

## **APPENDIX 1**

- a. SUMMARY OF APPLICATION METHOD ADJUSTMENT FACTORS AND METHOD USE FRACTIONS
- b. PRE-2024 FIELD FUMIGATION METHODS (FFM), FFM CODE FOR PESTICIDE USE REPORTING, AND EMISSION RATING
- c. 2024 FIELD FUMIGATION METHODS (FFM), FFM CODE FOR PESTICIDE USE REPORTING, AND EMISSION RATING

## APPENDIX 1a – SUMMARY OF APPLICATION METHOD ADJUSTMENT FACTORS AND METHOD USE FRACTIONS

**Table A1 - 1. Application Method Adjustment Factors (AMAF) for 2004 - 2007.**

<b>Fumigation Method<sup>1</sup></b>	<b>AMAF</b>					
	<b>1,3-D</b>	<b>Chloropicrin</b>	<b>Methyl Bromide</b>	<b>Metam</b>	<b>Dazomet</b>	<b>Na Tetrathio carbonate</b>
Shallow injection w/ high permeability tarp or no tarp-broadcast	61*	64*	74*	not applicable	not applicable	not applicable
Shallow injection w/ low permeability tarp-broadcast	not applicable	44	48	not applicable	not applicable	not applicable
Shallow injection w/ high permeability tarp or no tarp-bed	not applicable	64*	100*	77*	not applicable	not applicable
Shallow injection w/ low permeability tarp-bed	not applicable	64*	100*	not applicable	not applicable	not applicable
Shallow injection w/ water treatments	41	20	not applicable	21	not applicable	not applicable
Shallow injection w/ soil cap	not applicable	not applicable	not applicable	14	not applicable	not applicable
Deep injection w/ high permeability tarp or no tarp-broadcast	41	64*	74*	not applicable	not applicable	not applicable
Deep injection w/ low permeability tarp-broadcast	not applicable	44	48	not applicable	not applicable	not applicable
Deep injection w/ water treatments	27	20	not applicable	not applicable	not applicable	not applicable
Rotovate/rototill	not applicable	not applicable	not applicable	14	17	not applicable
Sprinkler	not applicable	not applicable	not applicable	77*	not applicable	10
Sprinkler w/ water treatments	not applicable	not applicable	not applicable	21	not applicable	not applicable
Flood	not applicable	not applicable	not applicable	77*	not applicable	10
Drip w/ high permeability tarp or no tarp	29	not applicable	not applicable	9	not applicable	10
Drip w/ low permeability tarp	not applicable	15	not applicable	9	not applicable	not applicable
Non-field soil (structural/post-harvest)	not applicable	100	100	not applicable	not applicable	not applicable

\* These are considered “high-emission” fumigation methods and are prohibited within the San Joaquin Valley, Southeast Desert, and Ventura NAAs during May-October.

**Table A1 - 2. 1990 frequency of fumigation methods used (method use fractions) in the Sacramento Metro nonattainment area.**

<b>Fumigation Method<sup>1</sup></b>	<b>% of Amount Applied</b>					
	<b>1,3-D<sup>2</sup></b>	<b>Chloropicrin</b>	<b>Methyl Bromide</b>	<b>Metam<sup>3</sup></b>	<b>Dazomet</b>	<b>Na Tetrathio carbonate<sup>4</sup></b>
Shallow injection w/ high permeability tarp or no tarp-broadcast		42	37			
Shallow injection w/ low permeability tarp-broadcast						
Shallow injection w/ high permeability tarp or no tarp-bed		42	36	3		
Shallow injection w/ low permeability tarp-bed						
Shallow injection w/ water treatments						
Shallow injection w/ soil cap				15		
Deep injection w/ high permeability tarp or no tarp-broadcast		16	14			
Deep injection w/ low permeability tarp-broadcast						
Deep injection w/ water treatments						
Rotovate/rototill				2	100	
Sprinkler				55		33
Sprinkler w/ water treatments						
Flood				10		33
Drip w/ high permeability tarp or no tarp				10		34
Drip w/ low permeability tarp				5		
Non-field soil (structural/post-harvest)			13			

<sup>1</sup> Fumigation methods are described in detail in the memo Barry et al., 2007.

<sup>2</sup> Use of 1,3-D was suspended in early 1990.

<sup>3</sup> DPR assumes 100% conversion of metam to MITC and percentages are relative to the amount of MITC applied.

<sup>4</sup> DPR assumes 100% conversion of sodium (Na) tetrathiocarbonate to carbon disulfide and percentages are relative to the amount of carbon disulfide combined.

**Table A1 - 3. 1990 frequency of fumigation methods used (method use fractions) in the San Joaquin Valley nonattainment area.**

Fumigation Method <sup>1</sup>	% of Amount Applied					
	1,3-D <sup>2</sup>	Chloropicrin	Methyl Bromide	Metam <sup>3</sup>	Dazomet	Na Tetrathio carbonate <sup>4</sup>
Shallow injection w/ high permeability tarp or no tarp-broadcast		29	29			
Shallow injection w/ low permeability tarp-broadcast						
Shallow injection w/ high permeability tarp or no tarp-bed		29	29	8		
Shallow injection w/ low permeability tarp-bed						
Shallow injection w/ water treatments						
Shallow injection w/ soil cap				25		
Deep injection w/ high permeability tarp or no tarp-broadcast		42	42			
Deep injection w/ low permeability tarp-broadcast						
Deep injection w/ water treatments						
Rotovate/rototill				3	100	
Sprinkler				60		33
Sprinkler w/ water treatments						
Flood						33
Drip w/ high permeability tarp or no tarp				2		34
Drip w/ low permeability tarp				2		
Non-field soil (structural/post-harvest)						

<sup>1</sup> Fumigation methods are described in detail in the memo Barry et al., 2007.

<sup>2</sup> Use of 1,3-D was suspended in early 1990.

<sup>3</sup> DPR assumes 100% conversion of metam to MITC and percentages are relative to the amount of MITC applied.

