job basis. The decision should be based on, but not limited to, hazard to the public, residents, or workers; size of the damaged area(s); timing of damage; and feasibility of repair.
C. Tarpaulin Repair (Continued)

2. Title 3, California Code of Regulations section 6780 requires the use of approved respiratory protective equipment if the concentration of methyl bromide cannot be controlled and an employee’s exposure would exceed 5 ppm. Areas to be repaired must be tested by the certified applicator, using an appropriate testing device, and shown to have less than 5 ppm of methyl bromide in the projected work areas before unprotected employees are allowed to enter to conduct tarp repair. The certified applicator must wear approved respiratory protective equipment when conducting these tests.

D. Workers in Adjacent Sites

1. The property operator and/or pest control operator must be aware of adjacent sites where activity is likely while the Worker Buffer Zone is in effect, following the start of the application. They must ensure that the adjacent property operators are advised, prior to the fumigation, to keep their workers outside of the Worker Buffer Zone during that period of time.

2. The property operator and/or pest control operator may give notice to adjoining property operators verbally or in writing.

3. If entry occurs as the result of a failure to be aware of worker activity and subsequent failure to advise adjacent property operators to keep workers out, the operator of the property fumigated and the person performing pest control are in violation of the methyl bromide permit conditions.
RECOMMENDED PERMIT CONDITIONS FOR SOIL FUMIGATION WITHIN A GREENHOUSE

III. APPLICATION REQUIREMENTS

A. Soil injections using tractor-drawn chisels or similar devices are prohibited within a greenhouse.

B. All soil application of methyl bromide within a greenhouse shall comply with the raised-tarp fumigation methods specified on the registered pesticide label. All delivery tubes shall be anchored in place under the tarp and shall not be moved during the application of methyl bromide. Follow the manufacturer’s recommendations for application tubing.

C. The fumigant must be introduced from outside of the greenhouse. If entry into the greenhouse enclosure is required to perform a function necessary for the application, a Self-Contained Breathing Apparatus must be worn.

D. All fittings, connections, and valves must be checked for methyl bromide leaks prior to fumigation. If cylinders are replaced during the fumigation process, the connections and valves must be checked for leaks prior to continuing the job.

E. Only the tarpaulins listed on the approved manufacturers list are to be used. (See Section IX, List of Manufacturers of High Barrier Approved Tarpaulins.) They have been determined to meet or exceed the following standards for a “high barrier” tarpaulin: a permeability factor of less than eight millimeters methyl bromide per hour, per square meter, per 1,000 ppm of methyl bromide under the tarpaulin at 30 degrees Celsius. Polyethylene tarp of six-mil thickness or greater meets these criteria.

F. A maximum of 450 pounds of methyl bromide (active ingredient) per acre is allowed.

G. A maximum aggregate of 50,000 square feet will be allowed in a 48-hour period.

H. All greenhouse fumigations must be isolated from all other types of methyl bromide fumigations.
RECOMMENDED PERMIT CONDITIONS FOR SOIL FUMIGATION WITHIN A GREENHOUSE

IV. BUFFER ZONE DETERMINATION

A. A buffer zone is the area surrounding an application block outside of which certain activities or practices are allowed. The buffer zone is in effect until the tarp has been removed and aeration is complete (See Section VIII, Tarp Removal). The size of the buffer zone will be determined by the proposed size of the application block and the application rate. The buffer zone surrounding an application block may have to be modified due to the proximity to occupied structures, distance to adjacent workers, and nearness to completed or proposed greenhouse fumigations.

B. The buffer zone is partitioned into the Resident Buffer Zone and the Worker Buffer Zone. The size of the Resident Buffer Zone is based on the assumption that a person may “dwell” at a place for any or all parts of a **24 hour-period**. The size of the Worker Buffer Zone is based on the assumption that people work or recreate at a place for **eight hours or less**.

C. Transit through the Worker Buffer Zone by the permittee's employees is limited to infrequent and unavoidable trips. Routine or repeated transit through this buffer zone is prohibited.

D. The buffer zones begin at the edges of the treated piles and extend in all directions regardless of buildings or property boundaries.

E. Procedures: Isolated Blocks

1. To determine the **Resident Buffer Zone** surrounding an isolated block, use the application rate and the area of the application block and apply these values to Table 1.

