

Appendix M

Methyl Bromide Field Fumigation Recommended Permit Conditions

About the permit conditions

Commissioners should use this document to determine buffer zone distances and durations for methyl bromide field soil fumigations. These permit conditions consolidate methyl bromide regulations and label requirements, and clarify the use requirements in 3 CCR sections 6447 (general requirements), 6447.1 (notification), and 6447.2 (buffer zones). These permit conditions also clarify 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. By complying with these permit conditions, permittees comply with both the above-mentioned regulations and label requirements.

In addition, these permit conditions clarify buffer zone requirements for products containing methyl bromide and chloropicrin, and are consistent with the requirements in Appendix K.

These permit conditions do not apply to these sites

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

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

For greenhouse fumigations with methyl bromide, follow *Methyl Bromide Recommended Permit Conditions for Soil Fumigation Within a Greenhouse* in Appendix I. For potting soil, follow *Recommended Permit Conditions for Tarped Potting Soil Fumigation* in Appendix G.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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Methyl Bromide Field Fumigation Recommended Permit Conditions, Continued

Buffer Zone Distances- Reconciling regulations and labeling

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. In addition, regulations specify the commissioner may not allow a smaller buffer zone or a duration that is less than those listed in Methyl Bromide Field Fumigation Buffer Zone Determination, Rev. 3/10 (3 CCR section 6447.2).

Commissioners should determine buffer zone distances and durations using the tables in these permit conditions. The buffer distances and durations in these permit conditions are the same as or greater than the 3/10 and 12/8/04 documents. The only change in the permit condition buffer distances is the deletion of the buffer zones for untarped/shallow/bed method described in 3 CCR section 6447.3(a)(1) because this method is no longer allowed by labeling.

These permit conditions 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., allowed activities within the buffer) still apply.

Overlapping buffer zones

Buffer zones for two or more applications must not overlap unless a minimum of 12 hours elapses from the time the earlier application(s) is complete until the start of the later application.

If at least 12 hours, but less than 36 hours elapse from the time the earlier application(s) is complete until the start of the later application, the inner and outer buffer zone distances must be recalculated based on the combined acreage of the methyl bromide application blocks with overlapping buffer zones.

The combined acreage of blocks with overlapping buffers cannot exceed 40 acres.

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Methyl Bromide Field Fumigation Recommended Permit Conditions, Continued

Overlapping buffer zones (continued)

Determining buffer zones based on combined acreage should only be done for applications that are identical in all other respects. Consult with DPR to determine the appropriate buffer zones if the blocks with overlapping buffers use different application rates, different fumigation methods, or different products. As an alternative,

1. Determine the combined acreage and highest application rate,
 2. Look up the buffer zone for each fumigation method,
 3. Select the largest buffer zone and apply it to all overlapping blocks.
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Buffer zone Distances-Procedures

Two buffer zones are specified in 3 CCR section 6447.2, an inner buffer zone and an outer buffer zone.

The distances and duration of the buffer zones are dependent upon the size of the application block to be fumigated, the application rate (pounds methyl bromide active ingredient per acre), and the application method to be used. The following steps are used to determine the buffer zone requirements associated with an application block.

1. Verify that the fumigation method conforms to a method described in *Table 1*. If it does not, then the fumigation may not proceed, unless the fumigation is conducted under a research authorization.
2. Find the emission ratio for the specified fumigation method in *Table 1*.
3. Determine the emission rate and acreage. The emission rate is calculated by multiplying the emission ratio by the broadcast-equivalent application rate for pounds of methyl bromide active ingredient per acre (lbs AI/ac).

For bedded and strip fumigations, the broadcast-equivalent application rate for the AI is calculated using the same procedure as described on the label for bed/strip width and row spacing, then adjusting for the percent of methyl bromide listed on the label. For example, if the broadcast-equivalent application rate for the product is 120 lbs/ac and the product contains 45% methyl bromide, the broadcast-equivalent application rate for methyl bromide is $120 \times 0.45 = 54$ lbs AI/ac.

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Methyl Bromide Field Fumigation Recommended Permit Conditions, Continued

Buffer zone Distances-Procedures (continued)

4. Determine the appropriate outer buffer zone distance from *Table 2* or *Table 3*. Use *Table 3* only for applications that employ the method described in section 6447.3(a)(3)(B)(1)-broadcast, AND are 10 acres or less, AND have an application rate of 235 pounds AI per acre or less. Use *Table 2* for all other applications, including method (3)(B)(1)-strip.
5. Determine the appropriate inner buffer zone distance from *Table 4*. If applicable, the inner buffer zone distance must be based on the combined acreage of the application blocks with overlapping methyl bromide outer buffer zones.

Tables 1-4 are located at the end of this Appendix.

Labeling requires Emergency Preparedness and Response measures for buffer zones greater than 25 feet consisting of either Fumigant Site Monitoring or Response Information for Neighbors. Fumigant Site Monitoring is not needed since 3 CCR section 6447.1 requires notification and complies with the Response Information for Neighbors Requirements.

Buffer zones for methyl bromide and chloropicrin combinations

For products containing methyl bromide and chloropicrin, determine the methyl bromide and chloropicrin buffer zones separately:

1. Determine the methyl bromide outer and inner buffer zones distances following the procedure described above.
2. Determine the chloropicrin buffer zone using the procedure in Appendix K, *Chloropicrin and Chloropicrin in Combination with Other Products (Field Fumigant) Interim Recommended Permit Conditions*.
3. The determination of the methyl bromide outer buffer zone, the methyl bromide inner buffer zone, and the chloropicrin buffer zone will result in three scenarios for buffer zone restrictions:

Scenario 1: If the chloropicrin buffer zone is smaller than or equal to the methyl bromide inner buffer zone, then there are two buffer zones – a combined methyl bromide inner/chloropicrin buffer zone and a methyl bromide outer buffer zone.

Continued on next page

Methyl Bromide Field Fumigation Recommended Permit Conditions, Continued

Buffer zones for methyl bromide and chloropicrin combinations
(continued)

In this case, the methyl bromide inner buffer zone distance also functions as the chloropicrin buffer zone distance. Both the chloropicrin buffer zone and methyl bromide inner buffer zone restrictions apply.