<sup>4</sup> DPR assumes 100% conversion of sodium (Na) tetrathiocarbonate to carbon disulfide and percentages are relative to the amount of carbon disulfide applied.

**Table A1 - 4. 1990 frequency of fumigation methods used (method use fractions) in the Southeast Desert nonattainment area.**

<b>Fumigation Method<sup>1</sup></b>	<b>% of Amount Applied</b>					
	<b>1,3-D<sup>2</sup></b>	<b>Chloropicrin</b>	<b>Methyl Bromide</b>	<b>Metam<sup>3</sup></b>	<b>Dazomet</b>	<b>Na Tetrathio carbonate<sup>4</sup></b>
Shallow injection w/ high permeability tarp or no tarp-broadcast		50	35			
Shallow injection w/ low permeability tarp-broadcast						
Shallow injection w/ high permeability tarp or no tarp-bed		50	34	10		
Shallow injection w/ low permeability tarp-bed						
Shallow injection w/ water treatments						
Shallow injection w/ soil cap						
Deep injection w/ high permeability tarp or no tarp-broadcast						
Deep injection w/ low permeability tarp-broadcast						
Deep injection w/ water treatments						
Rotovate/rototill					100	
Sprinkler				30		33
Sprinkler w/ water treatments						
Flood				50		33
Drip w/ high permeability tarp or no tarp				5		34
Drip w/ low permeability tarp				5		
Non-field soil (structural/post-harvest)			31			

<sup>1</sup> Fumigation methods are described in detail in the memo Barry et al., 2007.

<sup>2</sup> Use of 1,3-D was suspended in early 1990.

<sup>3</sup> DPR assumes 100% conversion of metam to MITC and percentages are relative to the amount of MITC applied

<sup>4</sup> DPR assumes 100% conversion of sodium (Na) tetrathiocarbonate to carbon disulfide and percentages are relative to the amount of carbon disulfide applied.

**Table A1 - 5. 1990 frequency of fumigation methods used (method use fractions) in the Ventura nonattainment area.**

<b>Fumigation Method<sup>1</sup></b>	<b>% of Amount Applied</b>					
	<b>1,3-D<sup>2</sup></b>	<b>Chloropicrin</b>	<b>Methyl Bromide</b>	<b>Metam<sup>3</sup></b>	<b>Dazomet</b>	<b>Na Tetrathio carbonate<sup>4</sup></b>
Shallow injection w/ high permeability tarp or no tarp-broadcast		50	49			
Shallow injection w/ low permeability tarp-broadcast						
Shallow injection w/ high permeability tarp or no tarp-bed		50	49	20		
Shallow injection w/ low permeability tarp-bed						
Shallow injection w/ water treatments						
Shallow injection w/ soil cap						
Deep injection w/ high permeability tarp or no tarp-broadcast						
Deep injection w/ low permeability tarp-broadcast						
Deep injection w/ water treatments						
Rotovate/rototill					100	
Sprinkler				50		33
Sprinkler w/ water treatments						
Flood						33
Drip w/ high permeability tarp or no tarp				15		34
Drip w/ low permeability tarp				15		
Non-field soil (structural/post-harvest)			3			

<sup>1</sup> Fumigation methods are described in detail in the memo Barry et al., 2007.

<sup>2</sup> Use of 1,3-D was suspended in early 1990.

<sup>3</sup> DPR assumes 100% conversion of metam to MITC and percentages are relative to the amount of MITC applied

<sup>4</sup> DPR assumes 100% conversion of sodium (Na) tetrathiocarbonate to carbon disulfide and percentages are relative to the amount of carbon disulfide applied.

**Table A1 - 6. 1990 frequency of fumigation methods used (method use fractions) in the South Coast nonattainment area.**

<b>Fumigation Method<sup>1</sup></b>	<b>% of Amount Applied</b>					
	<b>1,3-D<sup>2</sup></b>	<b>Chloropicrin</b>	<b>Methyl Bromide</b>	<b>Metam<sup>3</sup></b>	<b>Dazomet</b>	<b>Na Tetrathio carbonate<sup>4</sup></b>
Shallow injection w/ high permeability tarp or no tarp-broadcast		50	3			
Shallow injection w/ low permeability tarp-broadcast						
Shallow injection w/ high permeability tarp or no tarp-bed		50	3	20		
Shallow injection w/ low permeability tarp-bed						
Shallow injection w/ water treatments						
Shallow injection w/ soil cap						
Deep injection w/ high permeability tarp or no tarp-broadcast						
Deep injection w/ low permeability tarp-broadcast						
Deep injection w/ water treatments						
Rotovate/rototill					100	
Sprinkler				50		33
Sprinkler w/ water treatments						
Flood						33
Drip w/ high permeability tarp or no tarp				15		34
Drip w/ low permeability tarp				15		
Non-field soil (structural/post-harvest)			95			

<sup>1</sup> Fumigation methods are described in detail in the memo Barry et al., 2007.

<sup>2</sup> Use of 1,3-D was suspended in early 1990.

<sup>3</sup> DPR assumes 100% conversion of metam to MITC and percentages are relative to the amount of MITC applied

<sup>4</sup> DPR assumes 100% conversion of sodium (Na) tetrathiocarbonate to carbon disulfide and percentages are relative to the amount of carbon disulfide applied.