2. To determine the **Worker Buffer Zone** surrounding an isolated block, first divide the application rate by **three**. Then, using the adjusted application rate and the area of the application block, apply these values to Table 1.
F. Procedures: Non-Isolated Blocks

1. Determine the highest application rate for all application blocks within 1,300 feet.

2. Compute the sum of the areas, in square feet, of the block to be evaluated and the next largest block within 1,300 feet.

3. To determine the Resident Buffer Zone, use the highest application rate and the sum of the application block areas and apply these values to Table 1.

4. To determine the Worker Buffer Zone, divide the highest application rate by three. Use the adjusted application rate and the sum of the application block areas and apply these values to Table 1.

5. If there are only two non-isolated application blocks, then the buffer zones determined above will be the same for each block.

   If there are more than two non-isolated blocks, then each pair of blocks, the one under evaluation and the next largest, will have to be considered individually. This may result in each block having different buffer zones even though they are not isolated from the others.
V. BUFFERZONE DURATION

A. The Resident and Worker Buffer Zones that surround an application block are in effect from the start of the fumigation until aeration is complete. Aeration is considered complete after the tarp has been removed and 48 hours have elapsed since tarp removal was completed. See Section VIII, Tarp Removal.

For example: the tarp was removed three days (minimum time allowed) after the fumigation was completed and the block was allowed to aerate for the required 48 hours following tarp removal. The buffer zone would be in effect for five days from the start of fumigation in an application block.

B. Determine the proposed Resident Buffer Zone by measuring the distance between the edge of the application block and the edge of the property line, not the physical structure associated with the property. This includes places where people are occupying.

People are not allowed to “dwell” within the Resident Buffer Zone. Residences within the buffer zone must be vacated while the buffer zone is in effect. If the resident(s) cannot or will not vacate the building(s), then the property operator must decrease the acreage to be treated or the rate of methyl bromide to be used so that the building lies outside of the buffer zone.

C. If there is an occupied commercial building or workers within the proposed Worker Buffer Zone and the workers were unable to vacate the premises, then the application must either be rescheduled to coincide with the worker’s day off or the acreage/rate must be decreased to reduce the buffer zone.

D. If there is a recreational area within the Worker Buffer Zone where people are expected to spend large amounts of time, the application must be rescheduled or amended to accommodate this activity. If the people are just walking, bicycling, or driving through the area without stopping, the application does not need to be changed.

E. This requirement applies to all persons, including the property operator.

F. If the application is stopped due to weather or breakdowns, then the buffer zone duration starts over at the beginning of the next day’s application.
RECOMMENDED PERMIT CONDITIONS FOR SOIL FUMIGATION WITHIN A GREENHOUSE

VI. NOTICE OF INTENT MODIFICATION

A. The county agricultural commissioner must receive a Notice of Intent at least 24 hours prior to commencement of fumigation of any application block with methyl bromide for a greenhouse soil fumigation. The Notice of Intent must indicate the day and the hour the application is intended to commence.

B. Unless a waiver is granted by the county agricultural commissioner, fumigation of any application block must not commence sooner than the starting time indicated on the Notice of Intent. Nor, must the fumigation commence later than 12 hours after the intended starting time submitted with the Notice of Intent. If fumigation of an application block does not commence within this time frame, a new Notice of Intent must be submitted, but no 24-hour waiting period is required unless notified by the county agricultural commissioner.

C. For multiple application blocks to be fumigated sequentially, the county agricultural commissioner may allow a Notice of Intent with a “schedule” to be submitted in lieu of a Notice of Intent for each application block to be fumigated. The schedule must include a map and must specify the date and time each application block is intended to be fumigated.

D. The 24-hour Notice of Intent waiting period may be waived if the county agricultural commissioner determines that effective pest control cannot be attained otherwise, or, 24 hours are not necessary to adequately evaluate the intended application.

E. The reasons for granting each waiver must be documented and a record maintained by the county agricultural commissioner.

F. The operator of the property to be treated and the person performing pest control, if different, must be aware of adjacent sites where there is a reasonable possibility of work activity occurring while the Worker Buffer Zone is in effect, and must ensure that operators of those adjacent properties are advised to keep fieldworkers out of those areas during that period of time.
RECOMMENDED PERMIT CONDITIONS FOR SOIL FUMIGATION WITHIN A GREENHOUSE

VII. GREENHOUSE REENTRY REQUIREMENTS

A. If the greenhouse is not enclosed, the air monitoring requirements listed in this section may be waived. This determination should be based on the size and number of openings in the greenhouse, length of time the greenhouse will remain open, local wind conditions, the proximity to obstructions, the application rate, and the size of the fumigation. Other parameters may apply according to the specific situation. If only doors and vents are opened (regardless of ventilation), the greenhouse should be considered enclosed.