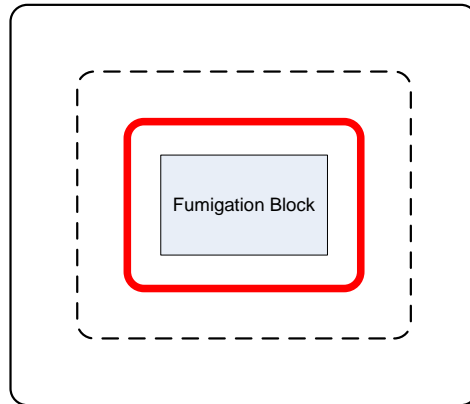
All of the methyl bromide outer buffer zone restrictions apply to the methyl bromide outer buffer zone.

For clarity, the combined requirements of the labels and regulations are described on the following page.

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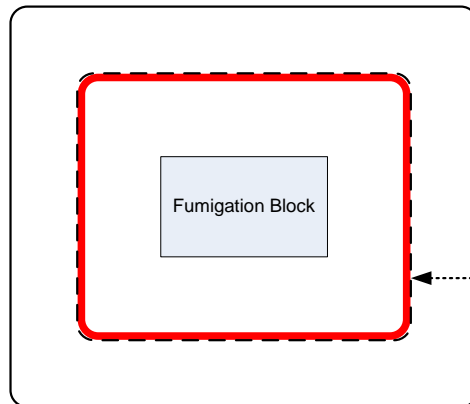
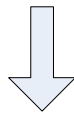
Methyl Bromide Field Fumigation Recommended Permit Conditions, Continued

Buffer zones for methyl bromide and chloropicrin combinations (continued)



Scenario 1: Chloropicrin buffer is smaller than both the methyl bromide inner buffer and methyl bromide outer buffer

- Methyl Bromide Outer Buffer
- - - Methyl Bromide Inner Buffer
- Chloropicrin Buffer**



Methyl Bromide Outer Buffer Requirements

Allowed activities: fumigation handling, transit by vehicle or bike (label), and CAC-approved activities for no more than 12 hrs (regs)

Duration: 48-84 hrs (regs)

Extending into other properties: any properties with written permission (label), except schools, convalescent homes, hospitals, other sites identified by CAC (regs)

Posting: none

Combined Methyl Bromide Inner Buffer and Chloropicrin Buffer Requirements

Allowed activities: fumigation handling and transit by vehicle or bike (label)

Duration: 48-84 hrs (regs), except TIF broadcast (label)

Extending into other properties: ag properties only, with written permission (regs)

Posting: at usual points of entry (label) and every 200 ft along perimeter in adjoining ag property (regs), except TIF broadcast (label)

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Methyl Bromide Field Fumigation Recommended Permit Conditions, Continued

Buffer zones for methyl bromide and chloropicrin combinations
(continued)

Scenario 2: If the chloropicrin buffer zone is larger than the methyl bromide inner buffer zone, but smaller than the methyl bromide outer buffer zone, then there are two buffer zones – a combined methyl bromide inner/chloropicrin buffer zone and a methyl bromide outer buffer zone (same as Scenario 1).

In this case, the chloropicrin buffer zone distance also functions as the methyl bromide inner buffer zone distance. Both the chloropicrin buffer zone and methyl bromide inner buffer zone restrictions apply (same as Scenario 1).

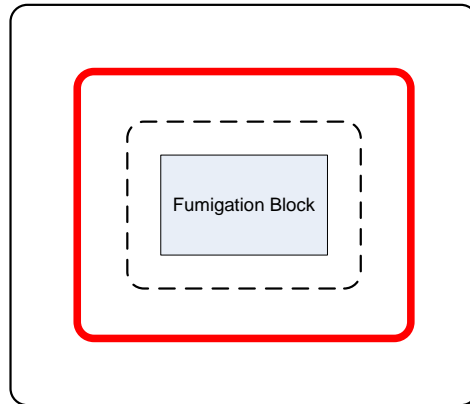
All of the methyl bromide outer buffer zone restrictions apply to the methyl bromide outer buffer zone.

For clarity, the combined requirements of the labels and regulations are described on the following page.

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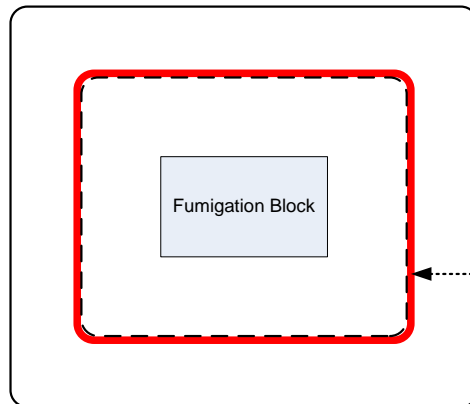
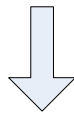
Methyl Bromide Field Fumigation Recommended Permit Conditions, Continued

Buffer zones for methyl bromide and chloropicrin combinations (continued)



Scenario 2: Chloropicrin buffer is larger than the methyl bromide inner buffer, but smaller than methyl bromide outer buffer

- Methyl Bromide Outer Buffer
- - - Methyl Bromide Inner Buffer
- Chloropicrin Buffer**



Methyl Bromide Outer Buffer Requirements

Allowed activities: fumigation handling, transit by vehicle or bike (label), and CAC-approved activities for no more than 12 hrs (regs)

Duration: 48-84 hrs (regs)

Extending into other properties: any properties with written permission (label), except schools, convalescent homes, hospitals, other sites identified by CAC (regs)

Posting: none

Combined Methyl Bromide Inner Buffer and Chloropicrin Buffer Requirements

Allowed activities: fumigation handling and transit by vehicle or bike (label)

Duration: 48-84 hrs (regs), except TIF broadcast (label)

Extending into other properties: ag properties only, with written permission (regs)

Posting: at usual points of entry (label) and every 200 ft along perimeter in adjoining ag property (regs), except TIF broadcast (label)

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Methyl Bromide Field Fumigation Recommended Permit Conditions, Continued

Buffer zones for methyl bromide and chloropicrin combinations (continued)

Scenario 3: If the chloropicrin buffer zone is larger than the outer methyl bromide buffer zone, then there are two buffer zones – a methyl bromide inner buffer zone and a combined methyl bromide outer/chloropicrin buffer zone.