**Table A1 - 7. 7 frequency of fumigation methods used (method use fractions) in the Sacramento Metro nonattainment area.**

Fumigation Method <sup>1</sup>	% of Amount Applied					
	1,3-D	Chloropicrin	Methyl Bromide	Metam <sup>2</sup>	Dazomet	Na Tetrathio-carbonate <sup>3</sup>
Shallow injection w/ high permeability tarp or no tarp-broadcast						
Shallow injection w/ low permeability tarp-broadcast		56.0	11.3			
Shallow injection w/ high permeability tarp or no tarp-bed				21		
Shallow injection w/ low permeability tarp-bed		33.0	6.3			
Shallow injection w/ water treatments						
Shallow injection w/ soil cap				15		
Deep injection w/ high permeability tarp or no tarp-broadcast	99					
Deep injection w/ low permeability tarp-broadcast			11.4			
Deep injection w/ water treatments						
Rotovate/rototill					100	
Sprinkler				45		33
Sprinkler w/ water treatments						
Flood						33
Drip w/ high permeability tarp or no tarp	1			9		34
Drip w/ low permeability tarp		11.0		10		
Non-field soil (structural/post-harvest)			70.9			

<sup>1</sup> Fumigation methods are described in detail in the memo Barry et al., 2007.

<sup>2</sup> DPR assumes 100% conversion of metam to MITC and percentages are relative to the amount of MITC applied.

<sup>3</sup> DPR assumes 100% conversion of sodium (Na) tetrathiocarbonate to carbon disulfide and percentages are relative to the amount of carbon disulfide applied.



**Table A1 - 8. 8 frequency of fumigation methods used (method use fractions) in the San Joaquin Valley nonattainment area.**

<b>Fumigation Method<sup>1</sup></b>	<b>% of Amount Applied</b>					
	<b>1,3-D</b>	<b>Chloropicrin</b>	<b>Methyl Bromide</b>	<b>Metam<sup>2</sup></b>	<b>Dazomet</b>	<b>Na Tetrathio-carbonate<sup>3</sup></b>
Shallow injection w/ high permeability tarp or no tarp-broadcast	2					
Shallow injection w/ low permeability tarp-broadcast		97.0	79.5			
Shallow injection w/ high permeability tarp or no tarp-bed				21		
Shallow injection w/ low permeability tarp-bed			0.6			
Shallow injection w/ water treatments						
Shallow injection w/ soil cap				20		
Deep injection w/ high permeability tarp or no tarp-broadcast	97	1.0				
Deep injection w/ low permeability tarp-broadcast		1.0	16.3			
Deep injection w/ water treatments						
Rotovate/rototill					100	
Sprinkler				35		33
Sprinkler w/ water treatments						
Flood						33
Drip w/ high permeability tarp or no tarp	1			14		34
Drip w/ low permeability tarp				10		
Non-field soil (structural/post-harvest)		1.0	3.7			

<sup>1</sup> Fumigation methods are described in detail in the memo Barry et al., 2007.

<sup>2</sup> DPR assumes 100% conversion of metam to MITC and percentages are relative to the amount of MITC applied.

<sup>3</sup> DPR assumes 100% conversion of sodium (Na) tetrathiocarbonate to carbon disulfide and percentages are relative to the amount of carbon disulfide applied.

**Table A1 - 9. 2005 frequency of fumigation methods used (method use fractions) in the Southeast Desert nonattainment area.**

<b>Fumigation Method<sup>1</sup></b>	<b>% of Amount Applied</b>					
	<b>1,3-D</b>	<b>Chloropicrin</b>	<b>Methyl Bromide</b>	<b>Metam<sup>2</sup></b>	<b>Dazomet</b>	<b>Na Tetrathio-carbonate<sup>3</sup></b>
Shallow injection w/ high permeability tarp or no tarp-broadcast						
Shallow injection w/ low permeability tarp-broadcast		88	77.1			
Shallow injection w/ high permeability tarp or no tarp-bed				6		
Shallow injection w/ low permeability tarp-bed			18.9			
Shallow injection w/ water treatments						
Shallow injection w/ soil cap						
Deep injection w/ high permeability tarp or no tarp-broadcast	10					
Deep injection w/ low permeability tarp-broadcast			1.1			
Deep injection w/ water treatments						
Rotovate/rototill					100	
Sprinkler				75		33
Sprinkler w/ water treatments						
Flood						33
Drip w/ high permeability tarp or no tarp	90	5		7		34
Drip w/ low permeability tarp		5		12		
Non-field soil (structural/post-harvest)		2	2.9			

<sup>1</sup> Fumigation methods are described in detail in the memo Barry et al., 2007.

<sup>2</sup> DPR assumes 100% conversion of metam to MITC and percentages are relative to the amount of MITC applied.

<sup>3</sup> DPR assumes 100% conversion of sodium (Na) tetrathiocarbonate to carbon disulfide and percentages are relative to the amount of carbon disulfide applied.

**Table A1 - 10. 2005 frequency of fumigation methods used (method use fractions) in the Ventura nonattainment area.**

Fumigation Method <sup>1</sup>	% of Amount Applied					
	1,3-D	Chloropicrin	Methyl Bromide	Metam <sup>2</sup>	Dazomet	Na Tetrathio-carbonate <sup>3</sup>
Shallow injection w/ high permeability tarp or no tarp-broadcast	1					
Shallow injection w/ low permeability tarp-broadcast		67	100.0			
Shallow injection w/ high permeability tarp or no tarp-bed						
Shallow injection w/ low permeability tarp-bed						
Shallow injection w/ water treatments				25		
Shallow injection w/ soil cap						
Deep injection w/ high permeability tarp or no tarp-broadcast	4					
Deep injection w/ low permeability tarp-broadcast						
Deep injection w/ water treatments						
Rotovate/rototill					100	
Sprinkler						33
Sprinkler w/ water treatments				20		
Flood						33
Drip w/ high permeability tarp or no tarp	95			5		34
Drip w/ low permeability tarp		33		50		
Non-field soil (structural/post-harvest)						

<sup>1</sup> Fumigation methods are described in detail in the memo Barry et al., 2007.

<sup>2</sup> DPR assumes 100% conversion of metam to MITC and percentages are relative to the amount of MITC applied.

<sup>3</sup> DPR assumes 100% conversion of sodium (Na) tetrathiocarbonate to carbon disulfide and percentages are relative to the amount of carbon disulfide applied.