B. Entry by any person, other than a trained and protected pesticide handler into an enclosed greenhouse, is prohibited from the start of application until 48 hours after application AND the air concentration has been measured and found to be less than 5 ppm in the working area(s).

C. Entry by any person, other than a trained and protected pesticide handler, is prohibited for 24 hours following the start of aeration (tarp cutting, tarp removal, breaking seals). Note: 3 CCR section 6782(d) prohibits the release of a fumigant into an enclosed, occupied work area.

D. Entry into an enclosed greenhouse by unprotected workers, when not prohibited above, will be allowed only after air monitoring is conducted according to the protocol listed in Appendix 1. Work time restrictions will be based on the air monitoring test results. Air monitoring and entry restrictions will continue until aeration is complete.

E. The permittee shall prohibit all work activities within the Worker Buffer Zone surrounding a fumigated application block. The Worker Buffer Zone is in effect until soil aeration is complete. This prohibition shall be in effect for all greenhouse types, whether enclosed or open.

F. If the Worker Buffer Zone extends into adjacent greenhouses, workers may occupy those areas within the adjacent greenhouse that are outside of the Worker Buffer Zone without additional air monitoring or restriction.

G. A Self-Contained Breathing Apparatus shall be worn when entry into an enclosed greenhouse is required during the time periods listed in VII-B and VII-C. A Self-Contained Breathing Apparatus shall be worn when entry into a Worker Buffer Zone and/or the application block is required before aeration is complete regardless of greenhouse type (enclosed or open).
RECOMMENDED PERMIT CONDITIONS FOR SOIL FUMIGATION WITHIN A GREENHOUSE

VII. GREENHOUSE REENTRY REQUIREMENTS (Continued)

H. If the greenhouse is enclosed, the measured airborne levels of methyl bromide must be less than 1 ppm and soil aeration must be complete before unrestricted entry into all areas of the greenhouse is permitted.

If the greenhouse is not enclosed, then soil aeration must be complete before unrestricted entry is permitted.

VIII. TARPAULIN REMOVAL AND SOIL AERATION PROCEDURES

A. The tarpaulin must remain on the application block for at least three days (72 hours) following the application.

B. A Self-Contained Breathing Apparatus shall be used while the tarpaulin is being removed (without aeration), slit, or while breaking soil-to-tarp or tarp-to-tarp seals.

C. If the tarp is slit or the seals broken, rather than being completely removed, the treated area shall be aerated for a minimum of one day (24 hours) after finishing this activity.

The tarpaulin may be removed, without using a Self-Contained Breathing Apparatus, only after the aeration period is complete and air monitoring has been done according to the requirements listed in Appendix I. The same limitations listed in Appendix I apply to persons engaged in tarp removal.

D. The soil must remain undisturbed for a minimum of two days (48 hours) after the tarpaulin has been completely removed. When this time period has elapsed and air levels have been tested and shown to be less than 1 ppm methyl bromide (as required in Section VII-H), then the restricted entry interval and buffer zone periods are over.

IX. LIST OF MANUFACTURERS OF HIGH BARRIER APPROVED TARPAULINS

The current list of approved tarpaulins is available at DPR’s web site at: http://www.cdpr.ca.gov/docs/dprdocs/methbrom/fum_regs.htm

Under the section, Methyl Bromide, select Approved tarpaulins.
RECOMMENDED PERMIT CONDITIONS FOR SOIL FUMIGATION WITHIN A GREENHOUSE

TABLE 1. Buffer Zone Distances (In Feet) for Greenhouse Applications of Methyl Bromide

There are two steps in determining the appropriate size of the Resident and Worker Buffer Zones for an application block. First, determine if the block is isolated or not; refer to the definitions in Section I.

To determine the size of the Resident Buffer Zone, select the appropriate number of square feet in the left-hand column. Then, select the application rate (pounds/acre) from the top row. The Resident Buffer Zone is the value where the square foot row and the rate column intersect. To determine the Worker Buffer Zone, divide the application rate by three and follow the instructions for the Resident Buffer Zone.