All of the methyl bromide inner buffer zone restrictions apply to the methyl bromide inner buffer zone.

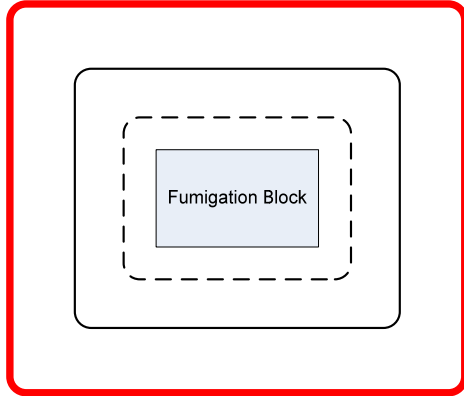
In this case, the chloropicrin buffer zone distance also functions as the methyl bromide outer buffer zone distance. Both the chloropicrin buffer zone and methyl bromide outer buffer zone restrictions apply to the combined buffer zone, consequently, no persons are allowed within this buffer zone except to perform fumigation-handling activities or transit by vehicle or bicycle.

For clarity, the combined requirements of the labels and regulation are described on the following page.

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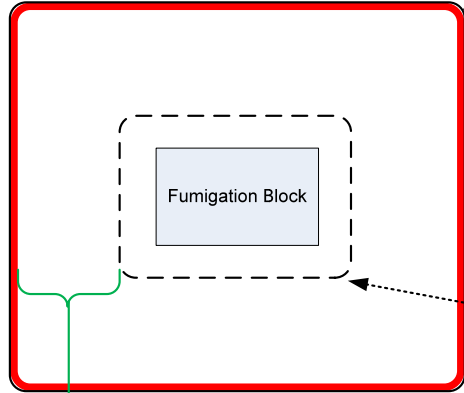
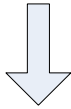
Methyl Bromide Field Fumigation Recommended Permit Conditions, Continued

Buffer zones for methyl bromide and chloropicrin combinations (continued)



Scenario 3: Chloropicrin buffer is larger than both the methyl bromide inner buffer and the methyl bromide outer buffer

- Methyl Bromide Outer Buffer
- - - Methyl Bromide Inner Buffer
- Chloropicrin Buffer**



Establishing a methyl bromide inner buffer allows the combined methyl bromide outer buffer and chloropicrin buffer to extend into non-ag property

Combined Methyl Bromide Outer Buffer and Chloropicrin Buffer Requirements

Allowed activities: fumigation handling, transit by vehicle or bike (label)

Duration: 48-84 hrs (regs)

Extending into other properties: any properties with written permission (label), except schools, convalescent homes, hospitals, other sites identified by CAC (regs)

Posting: at usual points of entry (label). It may be simpler for CAC to require posting at both points of entry and every 200 ft in adjoining ag property. The shorter methyl bromide inner buffer would then have no posting.

Methyl Bromide Inner Buffer Requirements

Allowed activities: fumigation handling and transit by vehicle or bike (label)

Duration: 48-84 hrs (regs), except TIF broadcast (label)

Extending into other properties: ag properties only, with written permission (regs)

Posting: every 200 ft along perimeter in adjoining ag property (regs), except TIF broadcast (label)

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Methyl Bromide Field Fumigation Recommended Permit Conditions, Continued

Buffer zone duration

Determine the buffer zone duration based on the application rate, acreage, and fumigation method. If applicable, the buffer zone duration must be based on the combined acreage of the application blocks with overlapping methyl bromide buffer zones.

Durations apply to both the inner and outer buffer zones.

Buffer zone durations are in the tables below. The buffer zone period, in hours, begins once the application is complete, as defined on product labeling.

TABLE A: Nontarpaulin/Deep/Broadcast - Section 6447.3(a)(2)
Tarp/Deep/Broadcast* - Section 6447.3(a)(5)

Acres	Application Rate (pounds AI per acre)										
	150	175	200	225	250	275	300	325	350	375	400
1 - 10	48	48	48	48	48	48	60	60	60	60	60
11 - 20	48	48	48	48	48	60	60	60	60	60	60
21 - 30	48	48	48	60	60	60	60	60	60	60	84
31 - 40	48	48	48	60	60	60	60	60	60	60	84

TABLE B: Tarpaulin/Shallow/Broadcast* - Section 6447.3(a)(3)
Tarpaulin/Shallow/Bed - Section 6447.3(a)(4)
Drip System/Hot Gas - Section 6447.3(a)(6)

Acres	Application Rate (pounds AI per acre)										
	150	175	200	225	250	275	300	325	350	375	400
1 - 10	48	48	48	48	48	48	48	48	48	48	48
11 - 20	48	48	48	48	48	48	48	48	48	60	60
21 - 30	48	48	48	48	48	48	48	60	60	60	60
31 - 40	48	48	48	48	48	48	48	60	60	60	60

***EXCEPTION.** For broadcast shank applications using any tarp that qualifies for a 60% or greater reduction in buffer zone distance (totally impermeable films), as assigned by U.S. EPA and DPR.

- a. The inner buffer zone period ends after the tarps have been removed from the application block.
- b. As an alternative to (a), two inner buffer zone periods may be established where the first inner buffer zone period begins at the start of the application and lasts for a minimum of 48 hours after the application is complete. The second inner buffer zone period begins when the tarps are perforated and ends after the tarps have been removed from the application block. Posting for the second inner buffer zone period is required at the usual points of entry, unless there is a physical barrier, as specified by the label. Posting for the second inner buffer zone period is not required every 200 feet along the buffer perimeter.

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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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Methyl Bromide Field Fumigation Recommended Permit Conditions, Continued

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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Methyl Bromide Field Fumigation Recommended Permit Conditions, Continued

Outer buffer zones (continued)

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.

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Methyl Bromide Field Fumigation Recommended Permit Conditions, Continued

Fumigation Management Plan and work site plan

The commissioner may allow the label-required Fumigant Management Plan (FMP) to meet the work site plan (WSP) requirements in 3 CCR section 6447(a), providing 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 (NOI), 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 work day/work hour limitations and respiratory protection as specified in sections 6784(b)(2)(C) and (b)(3).