**Table A1 - 11. 2005 frequency of fumigation methods used (method use fractions) in the South Coast nonattainment area.**

<b>Fumigation Method<sup>1</sup></b>	<b>% of Amount Applied</b>					
	<b>1,3-D</b>	<b>Chloropicrin</b>	<b>Methyl Bromide</b>	<b>Metam<sup>2</sup></b>	<b>Dazomet</b>	<b>Na Tetrathio-carbonate<sup>3</sup></b>
Shallow injection w/ high permeability tarp or no tarp-broadcast						
Shallow injection w/ low permeability tarp-broadcast		40	60.9			
Shallow injection w/ high permeability tarp or no tarp-bed				25		
Shallow injection w/ low permeability tarp-bed		36	30.8			
Shallow injection w/ water treatments						
Shallow injection w/ soil cap						
Deep injection w/ high permeability tarp or no tarp-broadcast	2					
Deep injection w/ low permeability tarp-broadcast			0.5			
Deep injection w/ water treatments						
Rotovate/rototill					100	
Sprinkler				20		33
Sprinkler w/ water treatments						
Flood						33
Drip w/ high permeability tarp or no tarp	98			5		34
Drip w/ low permeability tarp		24		50		
Non-field soil (structural/post-harvest)			7.8			

<sup>1</sup> Fumigation methods are described in detail in the memo Barry et al., 2007.

<sup>2</sup> DPR assumes 100% conversion of metam to MITC and percentages are relative to the amount of MITC applied.

<sup>3</sup> DPR assumes 100% conversion of sodium (Na) tetrathiocarbonate to carbon disulfide and percentages are relative to the amount of carbon disulfide applied.

**Table A1 - 12. 2006 frequency of fumigation methods used (method use fractions) in the Sacramento Metro nonattainment area.**

<b>Fumigation Method<sup>1</sup></b>	<b>% of Amount Applied</b>					
	<b>1,3-D</b>	<b>Chloropicrin</b>	<b>Methyl Bromide</b>	<b>Metam<sup>2</sup></b>	<b>Dazomet</b>	<b>Na Tetrathio-carbonate<sup>3</sup></b>
Shallow injection w/ high permeability tarp or no tarp-broadcast	3					
Shallow injection w/ low permeability tarp-broadcast		56.0	11.3			
Shallow injection w/ high permeability tarp or no tarp-bed				21		
Shallow injection w/ low permeability tarp-bed		33.0	6.3			
Shallow injection w/ water treatments						
Shallow injection w/ soil cap				15		
Deep injection w/ high permeability tarp or no tarp-broadcast	95					
Deep injection w/ low permeability tarp-broadcast			11.4			
Deep injection w/ water treatments						
Rotovate/rototill					100	
Sprinkler				45		33
Sprinkler w/ water treatments						
Flood						33
Drip w/ high permeability tarp or no tarp	2			9		34
Drip w/ low permeability tarp		11.0		10		
Non-field soil (structural/post-harvest)			70.9			

<sup>1</sup> Fumigation methods are described in detail in the memo Barry et al., 2007.

<sup>2</sup> DPR assumes 100% conversion of metam to MITC and percentages are relative to the amount of MITC applied.

<sup>3</sup> DPR assumes 100% conversion of sodium (Na) tetrathiocarbonate to carbon disulfide and percentages are relative to the amount of carbon disulfide applied.

**Table A1 - 13. 2006 frequency of fumigation methods used (method use fractions) in the San Joaquin Valley nonattainment area.**

Fumigation Method <sup>1</sup>	% of Amount Applied					
	1,3-D	Chloropicrin	Methyl Bromide	Metam <sup>2</sup>	Dazomet	Na Tetrathio-carbonate <sup>3</sup>
Shallow injection w/ high permeability tarp or no tarp-broadcast	2					
Shallow injection w/ low permeability tarp-broadcast		97.0	79.5			
Shallow injection w/ high permeability tarp or no tarp-bed				21		
Shallow injection w/ low permeability tarp-bed			0.6			
Shallow injection w/ water treatments						
Shallow injection w/ soil cap				20		
Deep injection w/ high permeability tarp or no tarp-broadcast	97	1.0				
Deep injection w/ low permeability tarp-broadcast		1.0	16.3			
Deep injection w/ water treatments						
Rotovate/rototill					100	
Sprinkler				35		33
Sprinkler w/ water treatments						
Flood						33
Drip w/ high permeability tarp or no tarp	1			14		34
Drip w/ low permeability tarp				10		
Non-field soil (structural/post-harvest)		1.0	3.7			

<sup>1</sup> Fumigation methods are described in detail in the memo Barry et al., 2007.

<sup>2</sup> DPR assumes 100% conversion of metam to MITC and percentages are relative to the amount of MITC applied.

<sup>3</sup> DPR assumes 100% conversion of sodium (Na) tetrathiocarbonate to carbon disulfide and percentages are relative to the amount of carbon disulfide applied.

**Table A1 - 14. 2006 frequency of fumigation methods used (method use fractions) in the Southeast Desert nonattainment area.**

<b>Fumigation Method<sup>1</sup></b>	<b>% of Amount Applied</b>					
	<b>1,3-D</b>	<b>Chloropicrin</b>	<b>Methyl Bromide</b>	<b>Metam<sup>2</sup></b>	<b>Dazomet</b>	<b>Na Tetrathio-carbonate<sup>3</sup></b>
Shallow injection w/ high permeability tarp or no tarp-broadcast						
Shallow injection w/ low permeability tarp-broadcast		88.0	77.1			
Shallow injection w/ high permeability tarp or no tarp-bed				6		
Shallow injection w/ low permeability tarp-bed			18.9			
Shallow injection w/ water treatments						
Shallow injection w/ soil cap						
Deep injection w/ high permeability tarp or no tarp-broadcast	16					
Deep injection w/ low permeability tarp-broadcast		0.2	1.1			
Deep injection w/ water treatments						
Rotovate/rototill					100	
Sprinkler				75		33
Sprinkler w/ water treatments						
Flood						33
Drip w/ high permeability tarp or no tarp	84	5.0		7		34
Drip w/ low permeability tarp		5.0		12		
Non-field soil (structural/post-harvest)		2.0	2.9			

<sup>1</sup> Fumigation methods are described in detail in the memo Barry et al., 2007.