<table>
<thead>
<tr>
<th>Area Treated (Round up)</th>
<th>Application Rate: Pounds Per Acre (Round up to next highest value)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>175</td>
</tr>
<tr>
<td>Square feet</td>
<td></td>
</tr>
<tr>
<td>Acres</td>
<td></td>
</tr>
<tr>
<td>5,000</td>
<td>20</td>
</tr>
<tr>
<td>10,000</td>
<td>20</td>
</tr>
<tr>
<td>15,000</td>
<td>20</td>
</tr>
<tr>
<td>20,000</td>
<td>20</td>
</tr>
<tr>
<td>25,000</td>
<td>20</td>
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<tr>
<td>30,000</td>
<td>20</td>
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<td>35,000</td>
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<td>40,000</td>
<td>20</td>
</tr>
<tr>
<td>45,000</td>
<td>20</td>
</tr>
<tr>
<td>50,000</td>
<td>25</td>
</tr>
</tbody>
</table>
RECOMMENDED PERMIT CONDITIONS FOR SOIL FUMIGATION WITHIN A GREENHOUSE

APPENDIX I

A. Testing Procedure

1. If more than two hours have elapsed since the last test, then a Self-Contained Breathing Apparatus must be worn or testing must be performed remotely.

2. Air monitoring must be performed within the work area where concentrations are assumed to be the highest. The test location(s) will depend on the proximity of people to the application block and the ventilation patterns within the enclosed greenhouse. If the work location is not known or changes over time, several locations need to be tested.

3. The first test must be performed shortly before each work shift and before any people are allowed to enter the greenhouse.

4. The air monitoring results will determine the length of time people will be allowed within the enclosed greenhouse. Work time is the cumulative amount of time a person spends within the greenhouse. It does not include time spent outside of the greenhouse.

Use the following work and testing schedule for each work shift. If the work shift will be longer than two hours, then subsequent tests are required. If they show higher concentrations than the initial test, then the work schedule must be adjusted to the new concentration. For example: the first test shows 1 ppm methyl bromide in the work area. People may occupy that area for up to four hours, providing a second test is performed after two hours. If the second test shows that the level of methyl bromide has risen to 3 ppm, then the people must be removed from the work area because according to the chart, they are allowed two hours of exposure at that level of methyl bromide.

Suggested Table for Time Restrictions: Colorimetric Tube Monitoring

<table>
<thead>
<tr>
<th>Maximum PPM Allowed Per Test Required</th>
<th>Work Time Restriction (Per 24 hours)</th>
<th>Colorimetric Tube</th>
<th>Tests Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 ppm</td>
<td>1 hour</td>
<td>5 ppm or less</td>
<td>initial test</td>
</tr>
<tr>
<td>3 ppm</td>
<td>2 hours</td>
<td>3 ppm or less</td>
<td>initial test</td>
</tr>
<tr>
<td>1 ppm</td>
<td>4 hours</td>
<td>1 ppm or less</td>
<td>initial test, repeat at 2 hours</td>
</tr>
<tr>
<td>ND*</td>
<td>8 hours</td>
<td>0.5 ppm or less</td>
<td>initial test, repeat every 2 hours</td>
</tr>
</tbody>
</table>

*ND – no detectable amount
RECOMMENDED PERMIT CONDITIONS FOR SOIL FUMIGATION WITHIN A GREENHOUSE

APPENDIX I (Continued)

Suggested Table for Time Restrictions: Real-time Monitoring

<table>
<thead>
<tr>
<th>Restriction (Per 24 hours)</th>
<th>Real-time Monitoring Results</th>
<th>Restriction (Per 24 hours)</th>
<th>Real-time Monitoring Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 hour</td>
<td>2.6 to 5 ppm</td>
<td>6 hours</td>
<td>0.72 to 0.83</td>
</tr>
<tr>
<td>2 hours</td>
<td>1.67 to 2.50</td>
<td>7 hours</td>
<td>0.64 to 0.71</td>
</tr>
<tr>
<td>3 hours</td>
<td>1.27 to 1.66</td>
<td>8 hours</td>
<td>ND to 0.63 ppm</td>
</tr>
<tr>
<td>4 hours</td>
<td>1.10 to 1.26</td>
<td>Unlimited</td>
<td>&lt;0.5 ppm (ND*)</td>
</tr>
<tr>
<td>5 hours</td>
<td>0.84 to 1.09</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*ND – no detectable amount

5. Testing and work time restrictions continue until the end of soil aeration and air monitoring within the greenhouse shows that airborne levels of methyl bromide are less than 1 ppm. Testing may be discontinued, prior to completion of aeration, if no further work will take place within the greenhouse.