Alternatively, the commissioner may require the operator of the property to be treated to submit the WSP specified in 3 CCR section 6447(a) at least 7 days prior to submitting the NOI and the supervising certified applicator to prepare a separate FMP document prior to the applications.

Notification to neighbors and emergency preparedness and response measures

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

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Methyl Bromide Field Fumigation Recommended Permit Conditions, Continued

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.

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 7 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.

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Methyl Bromide Field Fumigation Recommended Permit Conditions, Continued

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 required to receive initial notification who requested 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 3 CCR section 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.

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 1/4 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.

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Methyl Bromide Field Fumigation Recommended Permit Conditions, Continued

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://www2.epa.gov/soil-fumigants/tarps>.

Additional tarp 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.

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TABLE 1. METHYL BROMIDE FIELD SOIL FUMIGATION METHODS AND EMISSION RATIOS

Each methyl bromide fumigation must conform to all requirements specific to a Fumigation Method listed below. An applicator may not "mix-and-match" the requirements of two or more fumigation methods. Equipment and fumigation requirements are described in section 6447.3(a).

Section 6447.3(a)	Fumigation Method	Injection Type	Injection Depth (in.)	Injection Spacing (in.)	Tractor Implements	Dilution Fan	Max Rate (lbs AI/ac)	Emission Ratio
(2)(B)1	Nontarp/Deep/Broadcast	Forward chisel	20+	68 or less	None	Yes	400	0.40
(2)(B)2	Nontarp/Deep/Broadcast	Forward chisel	24+	68 or less	Closing shoes, compaction roller	No	400	0.40
(3)(B)1	Tarp/Shallow/Broadcast	Horizontal V-shaped blades	10 - 15	12 or less	None	Yes	400	0.25
(3)(B)1	Tarp/Shallow/Broadcast (STRIP FUMIGATION)*	Horizontal V-shaped blades	10 - 15	12 or less	None	Yes	400	0.40
(3)(B)2	Tarp/Shallow/Broadcast	Rearward chisel	10 - 15	12 or less	Closing shoes, compaction roller	No	400	0.80
(4)(B)1	Tarp/Shallow/Bed	Rearward chisel	6 - 15	12 or less	Closing shoes, compaction roller	No	250	0.80
(4)(B)2	Tarp/Shallow/Bed	Rearward chisel	6 - 15	12 or less	Bed shaper	No	250	0.80
(4)(B)3	Tarp/Shallow/Bed	Rearward chisel	6 - 15	12 or less	Bed former and bed shaper	No	250	0.80
(5)(B)1	Tarp/Deep/Broadcast	Forward chisel	20+	66 or less	None	Yes	400	0.25
(5)(B)1	Tarp/Deep/Broadcast (STRIP FUMIGATION)*	Forward chisel	20+	66 or less	None	Yes	400	0.40
(5)(B)2	Tarp/Deep/Broadcast	Forward chisel	20+	66 or less	Closing shoes, compaction roller	No	400	0.25
(5)(B)2	Tarp/Deep/Broadcast (STRIP FUMIGATION)*	Forward chisel	20+	66 or less	Closing shoes, compaction roller	No	400	0.40
(6)	Drip System-Hot Gas	Drip tubing	1+	NA	NA	NA	225	1.0

* Similar to bed fumigations, strip fumigations have alternating treated and untreated rows. In many cases, the untreated sections are fumigated on a later date.

TABLE 2. OUTER BUFFER ZONE DISTANCES (FEET) FOR FIELD SOIL FUMIGATION, EXCEPT USE TABLE 3 FOR METHOD SECTION 6447.3(a)(3)(B)1-BROADCAST, 10 ACRES OR LESS, AND 235 LBS AI/AC OR LESS.

- Select the appropriate "Acreage" in the left-hand column.
- Select the appropriate "Emission Rate" (emission ratio x application rate) from the top row.
- Read the buffer zone distance where the "Acreage" row and the "Emission Rate" columns intersect.

Acres	Emission Rate (pounds AI/acre-day)														
	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
1	100	100	100	100	100	100	100	100	110	110	110	120	130	140	150
2	100	100	100	100	100	100	110	120	130	150	160	170	190	210	230
3	100	100	100	100	100	100	120	140	160	180	200	230	250	270	290
4	100	100	100	100	100	110	140	160	190	220	240	270	300	330	350
5	100	100	100	100	110	120	150	180	210	250	280	310	340	370	400
6	100	100	100	100	120	140	170	210	240	270	310	340	370	410	440
7	100	100	100	100	130	160	190	230	260	300	330	370	410	440	480
8	100	100	100	110	140	180	210	250	280	320	360	400	440	480	510
9	100	100	100	120	150	190	230	270	300	340	380	420	470	510	550
10	100	100	100	120	160	200	240	280	320	370	410	450	500	540	580
11	100	100	100	130	170	210	260	300	340	390	430	480	520	570	620
12	100	100	110	140	180	220	270	310	360	410	450	500	550	600	650
13	100	100	110	150	190	230	280	330	380	430	480	530	580	630	680
14	100	100	110	160	200	240	290	340	390	440	500	550	600	660	710
15	100	100	120	160	210	250	300	350	410	460	520	570	630	680	740
16	100	100	120	170	210	260	310	370	420	480	540	590	650	710	770
17	100	100	130	180	220	270	330	380	440	500	550	610	670	730	790
18	100	100	130	180	230	280	340	390	450	510	570	630	700	760	820
19	100	100	140	190	240	290	350	410	470	530	590	650	720	780	840
20	100	100	140	190	240	300	360	420	480	540	610	670	740	800	870
21	100	100	150	200	250	310	370	430	490	560	620	690	760	820	890
22	100	100	150	200	260	320	380	440	510	570	640	710	780	850	920
23	100	110	160	210	270	330	390	450	520	590	660	730	800	870	940
24	100	110	160	210	270	330	400	470	530	600	670	750	820	890	960
25	100	110	170	220	280	340	410	480	550	620	690	760	840	910	980
26	100	120	170	220	290	350	420	490	560	630	710	780	860	930	1000
27	100	120	170	230	290	360	430	500	570	650	720	800	870	950	1000
28	100	120	180	240	300	370	440	510	580	660	740	810	890	970	1100
29	100	130	180	240	310	370	450	520	600	670	750	830	910	990	1100
30	100	130	180	250	310	380	450	530	610	690	770	850	930	1000	1100
31	100	130	190	250	320	390	460	540	620	700	780	860	950	1000	1100
32	100	140	190	260	320	400	470	550	630	710	800	880	960	1000	1100
33	100	140	200	260	330	400	480	560	640	730	810	900	980	1100	1200
34	100	140	200	270	340	410	490	570	650	740	820	910	1000	1100	1200
35	100	140	200	270	340	420	500	580	660	750	840	930	1000	1100	1200
36	100	150	210	270	350	420	510	590	680	760	850	940	1000	1100	1200
37	100	150	210	280	350	430	510	600	690	770	870	960	1000	1100	1200
38	100	150	210	280	360	440	520	610	700	790	880	970	1100	1200	1300
39	100	150	220	290	360	440	530	620	710	800	890	990	1100	1200	1300
40	100	150	220	290	370	450	540	630	720	810	900	1000	1100	1200	1300