<sup>2</sup> DPR assumes 100% conversion of metam to MITC and percentages are relative to the amount of MITC applied.

<sup>3</sup> DPR assumes 100% conversion of sodium (Na) tetrathiocarbonate to carbon disulfide and percentages are relative to the amount of carbon disulfide applied.

**Table A1 - 15. 2006 frequency of fumigation methods used (method use fractions) in the Ventura nonattainment area.**

<b>Fumigation Method<sup>1</sup></b>	<b>% of Amount Applied</b>					
	<b>1,3-D</b>	<b>Chloropicrin</b>	<b>Methyl Bromide</b>	<b>Metam<sup>2</sup></b>	<b>Dazomet</b>	<b>Na Tetrathio-carbonate<sup>3</sup></b>
Shallow injection w/ high permeability tarp or no tarp-broadcast						
Shallow injection w/ low permeability tarp-broadcast		67.0	100.0			
Shallow injection w/ high permeability tarp or no tarp-bed						
Shallow injection w/ low permeability tarp-bed						
Shallow injection w/ water treatments				25		
Shallow injection w/ soil cap						
Deep injection w/ high permeability tarp or no tarp-broadcast	7					
Deep injection w/ low permeability tarp-broadcast						
Deep injection w/ water treatments						
Rotovate/rototill					100	
Sprinkler						33
Sprinkler w/ water treatments				20		
Flood						33
Drip w/ high permeability tarp or no tarp	93			5		34
Drip w/ low permeability tarp		33.0		50		
Non-field soil (structural/post-harvest)						

<sup>1</sup> Fumigation methods are described in detail in the memo Barry et al., 2007.

<sup>2</sup> DPR assumes 100% conversion of metam to MITC and percentages are relative to the amount of MITC applied.

<sup>3</sup> DPR assumes 100% conversion of sodium (Na) tetrathiocarbonate to carbon disulfide and percentages are relative to the amount of carbon disulfide applied.



**Table A1 - 16. 2006 frequency of fumigation methods used (method use fractions) in the South Coast nonattainment area.**

Fumigation Method <sup>1</sup>	% of Amount Applied					
	1,3-D	Chloropicrin	Methyl Bromide	Metam <sup>2</sup>	Dazomet	Na Tetrathio-carbonate <sup>3</sup>
Shallow injection w/ high permeability tarp or no tarp-broadcast						
Shallow injection w/ low permeability tarp-broadcast		40.0	60.9			
Shallow injection w/ high permeability tarp or no tarp-bed				25		
Shallow injection w/ low permeability tarp-bed		36.0	30.8			
Shallow injection w/ water treatments						
Shallow injection w/ soil cap						
Deep injection w/ high permeability tarp or no tarp-broadcast						
Deep injection w/ low permeability tarp-broadcast			0.5			
Deep injection w/ water treatments						
Rotovate/rototill					100	
Sprinkler				20		33
Sprinkler w/ water treatments						
Flood						33
Drip w/ high permeability tarp or no tarp	100			5		34
Drip w/ low permeability tarp		24.0		50		
Non-field soil (structural/post-harvest)			7.8			

<sup>1</sup> Fumigation methods are described in detail in the memo Barry et al., 2007.

<sup>2</sup> DPR assumes 100% conversion of metam to MITC and percentages are relative to the amount of MITC applied.

<sup>3</sup> DPR assumes 100% conversion of sodium (Na) tetrathiocarbonate to carbon disulfide and percentages are relative to the amount of carbon disulfide applied.

**Table A1 - 17. 2007 frequency of fumigation methods used (method use fractions) in the Sacramento Metro nonattainment area.**

<b>Fumigation Method<sup>1</sup></b>	<b>% of Amount Applied</b>					
	<b>1,3-D</b>	<b>Chloropicrin</b>	<b>Methyl Bromide</b>	<b>Metam<sup>2</sup></b>	<b>Dazomet</b>	<b>Na Tetrathio-carbonate<sup>3</sup></b>
Shallow injection w/ high permeability tarp or no tarp-broadcast	0.0					
Shallow injection w/ low permeability tarp-broadcast		56.0	11.3			
Shallow injection w/ high permeability tarp or no tarp-bed				21		
Shallow injection w/ low permeability tarp-bed		33.0	6.3			
Shallow injection w/ water treatments						
Shallow injection w/ soil cap				15		
Deep injection w/ high permeability tarp or no tarp-broadcast	99.9					
Deep injection w/ low permeability tarp-broadcast			11.4			
Deep injection w/ water treatments						
Rotovate/rototill					100	
Sprinkler				45		33
Sprinkler w/ water treatments						
Flood						33
Drip w/ high permeability tarp or no tarp	0.1			9		34
Drip w/ low permeability tarp		11.0		10		
Non-field soil (structural/post-harvest)			70.9			

<sup>1</sup> Fumigation methods are described in detail in the memo Barry et al., 2007.

<sup>2</sup> DPR assumes 100% conversion of metam to MITC and percentages are relative to the amount of MITC applied.

<sup>3</sup> DPR assumes 100% conversion of sodium (Na) tetrathiocarbonate to carbon disulfide and percentages are relative to the amount of carbon disulfide applied.