6. Employers must maintain records of the air monitoring results. The record must include, at least, the date/time of fumigation and air monitoring; person performing the test(s); greenhouse site identification; location of the fumigation within the greenhouse; location(s) of the air monitoring test(s); colorimetric tube model number and detection limit; and the colorimetric tube reading(s). The information may be recorded on the following form. These records must be made available to employees upon request.

<table>
<thead>
<tr>
<th>Test 1</th>
<th>Test 2</th>
<th>Test 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greenhouse Site Identification</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fumigation Location</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Application Block Size</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rate of Methyl Bromide</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date/Time Start of Fumigation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date/Time Start of Aeration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Person Performing Test(s)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date/Time of Test(s)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test Location(s)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test Results (ppm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colorimetric Tube Model No.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colorimetric Tube Detection Limit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comments</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
B. Air Monitoring Equipment

There are different methods available for air monitoring. These include colorimetric detector tubes (e.g., National Draeger, Sensidyne, Matheson-Kitagawa, MSA) and real-time remote sensing monitors (e.g., PureAire Monitoring Systems). **NOTE: These air monitoring methods apply to enclosed areas, including greenhouse soil fumigation and commodity fumigation.**

Colorimetric detector tubes (approximately ¼” X 6”) produce a color change when methyl bromide is present. The length of this color change indicates the methyl bromide concentration. A specific pump must be used with these tubes; both must be purchased from the same manufacturer. The (upper and lower) detection limits of these tubes vary with manufacturer and model.

Select the tube model which best fits your needs; contact the test equipment manufacturer. The choice of detector tube is in part determined by the duration of exposure. If short-term access (less than one hour) is necessary, a detector tube that measures to 5 ppm would be adequate. To determine entry for longer times or to document that control methods are adequate, a detector tube that measures to a lower detection limit would be appropriate.

A real-time remote sensing monitor could be used as a continuous monitor for methyl bromide concentrations in fumigation chamber control rooms, commodity storage facilities, commodity chilling rooms, and other processing and storage areas where methyl bromide-treated commodities may be present. Areas monitored by this type system, or its equivalent, should not require colorimetric tube sampling.

A real-time monitoring system, equipped with remote sensors or sensor intake ports capable of a minimum detection value of 500 ppb methyl bromide and having a detection lag-time of two minutes or less, may be used to monitor areas where methyl bromide air concentrations may immediately exceed DPR guideline values (630 ppb) or where the buildup of methyl bromide from the off-gassing commodity may also cause concentration greater than 630 ppb. Such a system must include a warning function to indicate where air concentrations have exceeded 630 ppb and an alarm for when concentrations exceed 5 ppm. The system must also include a digital display and be capable of data-logging. Before installation of this type of system, it is strongly recommended that DPR’s Worker Health and Safety (WHS) Branch be consulted for proper placement of remote sensors/ports. All manufacturer's requirements and recommendations must be followed. Facilities that install these units as a replacement for colorimetric tube testing should be required to contact WHS staff to confirm the unit's monitoring results.
Part 7.3.2
Methyl Bromide Field Fumigation Recommended Permit Conditions

Introduction
In addition to labeling and California regulation requirements, DPR recommends the following permit conditions.

About the permit conditions
These permit conditions are a consolidation of certain methyl bromide regulations and label requirements, and are meant to clarify the use requirements in 3 CCR sections 6447 (general requirements), 6447.1 (notification), and 6447.2 (buffer zones). These permit conditions also clarify new label requirements for buffer zones, difficult to evacuate sites, emergency preparedness and response measures, tarp perforation and removal, and label references to buffer zones by specifying whether the requirements apply to the inner buffer zone or the outer buffer zone. DPR’s intent is that by complying with these permit conditions, permittees would simultaneously comply with the above-mentioned regulations and label requirements. These permit conditions also include all applicable chloropicrin permit conditions.

Consistent with 3 CCR section 6447, these permit conditions do not apply to:

- Greenhouses and other similar structures
- Potting soil
- Golf courses
- Replant of individual vine or tree-sites (tree holes) less than one contiguous acre, and
- Raised-tarpaulin nursery fumigations of less than one acre.