TABLE 2. OUTER BUFFER ZONE DISTANCES (FEET) FOR FIELD SOIL FUMIGATION, EXCEPT USE TABLE 3 FOR METHOD SECTION 6447.3(a)(3)(B)1-BROADCAST, 10 ACRES OR LESS, AND 235 LBS AI/AC OR LESS, Continued

- Select the appropriate number of "Acres" in the left-hand column.
- Select the appropriate "Emission Rate" (emission ratio x application rate) from the top row.
- Read the buffer zone distance where the "Acres" row and the "Emission Rate" columns intersect.

Acres	Emission Rate (pounds AI/acre-day)														
	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175
1	170	180	190	200	210	220	240	250	260	270	280	290	300	310	320
2	240	260	280	290	310	330	350	360	380	390	410	430	440	460	470
3	320	340	360	380	410	430	450	470	490	510	530	550	570	590	610
4	380	410	430	460	490	510	540	560	590	610	640	660	690	710	730
5	430	460	490	520	550	580	610	640	670	700	720	750	780	810	830
6	480	510	540	580	610	640	670	700	740	770	800	830	860	890	920
7	520	550	590	620	660	690	730	760	800	830	860	900	930	960	990
8	550	590	630	670	710	750	780	820	860	890	930	960	1000	1000	1100
9	590	630	670	710	760	800	840	870	910	950	990	1000	1100	1100	1100
10	630	670	720	760	800	840	890	930	970	1000	1000	1100	1100	1200	1200
11	660	710	760	800	850	890	940	980	1000	1100	1100	1200	1200	1200	1300
12	700	750	800	840	890	940	990	1000	1100	1100	1200	1200	1300	1300	1300
13	730	780	830	880	930	980	1000	1100	1100	1200	1200	1300	1300	1400	1400
14	760	820	870	920	970	1000	1100	1100	1200	1200	1300	1300	1400	1400	1500
15	790	850	900	960	1000	1100	1100	1200	1200	1300	1300	1400	1400	1500	1500
16	820	880	940	990	1000	1100	1200	1200	1300	1300	1400	1400	1500	1500	1600
17	850	910	970	1000	1100	1100	1200	1300	1300	1400	1400	1500	1500	1600	1600
18	880	940	1000	1100	1100	1200	1200	1300	1400	1400	1500	1500	1600	1600	1700
19	910	970	1000	1100	1200	1200	1300	1300	1400	1400	1500	1600	1600	1700	1700
20	930	1000	1100	1100	1200	1200	1300	1400	1400	1500	1500	1600	1700	1700	1800
21	960	1000	1100	1200	1200	1300	1300	1400	1500	1500	1600	1700	1700	1800	1800
22	980	1100	1100	1200	1300	1300	1400	1400	1500	1600	1600	1700	1800	1800	1900
23	1000	1100	1100	1200	1300	1400	1400	1500	1500	1600	1700	1700	1800	1900	1900
24	1000	1100	1200	1200	1300	1400	1500	1500	1600	1700	1700	1800	1800	1900	2000
25	1100	1100	1200	1300	1300	1400	1500	1600	1600	1700	1800	1800	1900	1900	2000
26	1100	1200	1200	1300	1400	1400	1500	1600	1700	1700	1800	1900	1900	2000	2100
27	1100	1200	1300	1300	1400	1500	1600	1600	1700	1800	1800	1900	2000	2000	2100
28	1100	1200	1300	1400	1400	1500	1600	1700	1700	1800	1900	1900	2000	2100	2100
29	1200	1200	1300	1400	1500	1500	1600	1700	1800	1800	1900	2000	2100	2100	2200
30	1200	1300	1300	1400	1500	1600	1600	1700	1800	1900	1900	2000	2100	2200	2200
31	1200	1300	1400	1400	1500	1600	1700	1800	1800	1900	2000	2100	2100	2200	2300
32	1200	1300	1400	1500	1500	1600	1700	1800	1900	1900	2000	2100	2200	2200	2300
33	1200	1300	1400	1500	1600	1700	1700	1800	1900	2000	2100	2100	2200	2300	2400
34	1300	1300	1400	1500	1600	1700	1800	1900	1900	2000	2100	2200	2200	2300	2400
35	1300	1400	1500	1500	1600	1700	1800	1900	2000	2000	2100	2200	2300	2400	2400
36	1300	1400	1500	1600	1700	1700	1800	1900	2000	2100	2200	2200	2300	2400	2500
37	1300	1400	1500	1600	1700	1800	1900	1900	2000	2100	2200	2300	2400	2400	2500
38	1300	1400	1500	1600	1700	1800	1900	2000	2100	2100	2200	2300	2400	2500	2500
39	1400	1500	1500	1600	1700	1800	1900	2000	2100	2200	2300	2300	2400	2500	2600
40	1400	1500	1600	1700	1800	1800	1900	2000	2100	2200	2300	2400	2500	2500	2600

TABLE 2. OUTER BUFFER ZONE DISTANCES (FEET) FOR FIELD SOIL FUMIGATION, EXCEPT USE TABLE 3 FOR METHOD SECTION 6447.3(a)(3)(B)1-BROADCAST, 10 ACRES OR LESS, AND 235 LBS AI/AC OR LESS, Continued

- Select the appropriate number of "Acres" in the left-hand column.
- Select the appropriate "Emission Rate" (emission ratio x application rate) from the top row.
- Read the buffer zone distance where the "Acres" row and the "Emission Rate" columns intersect.