**Table A1 - 18. 2007 frequency of fumigation methods used (method use fractions) in the San Joaquin Valley nonattainment area.**

Fumigation Method <sup>1</sup>	% of Amount Applied					
	1,3-D	Chloropicrin	Methyl Bromide	Metam <sup>2</sup>	Dazomet	Na Tetrathio-carbonate <sup>3</sup>
Shallow injection w/ high permeability tarp or no tarp-broadcast	0.3					
Shallow injection w/ low permeability tarp-broadcast		97.0	79.5			
Shallow injection w/ high permeability tarp or no tarp-bed				21		
Shallow injection w/ low permeability tarp-bed			0.6			
Shallow injection w/ water treatments						
Shallow injection w/ soil cap				20		
Deep injection w/ high permeability tarp or no tarp-broadcast	99.3	1.0				
Deep injection w/ low permeability tarp-broadcast		1.0	16.3			
Deep injection w/ water treatments						
Rotovate/rototill					100	
Sprinkler				35		33
Sprinkler w/ water treatments						
Flood						33
Drip w/ high permeability tarp or no tarp	0.4			14		34
Drip w/ low permeability tarp				10		
Non-field soil (structural/post-harvest)		1.0	3.7			

<sup>1</sup> Fumigation methods are described in detail in the memo Barry et al., 2007.

<sup>2</sup> DPR assumes 100% conversion of metam to MITC and percentages are relative to the amount of MITC applied.

<sup>3</sup> DPR assumes 100% conversion of sodium (Na) tetrathiocarbonate to carbon disulfide and percentages are relative to the amount of carbon disulfide applied.

**Table A1 - 19. 2007 frequency of fumigation methods used (method use fractions) in the Southeast Desert nonattainment area.**

<b>Fumigation Method<sup>1</sup></b>	<b>% of Amount Applied</b>					
	<b>1,3-D</b>	<b>Chloropicrin</b>	<b>Methyl Bromide</b>	<b>Metam<sup>2</sup></b>	<b>Dazomet</b>	<b>Na Tetrathio-carbonate<sup>3</sup></b>
Shallow injection w/ high permeability tarp or no tarp-broadcast	0.4					
Shallow injection w/ low permeability tarp-broadcast		88.0	77.1			
Shallow injection w/ high permeability tarp or no tarp-bed				6		
Shallow injection w/ low permeability tarp-bed			18.9			
Shallow injection w/ water treatments						
Shallow injection w/ soil cap						
Deep injection w/ high permeability tarp or no tarp-broadcast	0.0					
Deep injection w/ low permeability tarp-broadcast		0.2	1.1			
Deep injection w/ water treatments						
Rotovate/rototill					100	
Sprinkler				75		33
Sprinkler w/ water treatments						
Flood						33
Drip w/ high permeability tarp or no tarp	99.6	5.0		7		34
Drip w/ low permeability tarp		5.0		12		
Non-field soil (structural/post-harvest)		2.0	2.9			

<sup>1</sup> Fumigation methods are described in detail in the memo Barry et al., 2007.

<sup>2</sup> DPR assumes 100% conversion of metam to MITC and percentages are relative to the amount of MITC applied.

<sup>3</sup> DPR assumes 100% conversion of sodium (Na) tetrathiocarbonate to carbon disulfide and percentages are relative to the amount of carbon disulfide applied.

**Table A1 - 20. 2007 frequency of fumigation methods used (method use fractions) in the Ventura nonattainment area.**

<b>Fumigation Method<sup>1</sup></b>	<b>% of Amount Applied</b>					
	<b>1,3-D</b>	<b>Chloropicrin</b>	<b>Methyl Bromide</b>	<b>Metam<sup>2</sup></b>	<b>Dazomet</b>	<b>Na Tetrathio-carbonate<sup>3</sup></b>
Shallow injection w/ high permeability tarp or no tarp-broadcast						
Shallow injection w/ low permeability tarp-broadcast		67.0	100.0			
Shallow injection w/ high permeability tarp or no tarp-bed						
Shallow injection w/ low permeability tarp-bed						
Shallow injection w/ water treatments				25		
Shallow injection w/ soil cap						
Deep injection w/ high permeability tarp or no tarp-broadcast	5.0					
Deep injection w/ low permeability tarp-broadcast						
Deep injection w/ water treatments						
Rotovate/rototill					100	
Sprinkler						33
Sprinkler w/ water treatments				20		
Flood						33
Drip w/ high permeability tarp or no tarp	94.9			5		34
Drip w/ low permeability tarp		33.0		50		
Non-field soil (structural/post-harvest)						

<sup>1</sup> Fumigation methods are described in detail in the memo Barry et al., 2007.

<sup>2</sup> DPR assumes 100% conversion of metam to MITC and percentages are relative to the amount of MITC applied.

<sup>3</sup> DPR assumes 100% conversion of sodium (Na) tetrathiocarbonate to carbon disulfide and percentages are relative to the amount of carbon disulfide applied.

**Table A1 - 21. 2007 frequency of fumigation methods used (method use fractions) in the South Coast nonattainment area.**

<b>Fumigation Method<sup>1</sup></b>	<b>% of Amount Applied</b>					
	<b>1,3-D</b>	<b>Chloropicrin</b>	<b>Methyl Bromide</b>	<b>Metam<sup>2</sup></b>	<b>Dazomet</b>	<b>Na Tetrathio-carbonate<sup>3</sup></b>
Shallow injection w/ high permeability tarp or no tarp-broadcast						
Shallow injection w/ low permeability tarp-broadcast		40.0	60.9			
Shallow injection w/ high permeability tarp or no tarp-bed				25		
Shallow injection w/ low permeability tarp-bed		36.0	30.8			
Shallow injection w/ water treatments						
Shallow injection w/ soil cap						
Deep injection w/ high permeability tarp or no tarp-broadcast						
Deep injection w/ low permeability tarp-broadcast			0.5			
Deep injection w/ water treatments						
Rotovate/rototill					100	
Sprinkler				20		33
Sprinkler w/ water treatments						
Flood						33
Drip w/ high permeability tarp or no tarp	100.0			5		34
Drip w/ low permeability tarp		24.0		50		
Non-field soil (structural/post-harvest)			7.8			

<sup>1</sup> Fumigation methods are described in detail in the memo Barry et al., 2007.

<sup>2</sup> DPR assumes 100% conversion of metam to MITC and percentages are relative to the amount of MITC applied.