Greenhouse, potting soil, and other fumigations
For greenhouse fumigations with methyl bromide, follow DPR recommended permit conditions for Soil Fumigation Within a Greenhouse in Part C.7.3.1. For potting soil, follow DPR recommended permit conditions for Tarped Potting Soil Fumigation in Section C.6.2. For other fumigations to which DPR methyl bromide permit conditions do not apply, follow methyl bromide labeling restrictions, which include a minimum 25-foot buffer zone.

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**Guidance documents for buffer zones**

For California, labeling for all methyl bromide products (even products that contain more than 50% chloropicrin) requires a buffer zone distance specified on the current restricted materials permit, provided that the buffer zone distance is equal to or greater than the buffer zone distance specified in the December 8, 2004 California Department of Pesticide Regulation Methyl Bromide Field Fumigation Guidance Manual. Additionally, regulations specify that the commissioner may not allow a buffer zone that is smaller or a duration that is less in permit conditions than those listed in Methyl Bromide Field Fumigation Buffer Zone Determination, Rev. 3/10. The buffer distances in the 3/10 document are the same as the 12/8/04 document.

Commissioners should determine buffer zone distances and durations using the Methyl Bromide Field Fumigation Buffer Zone Determination, Rev. 3/13. The only change in buffer distances is the deletion of the buffer zones for one fumigation method no longer allowed by labeling, the untarped/shallow/bed method described in 3 CCR section 6447.3(a)(1). The 3/13 document also reconciles the labeling requirements for buffer zone proximity with the recommended permit conditions for field separation. The 1300 feet (1/4 mile) separation to determine isolated and non-isolated blocks no longer applies. Other buffer zone requirements on the labels (e.g., buffer duration,) still apply. To view the buffer determination document, go to [http://www.cdpr.ca.gov/docs/emon/pubs/tac/methbrom.htm](http://www.cdpr.ca.gov/docs/emon/pubs/tac/methbrom.htm).

**Fumigation Management Plan and work site plan**

Per 3 CCR section 6447(a), the operator of the property to be treated must submit a proposed work site plan (WSP) to the commissioner for evaluation at least 7 days prior to submitting a notice of intent. In addition, Phase 2 labeling requires the certified applicator supervising the application to verify and sign a site-specific Fumigation Management Plan (FMP) before the start of the application. Commissioners have the option to require submission of only the WSP document as per 3 CCR section 6447(a). In that case, the supervising certified applicator must complete a separate FMP document prior to application, but need not submit the FMP to the CAC.

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Methyl Bromide Field Fumigation Recommended Permit Conditions, Continued

Fumigation Management Plan and work site plan (continued)

Alternatively, Commissioners have the option to require a single comprehensive document that covers both requirements. To cover both requirements with a single document, the operator of the property to be treated shall submit a proposed FMP to the commissioner for evaluation at least 7 days prior to submitting the notice of intent, and include all elements specified by the label (except those that are required just prior to application, such as soil moisture), plus a description of:

- The notification procedure to property operators pursuant to section 6447.1(b);
- Any activities within the buffer zone(s) as specified in sections 6447.2(e) and (f); and
- Any workday/work hour limitations and respiratory protection as specified in sections 6784(b)(2)(C) and (b)(3).

Notification to neighbors and emergency preparedness and response measures

NOTE to the commissioner: These recommended permit conditions consolidate the notification requirements in 3 CCR section 6447.1 with the label notification requirements for Emergency Preparedness and Response. These permit conditions comply with both sets of requirements. The underlined text below shows the additional requirements needed to comply with labeling. If triggered, the labels’ Emergency Preparedness and Response measures require either notification or monitoring. If the consolidated notification procedure is followed, monitoring would not be needed.

Initial notification

The certified applicator supervising the fumigation and the operator of the property to be treated shall assure that operators of the following properties within 300 feet of the perimeter of the outer buffer zone receive notification that a permit to use methyl bromide near their property has been issued by the commissioner: properties that contain schools, residences, hospitals, convalescent homes, onsite employee housing, or businesses.