Acres	Emission Rate (pounds AI/acre-day)													
	180	185	190	195	200	205	210	215	220	225	230	235	240	250
1	330	350	360	370	380	390	400	400	410	420	430	440	450	460
2	490	500	520	530	550	560	570	590	600	620	630	640	660	670
3	630	650	670	690	710	730	750	760	780	800	820	830	850	870
4	760	780	800	830	850	870	890	910	930	950	980	1000	1000	1000
5	860	890	910	940	960	990	1000	1000	1100	1100	1100	1100	1200	1200
6	950	970	1000	1000	1100	1100	1100	1100	1200	1200	1200	1200	1300	1300
7	1000	1100	1100	1100	1100	1200	1200	1200	1300	1300	1300	1300	1400	1400
8	1100	1100	1200	1200	1200	1300	1300	1300	1400	1400	1400	1400	1500	1500
9	1200	1200	1200	1300	1300	1300	1400	1400	1400	1500	1500	1500	1600	1600
10	1200	1300	1300	1400	1400	1400	1500	1500	1500	1600	1600	1600	1700	1700
11	1300	1400	1400	1400	1500	1500	1500	1600	1600	1600	1700	1700	1800	1800
12	1400	1400	1500	1500	1500	1600	1600	1700	1700	1700	1800	1800	1800	1900
13	1400	1500	1500	1600	1600	1700	1700	1700	1800	1800	1900	1900	1900	2000
14	1500	1600	1600	1600	1700	1700	1800	1800	1800	1900	1900	2000	2000	2000
15	1600	1600	1700	1700	1700	1800	1800	1900	1900	2000	2000	2000	2100	2100
16	1600	1700	1700	1800	1800	1900	1900	1900	2000	2000	2100	2100	2200	2200
17	1700	1700	1800	1800	1900	1900	2000	2000	2100	2100	2100	2200	2200	2300
18	1700	1800	1800	1900	1900	2000	2000	2100	2100	2200	2200	2300	2300	2300
19	1800	1800	1900	1900	2000	2000	2100	2100	2200	2200	2300	2300	2400	2400
20	1800	1900	1900	2000	2000	2100	2100	2200	2200	2300	2300	2400	2400	2500
21	1900	1900	2000	2000	2100	2200	2200	2300	2300	2400	2400	2500	2500	2600
22	1900	2000	2000	2100	2200	2200	2300	2300	2400	2400	2500	2500	2600	2600
23	2000	2000	2100	2200	2200	2300	2300	2400	2400	2500	2500	2600	2600	2700
24	2000	2100	2100	2200	2300	2300	2400	2400	2500	2500	2600	2600	2700	2700
25	2100	2100	2200	2300	2300	2400	2400	2500	2500	2600	2700	2700	2800	2800
26	2100	2200	2200	2300	2400	2400	2500	2500	2600	2700	2700	2800	2800	2900
27	2200	2200	2300	2400	2400	2500	2500	2600	2700	2700	2800	2800	2900	2900
28	2200	2300	2300	2400	2500	2500	2600	2600	2700	2800	2800	2900	2900	3000
29	2300	2300	2400	2500	2500	2600	2600	2700	2800	2800	2900	2900	3000	3100
30	2300	2400	2400	2500	2600	2600	2700	2800	2800	2900	2900	3000	3100	3100
31	2300	2400	2500	2500	2600	2700	2700	2800	2900	2900	3000	3100	3100	3200
32	2400	2500	2500	2600	2700	2700	2800	2900	2900	3000	3000	3100	3200	3200
33	2400	2500	2600	2600	2700	2800	2800	2900	3000	3000	3100	3200	3200	3300
34	2500	2500	2600	2700	2800	2800	2900	3000	3000	3100	3200	3200	3300	3300
35	2500	2600	2700	2700	2800	2900	2900	3000	3100	3100	3200	3300	3300	3400
36	2500	2600	2700	2800	2800	2900	3000	3100	3100	3200	3300	3300	3400	3400
37	2600	2700	2700	2800	2900	3000	3000	3100	3200	3200	3300	3400	3400	3500
38	2600	2700	2800	2900	2900	3000	3100	3100	3200	3300	3400	3400	3500	3600
39	2700	2700	2800	2900	3000	3000	3100	3200	3300	3300	3400	3500	3500	3600
40	2700	2800	2900	2900	3000	3100	3200	3200	3300	3400	3400	3500	3600	3700

TABLE 2. OUTER BUFFER ZONE DISTANCES (FEET) FOR FIELD SOIL FUMIGATION, EXCEPT USE TABLE 3 FOR METHOD SECTION 6447.3(a)(3)(B)1-BROADCAST, 10 ACRES OR LESS, AND 235 LBS AI/AC OR LESS, Continued

- Select the appropriate number of "Acres" in the left-hand column.
- Select the appropriate "Emission Rate" (emission ratio x application rate) from the top row.
- Read the buffer zone distance where the "Acres" row and the "Emission Rate" columns intersect.