<sup>3</sup> DPR assumes 100% conversion of sodium (Na) tetrathiocarbonate to carbon disulfide and percentages are relative to the amount of carbon disulfide applied.

**Table A1 - 22. Application Method Adjustment Factors (AMAF) for 2008.**

		AMAF						
<b>Fumigation Method</b>	<b>Code</b>	<b>1,3-D</b>	<b>Chloro-picrin</b>	<b>Methyl Bromide</b>	<b>Metam Na</b>	<b>Metam K</b>	<b>Dazomet</b>	<b>Na Tetrathio-carbonate</b>
Chemigation (Drip System)/Tarpaulin	1209	19	12					
Chemigation (Drip)	1601							10
Chemigation (mini-sprinkler)	1602							10
Day Chemigation (Drip System) Nontarpaulin	1408				9	9		
Day Chemigation (Drip System) Tarpaulin	1407				9	9		
Day Drench	1413				100	100		
Day Nontarpaulin/Shallow/Broadcast or Bed /Two Water Treatments	1405				28			
Day Nontarpaulin/Shallow/Broadcast or Bed/Three Water Treatments	1406				21	21		
Day Power Mulcher	1410				14	14		
Day Rotary Tiller	1409					14		
Day Soil Capping	1411				14	14		
Day Sprinkler/Broadcast or Bed/One Water Treatment	1401				77	77		
Day Sprinkler/Broadcast or Bed/Three Water Treatments	1403				21	21		
Day Sprinkler/Broadcast or Bed/Two Water Treatments	1402				28	28		
Day or Night Flood	1412				77			
Night 4 A.M. Start/Sprinkler/Broadcast or Bed/Two Water treatments	1472				35			
Night Nontarpaulin/Shallow/	1455				13	13		

Broadcast or Bed/Two Water Treatments								
Night Sprinkler/Broadcast or Bed/Two Water Treatments	1452				77			
Nontarpaulin/Deep/Broadcast or Bed	1206	26	64					
Other label method - Methyl Bromide	1190		100	100				
Tarpaulin/Deep/Bed	1208	26						
Tarpaulin/Deep/Broadcast	1207	26						
Tarpaulin/Shallow/Bed	1106							10
Tarpaulin/Deep/Broadcast	1107			48				
Tarpaulin/Shallow/Broadcast – Nobel Plow	1103		44	48				

<sup>1</sup> Fumigation methods are described in detail in the memo Barry et al., 2007.

<sup>2</sup> DPR assumes 100% conversion of metam to MITC and percentages are relative to the amount of MITC applied.

<sup>3</sup> DPR assumes 100% conversion of sodium (Na) tetrathiocarbonate to carbon disulfide and percentages are relative to the amount of carbon disulfide applied.



**Table A1 - 23. 2008 frequency of fumigation methods used (method use fractions) in the Sacramento Metro nonattainment area.**

		% of Amount Applied						
<b>Fumigation Method</b>	<b>Code</b>	<b>1,3-D</b>	<b>Chloro-picrin</b>	<b>Methyl Bromide</b>	<b>Metam Na</b>	<b>Metam K</b>	<b>Dazomet</b>	<b>Na Tetrathio-carbonate</b>
Chemigation (Drip System)/Tarpaulin	1209	3.0	9.6					
Day Chemigation (Drip System) Nontarpaulin	1408					16.5		
Day Chemigation (Drip System) Tarpaulin	1407				83.2			
Day Rotary Tiller	1409				16.8	83.5		
Nontarpaulin/Deep/Broadcast or Bed	1206	97.0	55.7					
Tarpaulin/Deep/Broadcast	1107			74.8				
Tarpaulin/Shallow/Broadcast – Nobel Plow	1103		34.8	25.2				
Chemigation (Drip System)/Tarpaulin	1209	3.0	9.6					

<sup>1</sup> Fumigation methods are described in detail in the memo Barry et al., 2007.

<sup>2</sup> DPR assumes 100% conversion of metam to MITC and percentages are relative to the amount of MITC applied.

<sup>3</sup> DPR assumes 100% conversion of sodium (Na) tetrathiocarbonate to carbon disulfide and percentages are relative to the amount of carbon disulfide applied.

**Table A1 - 24. 2008 frequency of fumigation methods used (method use fractions) in the San Joaquin Valley nonattainment area.**

		% of Amount Applied						
<b>Fumigation Method</b>	<b>Code</b>	<b>1,3-D</b>	<b>Chloro-picrin</b>	<b>Methyl Bromide</b>	<b>Metam Na</b>	<b>Metam K</b>	<b>Dazomet</b>	<b>Na Tetrathio-carbonate</b>
Chemigation (Drip)	1601							97.1
Chemigation (mini-sprinkler)	1602							2.9
Day Chemigation (Drip System) Nontarpaulin	1408				1.3	10.5		
Day Chemigation (Drip System) Tarpaulin	1407				0.1	0.2		
Day Drench	1413					5.1		
Day Nontarpaulin/Shallow/Broadcast or Bed /Two Water Treatments	1405				0.2			
Day Nontarpaulin/Shallow/Broadcast or Bed/Three Water Treatments	1406				9.4	2.4		
Day Power Mulcher	1410				3.5	42.5		
Day Rotary Tiller	1409					5.2		
Day Soil Capping	1411				3.0	1.3		
Day Sprinkler/Broadcast or Bed/One Water Treatment	1401				1.4	7.6		
Day Sprinkler/Broadcast or Bed/Three Water Treatments	1403				14.3	0.7		
Day Sprinkler/Broadcast or Bed/Two Water Treatments	1402				7.7	7.1		
Day or Night Flood	1412							
Night 4 A.M. Start/Sprinkler/Broadcast or Bed/Two Water treatments	1472							
Night Nontarpaulin/Shallow/Broadcast or Bed/Two Water Treatments	1455				58.7	17.4		

Night Sprinkler/Broadcast or Bed/Two Water Treatments	1452				0.3			
Nontarpaulin/Deep/Broadcast or Bed	1206	98.0	19.5					
Other label method - Methyl Bromide	1190		0.4	0.3				
Tarpaulin/Deep/Bed	1208	1.2						
Tarpaulin/Deep/Broadcast	1207	0.9						
Tarpaulin/Shallow/Broadcast – Nobel Plow	1103		80.1	99.7				

<sup>1</sup> Fumigation methods are described in detail in the memo Barry et al., 2007.