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Methyl Bromide Field Fumigation Recommended Permit Conditions, Continued

Initial notification (continued)

Notification shall be in writing, in both English and Spanish, or by other means approved by the commissioner. The operator of the property to be treated shall assure that notification is delivered at least seven days prior to the submission of the notice of intent. The notification shall include the following information:

- The name of the chemical(s) to be applied;
- Name of fumigant product(s) and the EPA Registration number;
- Name, business address, and business telephone number of the operator of the property to be treated;
- Contact information for the applicator;
- Name, business address, and business telephone number of the commissioner;
- The earliest and latest dates that the fumigation will start (must not range more than 4 weeks);
- How to request subsequent notification of specific date and time of the fumigation;
- Location of the application block;
- Early signs and symptoms of exposure to the fumigant(s) applied, what to do, and who to call if you believe you are being exposed (911 in most cases); and
- How to find additional information about fumigants.

Specific notification when requested

The operator of the property to be treated shall assure that specific notification of the date and time of the start of the fumigation and anticipated expiration of buffer zones is provided to those persons notified above who request specific fumigation information. This specific fumigation notification shall be provided at least 48 hours prior to starting the fumigation. If a request for specific notification is received after the submission of the notice of intent and before the fumigation begins, the specific fumigation notification shall be provided prior to starting the fumigation, but the 48-hour requirement shall not apply. If the fumigation of an application block does not commence within the time frame specified in 6447.1(a)(2), then a new notification must be provided to those persons who requested the information, but the 48-hour requirement shall not apply unless required by the commissioner.

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Methyl Bromide Field Fumigation Recommended Permit Conditions, Continued

**General buffer zone requirements**

The inner and outer buffer zones mentioned in 3 CCR section 6447.2 must extend outward from the edge of the application block perimeter equally in all directions.

In general, all non-handlers, including field workers, residents, pedestrians, and other bystanders, must be excluded from the inner and outer buffer zones during the buffer zone period. Specific exceptions may be approved by the commissioner within the outer buffer zone (see “Outer buffer zone” section below).

The buffer zone restrictions shall begin at the start of fumigation. The buffer zone restrictions shall remain in effect for at least 48 hours after the completion of the application to the application block.

**Inner buffer zones**

The operator of the property to be treated shall assure that no persons are allowed within the inner buffer zone mentioned in 3 CCR section 6447.2 except to transit by vehicle or bicycle and perform fumigation-handling activities.

Inner buffer zones are not permitted to include bus stops or other locations where persons wait for public transit.

The inner buffer zone shall not extend into adjoining agricultural property except as provided below:

The inner buffer zone may extend into adjoining agricultural property if 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; and
- The signs are posted at intervals not exceeding 200 feet.

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Inner buffer zones (continued)

Unless there is a physical barrier that prevents bystander access to the inner buffer zone, inner buffer zone signs must also be placed along or outside the perimeter of the inner buffer zone, at all usual points of entry, and along likely routes of approach from areas where people not under the owner’s control may approach the buffer zone.

- Some examples of points of entry include, but are not limited to, roadways, sidewalks, paths, and bike trails.
- Some examples of likely routes of approach include, but are not limited to, the area between a buffer zone and a roadway, or the area between a buffer zone and a housing development.

Inner Buffer Zone signs must meet the following criteria:

- The printed side of the sign must face away from the application block toward areas from which people could approach.
- Signs must remain legible during the entire posting period and must meet the general standards outlined in the WPS for sign size, text size, and legibility (see 40 CFR §170.120).
- Signs must be posted no sooner than 24 hours prior to the start of the application and remain posted until the buffer zone period has expired.
- Signs must be removed within 3 days after the end of the buffer zone period.
- Inner Buffer Zone signs which meet the criteria above will be provided at points of sale for applicators to use.
- The Inner Buffer Zone signs must contain the following information:
  - “Do Not Walk” symbol
  - DO NOT ENTER/NO ENTRE
  - Methyl Bromide [Product Name] Fumigant BUFFER ZONE
  - Contact information for the certified applicator in charge of the fumigation

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Methyl Bromide Field Fumigation Recommended Permit Conditions, Continued

**Inner buffer zones (continued)**

*Exception:* If multiple contiguous blocks are fumigated within a 14-day period, the entire periphery of the contiguous blocks’ buffer zones *may* be posted. *Inner Buffer Zone* signs must be posted no sooner than 24-hours prior to the start of the first application. The signs must remain posted until the last buffer zone period expires and signs must be removed within 3 days after the buffer zone period for the last block has expired.

Inner buffer zones must not include buildings under the control of the owner of the application block and used for storage (e.g., sheds, barns, garages), UNLESS,

1. The storage buildings are not occupied during the buffer zone period, and
2. The storage buildings do not share a common wall with an occupied structure.