Acres	Emission Rate (pounds AI/acre-day)													
	255	260	265	270	275	280	285	290	295	300	305	310	315	320
1	480	490	500	500	510	520	530	540	550	550	560	570	580	580
2	690	710	720	730	740	760	770	780	790	800	810	820	840	850
3	900	920	930	950	960	980	990	1000	1000	1000	1100	1100	1100	1100
4	1100	1100	1100	1100	1200	1200	1200	1200	1200	1200	1300	1300	1300	1300
5	1200	1200	1300	1300	1300	1300	1300	1400	1400	1400	1400	1400	1500	1500
6	1300	1400	1400	1400	1400	1500	1500	1500	1500	1500	1600	1600	1600	1600
7	1400	1500	1500	1500	1500	1600	1600	1600	1600	1700	1700	1700	1700	1800
8	1600	1600	1600	1600	1700	1700	1700	1700	1800	1800	1800	1800	1900	1900
9	1700	1700	1700	1700	1800	1800	1800	1900	1900	1900	1900	2000	2000	2000
10	1800	1800	1800	1800	1900	1900	1900	2000	2000	2000	2100	2100	2100	2100
11	1900	1900	1900	1900	2000	2000	2000	2100	2100	2100	2200	2200	2200	2300
12	1900	2000	2000	2000	2100	2100	2100	2200	2200	2200	2300	2300	2300	2400
13	2000	2100	2100	2100	2200	2200	2200	2300	2300	2300	2400	2400	2400	2500
14	2100	2200	2200	2200	2300	2300	2300	2400	2400	2400	2500	2500	2500	2600
15	2200	2200	2300	2300	2400	2400	2400	2500	2500	2500	2600	2600	2600	2700
16	2300	2300	2400	2400	2400	2500	2500	2600	2600	2600	2700	2700	2700	2800
17	2400	2400	2400	2500	2500	2600	2600	2600	2700	2700	2800	2800	2800	2900
18	2400	2500	2500	2600	2600	2600	2700	2700	2800	2800	2800	2900	2900	3000
19	2500	2500	2600	2600	2700	2700	2800	2800	2800	2900	2900	3000	3000	3000
20	2600	2600	2700	2700	2800	2800	2800	2900	2900	3000	3000	3000	3100	3100
21	2600	2700	2700	2800	2800	2900	2900	3000	3000	3000	3100	3100	3200	3200
22	2700	2800	2800	2900	2900	2900	3000	3000	3100	3100	3200	3200	3300	3300
23	2800	2800	2900	2900	3000	3000	3100	3100	3200	3200	3200	3300	3300	3400
24	2800	2900	2900	3000	3000	3100	3100	3200	3200	3300	3300	3400	3400	3500
25	2900	3000	3000	3100	3100	3200	3200	3300	3300	3400	3400	3400	3500	3500
26	3000	3000	3100	3100	3200	3200	3300	3300	3400	3400	3500	3500	3600	3600
27	3000	3100	3100	3200	3300	3300	3400	3400	3500	3500	3600	3600	3600	3700
28	3100	3200	3200	3300	3300	3400	3400	3500	3500	3600	3600	3700	3700	3800
29	3200	3200	3300	3300	3400	3400	3500	3500	3600	3600	3700	3700	3800	3800
30	3200	3300	3300	3400	3500	3500	3600	3600	3700	3700	3800	3800	3900	3900
31	3300	3300	3400	3500	3500	3600	3600	3700	3700	3800	3800	3900	3900	4000
32	3300	3400	3500	3500	3600	3600	3700	3700	3800	3900	3900	4000	4000	4100
33	3400	3500	3500	3600	3600	3700	3800	3800	3900	3900	4000	4000	4100	4100
34	3500	3500	3600	3600	3700	3800	3800	3900	3900	4000	4000	4100	4100	4200
35	3500	3600	3600	3700	3800	3800	3900	3900	4000	4100	4100	4200	4200	4300
36	3600	3600	3700	3800	3800	3900	3900	4000	4100	4100	4200	4200	4300	4300
37	3600	3700	3800	3800	3900	3900	4000	4100	4100	4200	4200	4300	4300	4400
38	3700	3700	3800	3900	3900	4000	4100	4100	4200	4200	4300	4400	4400	4500
39	3700	3800	3900	3900	4000	4100	4100	4200	4200	4300	4400	4400	4500	4500
40	3800	3900	3900	4000	4100	4100	4200	4200	4300	4400	4400	4500	4500	4600

TABLE 3. OUTER BUFFER ZONE DISTANCES (FEET) FOR FUMIGATION METHOD SECTION 6447.3(a)(3)(B)1. TARPAULIN/SHALLOW/BROADCAST ("NOBEL PLOW") FIELD SOIL FUMIGATION WHERE APPLICATION BLOCKS ARE:

1. 10 ACRES OR LESS
2. APPLICATION RATES OF 235 POUNDS AI PER ACRE OR LESS

This table does not apply to method 6447.3(a)(3)(B)(1) when done as a strip fumigation. Use Table 2 to determine the outer buffer zone for method (3)(B)(1)-strip.

Acres	Coastal Counties	Inland Counties
1	60	60
2	60	60
3	60	60
4	60	60
5	60	60
6	60	*
7	70	*
8	80	*
9	90	*
10	100	*

* Use Table 2 to determine buffer zones for acreage larger than listed on this table.

Fumigations using rates greater than 235 pounds AI per acre are determined using Table 2.

TABLE 4. INNER BUFFER ZONE DISTANCES (FEET) FOR FIELD SOIL FUMIGATION

- Select the appropriate "Acreage" in the left-hand column.
- Select the appropriate "Emission Rate" (emission ratio x application rate) from the top row.
- Read the buffer zone distance where the "Acreage" row and the "Emission Rate" columns intersect.

