METHYL BROMIDE FIELD SOIL FUMIGATION
BUFFER ZONE DETERMINATION

Rev. 3/13

Scope

Commissioners should use this document to determine buffer zone distances and durations for methyl bromide field soil fumigations. This document does 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; and greenhouses and other similar structures. For such fumigations, commissioners should follow DPR's recommended permit conditions for greenhouse and potting soil fumigations, and label requirements for all other (e.g., tree hole) fumigations.

Summary of Changes

Phase 2 label changes for all methyl bromide field fumigation products went into effect in December 2012. The following summarizes the changes to reconcile the buffer zones required by labeling with the buffer zones required by California regulations.

Buffer Zone Distances – 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 (3CCR 6447.2) 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, the 12/8/04 document, and this document are the same, except the fumigation method specified in 6447.3(a)(1) – untarped/shallow/bed is not allowed by labels and therefore its buffer distances have been deleted. Labeling prohibits all buffer zone credits for methyl bromide fumigations in California because credits are not included in the 12/8/04 document.

Buffer Zone Durations – Relative to the 3/10 and 12/8/04 documents, most of the buffer zone durations specified in this document are longer to comply with labeling requirements.

Buffer Zone Proximity and Isolated Blocks –This document reconciles the labeling requirements for buffer zone proximity and the recommended permit conditions for field separation. The 1300 feet (1/4 mile) separation to determine isolated blocks and non-isolated blocks no longer applies.

Procedure to Determine Buffer Zone Distances and Duration

Two buffer zones are specified in 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 actual methyl bromide 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 application rate (pounds of actual methyl bromide per acre).

   For bedded and strip fumigations, the application rate used to determine the emission rate and buffer zones is the "broadcast equivalent" application rate specified by labeling. To calculate the broadcast equivalent rate for bedded or strip applications the following information is needed:

   - pounds of product per treated acre
   - strip or bed bottom width (inches)
   - center-to-center row spacing (inches)
   - application block size (acres)

   Pounds of product per treated acre is the ratio of total amount of product applied to the size of the total area treated (e.g., the rate of product applied in the bed). For bedded or strip applications, the total area treated is the summation of the area (i.e., length x width) of each treated bed bottom or strip that is located within the application block. The area of the space between the beds/strips is not factored in the total area treated. The application block size is the acreage within the perimeter of the fumigated portion of a field (including furrows, irrigation ditches, roadways). The perimeter of the application block is the border that connects the outermost edges of total area treated with the fumigant product.

   The broadcast equivalent rate must be calculated with the following formula:

$$\text{Broadcast equivalent rate (pounds/acre)} = \frac{\text{strip or bed bottom width (inches)}}{\text{center-to-center row spacing (inches)}} \times \text{pounds of product/treated acre in the strip or bed}$$

   See the product label for additional information and examples for broadcast equivalent application rates.

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), AND are 10 acres or less, AND have an application rate of 235 pounds per acre or less. Use *Table 2* for all other applications.

5. Determine if the outer buffer zone will overlap with the outer buffer zone(s) of other methyl bromide application blocks. Labeling prohibits overlapping outer buffer zones 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 buffer zone distances must be recalculated based on the combined acreage of the methyl bromide application blocks with overlapping outer buffer zones. The combined acreage of blocks with overlapping buffers cannot exceed 40 acres. 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.

   NOTE: Labeling requires Emergency Preparedness and Response measures for overlapping buffer zones, consisting of either Fumigant Site Monitoring or Response Information for Neighbors. Fumigant Site Monitoring is not needed since the permit conditions require notification that complies with the Response Information for Neighbors requirements.

6. 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.

7. Determine the buffer zone duration based on the application rate, acreage, and fumigation method *(Tables 5A, 5B. Buffer Zone Duration).* If applicable, the buffer zone duration must be based on the combined acreage of the application blocks with overlapping methyl bromide outer buffer zones.

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/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

* Optionally, closing shoes and a compaction roller can be used.

** 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 METHOD SECTION 6447.3(a)(3)(B)1.

- 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.

Emission Rate (pounds/acre-day)

Acres	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 METHOD SECTION 6447.3(a)(3)(B)1. (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.

Emission Rate (pounds/acre-day)

Acres	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 METHOD SECTION 6447.3(a)(3)(B)1. (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.

Emission Rate (pounds/acre-day)

Acres	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 METHOD SECTION 6447.3(a)(3)(B)1. (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.

Emission Rate (pounds/acre-day)

Acres	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 PER ACRE OR LESS

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 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.

Emission Rate (pounds/acre-day)

Acres	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.

Emission Rate (pounds/acre-day)

Acres	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

TABLE 5: BUFFER ZONE DURATION (HOURS) FOR FIELD SOIL FUMIGATION

All durations apply to both the inner and outer buffer zones.

For broadcast shank applications using any tarp that qualifies for a 60% or greater reduction in buffer zone distance (totally impermeable films), as indicated in the methyl bromide portion of U.S. EPA's tarp-credit website <http://www.epa.gov/pesticides/tarpcredits> :

a. The buffer zone period ends after the tarps have been removed from the application block.

b. As an alternative to (a) above, two buffer zone periods may be established where the first 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 buffer zone period begins when the tarps are perforated and ends after the tarps have been removed from the application block.

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

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

	Application Rate (pounds per acre)										
Acres	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 5B:
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)

	Application Rate (pounds per acre)										
Acres	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