**Outer buffer zones**

The operator of the property to be treated shall assure that no persons are allowed within the outer buffer zone except to transit by vehicle or bicycle, perform fumigation-handling activities, and commissioner-approved activities as identified in the restricted materials permit conditions. In no instance shall persons be allowed within the outer buffer zone for more than 12 hours in a 24-hour period.

The outer buffer zone shall not extend into properties that contain schools, convalescent homes, hospitals, and other similar sites determined by the commissioner.

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Outer buffer zones must not include residential areas (e.g., employee housing, private property), buildings (e.g., commercial, industrial), outdoor residential areas (e.g., lawns, gardens, play areas) and other areas that people may occupy, UNLESS,

- The occupants provide written agreement prior to the application that they will voluntarily vacate the buffer zone during the entire buffer zone period, and

- Reentry by occupants and other non-handlers must not occur until,
  - The buffer zone period has ended, and
  - Sensory irritation is not experienced upon re-entry.
  - For products containing more than 89% of methyl bromide, the certified applicator or handler(s) under his/her supervision has monitored the structures and has not experienced any sensory irritation upon re-entry. Entry by occupants and other non-handlers must not occur until two consecutive air samples for methyl bromide have been taken in the structure at least 1 hour apart and both samples indicate less than 1 ppm methyl bromide.

For publicly owned and/or operated areas such as parks, sidewalks, permanent walking paths, playgrounds, and athletic fields, outer buffer zones must not include these areas, UNLESS,

1. The area is not occupied during the buffer zone period,
2. Entry by non-handlers is prohibited during the buffer zone period, and
3. Written permission to include the public area in the buffer zone is granted by the appropriate state and/or local authorities responsible for management and operation of the area.

There is no requirement to post signs on the outer buffer zone perimeter. The labeling requirement for posting applies to the inner buffer zone.
Methyl Bromide Field Fumigation Recommended Permit Conditions, Continued

**Difficult to evacuate sites**

No fumigant application with an outer buffer zone greater than 300 feet is permitted within 1/4 mile (1,320 feet) of difficult to evacuate sites unless the site is not occupied by children from state-licensed day care centers, students (pre-K to grade 12), patients, or prisoners during the application and the 36-hour period following the end of the application.

No fumigant application with an outer buffer zone of 300 feet or less is permitted within 1/8 mile (660 feet) of difficult to evacuate sites unless the site is not occupied by children from state-licensed day care centers, students (pre-K to grade 12), patients, or prisoners during the application and the 36-hour period following the end of the application.

*NOTE to the commissioner: Based on local conditions, commissioners should determine whether the ¼ mile or 1/8 mile distance is measured from the fumigation to a difficult to evacuate site’s property line or occupied structure, and one of these should be specified in the permit conditions.*

*NOTE to the commissioner: When the outer buffer zone is more than 1020 feet, 3 CCR section 6447.2(i) still applies: When a school property is within 300 feet of the perimeter of the outer buffer zone, the injection shall be completed no less than 36 hours prior to the start of a school session. School session shall be those times when students are attending scheduled classes.*

**Tarp perforation and/or removal**

Tarps that qualify for any percentage reduction in buffer zone distance must not be perforated until a minimum of 9 days (216 hours) have elapsed after the application is complete, and must not be removed until a minimum of 1 day (24 hours) after perforation, unless a weather condition exists which necessitates early tarp perforation or removal as specified by the label. Tarps that qualify for reductions in buffer zone distances are listed in the methyl bromide portion of the U.S. EPA web site at [http://www.epa.gov/pesticides/tarpcredits/](http://www.epa.gov/pesticides/tarpcredits/).

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Additional information

Tarps that qualify for a reduction in buffer zone distance are generally prohibited for use with methyl bromide by 3 CCR section 6447(e). The recommended permit conditions allow these “high barrier” tarpaulins (e.g., totally impermeable films, virtually impermeable films) to be used with methyl bromide. This can be allowed as long as the permit conditions pertaining to the tarps (i.e., buffer distances, buffer duration, and tarp cutting intervals) are equally or more stringent than the regulations. Additionally, none of the buffer zone credits described on the label can be used for methyl bromide because they are not options in the 12/8/04 Guidance Manual.

Although not included in the permit conditions, use of metalized tarps should be discouraged because they may have disposal issues in California.