Acres	Emission Rate (pounds AI/acre-day)														
	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200
1	30	30	30	30	40	50	60	70	80	90	100	120	130	140	150
2	30	30	40	50	60	70	90	100	120	140	150	170	190	210	230
3	30	30	50	60	80	100	120	140	160	180	200	220	250	270	290
4	30	40	60	70	100	120	140	170	190	220	240	270	300	320	350
5	30	40	60	90	110	130	160	190	220	250	280	310	340	370	400
6	30	50	70	100	120	150	180	210	240	270	310	340	370	410	440
7	30	50	80	100	130	160	200	230	260	300	330	370	400	440	480
8	40	60	80	110	140	180	210	250	280	320	360	400	430	470	510
9	40	60	90	120	150	190	230	260	300	340	380	420	460	510	550
10	40	70	100	130	160	200	240	280	320	360	410	450	490	540	580
11	40	70	100	140	170	210	250	300	340	380	430	480	520	570	620
12	50	70	110	140	180	220	270	310	360	400	450	500	550	600	650
13	50	80	110	150	190	230	280	330	370	420	470	520	580	630	680
14	50	80	120	160	200	240	290	340	390	440	490	550	600	650	710
15	50	80	120	160	210	250	300	350	410	460	510	570	630	680	740
16	50	90	130	170	210	260	310	370	420	480	530	590	650	710	760
17	60	90	130	170	220	270	320	380	440	490	550	610	670	730	790
18	60	90	130	180	230	280	340	390	450	510	570	630	690	750	820
19	60	100	140	190	240	290	350	400	460	530	590	650	710	780	840
20	60	100	140	190	240	300	360	420	480	540	600	670	740	800	870
21	60	100	150	200	250	310	370	430	490	560	620	690	760	820	890
22	70	110	150	200	260	310	380	440	500	570	640	710	780	850	910
23	70	110	160	210	260	320	390	450	520	590	650	730	800	870	940
24	70	110	160	210	270	330	390	460	530	600	670	740	820	890	960
25	70	110	160	220	280	340	400	470	540	610	690	760	840	910	990
26	70	120	170	220	280	350	410	480	550	630	700	780	850	930	1000
27	80	120	170	230	290	350	420	490	570	640	720	800	870	950	1000
28	80	120	170	230	300	360	430	500	580	660	730	810	890	970	1100
29	80	130	180	240	300	370	440	520	590	670	750	830	910	990	1100
30	80	130	180	240	310	380	450	530	600	680	760	850	930	1000	1100
31	80	130	190	250	310	390	460	540	620	700	780	860	950	1000	1100
32	80	130	190	250	320	390	470	550	630	710	790	880	960	1000	1100
33	90	140	190	260	330	400	480	560	640	720	810	890	980	1100	1200
34	90	140	200	260	330	410	490	570	650	740	820	910	1000	1100	1200
35	90	140	200	270	340	420	500	580	660	750	840	930	1000	1100	1200
36	90	140	210	270	350	420	500	590	680	760	850	940	1000	1100	1200
37	90	150	210	280	350	430	510	600	690	780	870	960	1000	1100	1200
38	90	150	210	280	360	440	520	610	700	790	880	970	1100	1200	1200
39	90	150	220	290	360	440	530	620	710	800	890	980	1100	1200	1300
40	100	150	220	290	370	450	540	630	720	810	900	1000	1100	1200	1300

TABLE 4. INNER BUFFER ZONE DISTANCES (FEET) FOR FIELD SOIL FUMIGATION,
Continued

- Select the appropriate "Acreage" in the left-hand column.
- Select the appropriate "Emission Rate" (emission ratio x application rate) from the top row.
- Read the buffer zone distance where the "Acreage" row and the "Emission Rate" columns intersect.

Acres	Emission Rate (pounds AI/acre-day)											
	210	220	230	240	250	260	270	280	290	300	310	320
1	170	180	190	200	210	220	240	250	260	270	280	290
2	240	260	280	290	310	330	350	360	380	390	410	430
3	320	340	360	380	410	430	450	470	490	510	530	550
4	380	410	430	460	490	510	540	560	590	610	640	660
5	430	460	490	520	550	580	610	640	670	700	720	750
6	480	510	540	580	610	640	670	700	740	770	800	830
7	520	550	590	620	660	690	730	760	800	830	860	900
8	550	590	630	670	710	750	780	820	860	890	930	960
9	590	630	670	710	760	800	840	870	910	950	990	1000
10	630	670	720	760	800	840	890	930	970	1000	1000	1100
11	660	710	760	800	850	890	940	980	1000	1100	1100	1200
12	700	750	800	840	890	940	990	1000	1100	1100	1200	1200
13	730	780	830	880	930	980	1000	1100	1100	1200	1200	1300
14	760	820	870	920	970	1000	1100	1100	1200	1200	1300	1300
15	790	850	900	960	1000	1100	1100	1200	1200	1300	1300	1400
16	820	880	940	990	1000	1100	1200	1200	1300	1300	1400	1400
17	850	910	970	1000	1100	1100	1200	1300	1300	1400	1400	1500
18	880	940	1000	1100	1100	1200	1200	1300	1400	1400	1500	1500
19	910	970	1000	1100	1200	1200	1300	1300	1400	1400	1500	1600
20	930	1000	1100	1100	1200	1200	1300	1400	1400	1500	1500	1600
21	960	1000	1100	1200	1200	1300	1300	1400	1500	1500	1600	1700
22	980	1100	1100	1200	1300	1300	1400	1400	1500	1600	1600	1700
23	1000	1100	1100	1200	1300	1400	1400	1500	1500	1600	1700	1700
24	1000	1100	1200	1200	1300	1400	1500	1500	1600	1700	1700	1800
25	1100	1100	1200	1300	1300	1400	1500	1600	1600	1700	1800	1800
26	1100	1200	1200	1300	1400	1400	1500	1600	1700	1700	1800	1900
27	1100	1200	1300	1300	1400	1500	1600	1600	1700	1800	1800	1900
28	1100	1200	1300	1400	1400	1500	1600	1700	1700	1800	1900	1900
29	1200	1200	1300	1400	1500	1500	1600	1700	1800	1800	1900	2000
30	1200	1300	1300	1400	1500	1600	1600	1700	1800	1900	1900	2000
31	1200	1300	1400	1400	1500	1600	1700	1800	1800	1900	2000	2100
32	1200	1300	1400	1500	1500	1600	1700	1800	1900	1900	2000	2100
33	1200	1300	1400	1500	1600	1700	1700	1800	1900	2000	2100	2100
34	1300	1300	1400	1500	1600	1700	1800	1900	1900	2000	2100	2200
35	1300	1400	1500	1500	1600	1700	1800	1900	2000	2000	2100	2200
36	1300	1400	1500	1600	1700	1700	1800	1900	2000	2100	2200	2200
37	1300	1400	1500	1600	1700	1800	1900	1900	2000	2100	2200	2300
38	1300	1400	1500	1600	1700	1800	1900	2000	2100	2100	2200	2300
39	1400	1500	1500	1600	1700	1800	1900	2000	2100	2200	2300	2300
40	1400	1500	1600	1700	1800	1800	1900	2000	2100	2200	2300	2400

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