<sup>2</sup> DPR assumes 100% conversion of metam to MITC and percentages are relative to the amount of MITC applied.

<sup>3</sup> DPR assumes 100% conversion of sodium (Na) tetrathiocarbonate to carbon disulfide and percentages are relative to the amount of carbon disulfide applied.

**Table A1 - 25. 2008 frequency of fumigation methods used (method use fractions) in the Southeast Desert nonattainment area.**

Fumigation Method	Code	% of Amount Applied						
		1,3-D	Chloro-picrin	Methyl Bromide	Metam Na	Metam K	Dazomet	Na Tetrathio-carbonate
Chemigation (Drip System)/Tarpaulin	1209	88.3	100.0					
Day Chemigation (Drip System) Nontarpaulin	1408				57.1			
Day Sprinkler/Broadcast or Bed/Three Water Treatments	1403				34.2			
Day Sprinkler/Broadcast or Bed/Two Water Treatments	1402				1.3			
Night 4 A.M. Start/Sprinkler/Broadcast or Bed/Two Water treatments	1472				7.4			
Nontarpaulin/Deep/Broadcast or Bed	1206	11.7						
Tarpaulin/Deep/Broadcast	1107			37.4				
Tarpaulin/Shallow/Bed	1106							100.0

<sup>1</sup> Fumigation methods are described in detail in the memo Barry et al., 2007.

<sup>2</sup> DPR assumes 100% conversion of metam to MITC and percentages are relative to the amount of MITC applied.

<sup>3</sup> DPR assumes 100% conversion of sodium (Na) tetrathiocarbonate to carbon disulfide and percentages are relative to the amount of carbon disulfide applied.

**Table A1 - 26. 2008 frequency of fumigation methods used (method use fractions) in the Ventura nonattainment area.**

		% of Amount Applied						
Fumigation Method	Code	1,3-D	Chloro-picrin	Methyl Bromide	Metam Na	Metam K	Dazomet	Na Tetrathio-carbonate
Chemigation (Drip System)/Tarpaulin	1209	99.5	89.1					
Chemigation (mini-sprinkler)	1602							100.0
Day Chemigation (Drip System) Nontarpaulin	1408				0.2			
Day Chemigation (Drip System) Tarpaulin	1407				99.8	100.0		
Nontarpaulin/Deep/Broadcast or Bed	1206	0.5	0.1					
Tarpaulin/Shallow/Broadcast – Nobel Plow	1103		10.8	100.0				

<sup>1</sup> Fumigation methods are described in detail in the memo Barry et al., 2007.

<sup>2</sup> DPR assumes 100% conversion of metam to MITC and percentages are relative to the amount of MITC applied.

<sup>3</sup> DPR assumes 100% conversion of sodium (Na) tetrathiocarbonate to carbon disulfide and percentages are relative to the amount of carbon disulfide applied.

**Table A1 - 27. 2008 frequency of fumigation methods used (method use fractions) in the South Coast nonattainment area.**

		% of Amount Applied						
Fumigation Method	Code	1,3-D	Chloro-picrin	Methyl Bromide	Metam Na	Metam K	Dazomet	Na Tetrathio-carbonate
Chemigation (Drip System)/Tarpaulin	1209	100.0	63.4					
Other label method - Methyl Bromide	1190		0.9	2.3				
Tarpaulin/Deep/Broadcast	1107		0.5	4.8				
Tarpaulin/Shallow/Broadcast – Nobel Plow	1103		35.2	92.9				

<sup>1</sup> Fumigation methods are described in detail in the memo Barry et al., 2007.

<sup>2</sup> DPR assumes 100% conversion of metam to MITC and percentages are relative to the amount of MITC applied.

<sup>3</sup> DPR assumes 100% conversion of sodium (Na) tetrathiocarbonate to carbon disulfide and percentages are relative to the amount of carbon disulfide applied.

**APPENDIX 1b - California Department of Pesticide Regulation****Volatile Organic Compound Regulations****Field Fumigation Methods (FFM), FFM Code for Pesticide Use Reporting, and Emission Ratings**

<b>Regulation Section</b>	<b>Field Fumigation Method</b>	<b>FFM Code</b>	<b>Emission Rating (%)</b>
<b>6447.3</b>	<b>Methyl Bromide Fumigation Methods (With or without chloropicrin)</b>	<b>1100 series</b>	
6447.3(a)(1)	Nontarpaulin/Shallow/Bed	1101†	100*
6447.3(a)(2)	Nontarpaulin/Deep/Broadcast	1102	74*
6447.3(a)(3)	Tarpaulin/Shallow/Broadcast – Nobel Plow	1103	48
	Tarpaulin/Shallow/Broadcast – Nobel Plow – Strip	1104	74*
	Tarpaulin/Shallow/Broadcast – Closing shoes and compaction roller	1105†	100*
6447.3(a)(4)	Tarpaulin/Shallow/Bed	1106	100*
6447.3(a)(5)	Tarpaulin/Deep/Broadcast	1107	48
	Tarpaulin/Deep/Broadcast – Strip	1108	74*
6447.3(a)(6)	Drip System - Hot Gas	1109	100*
6447.3(a)(3)	Tarpaulin/Shallow/Broadcast – Nobel Plow–with tarp eligible for 60%	1143	48
	Tarpaulin/Shallow/Broadcast – Nobel Plow – Strip –with tarp eligible for 60% credit	1144	74*
	Tarpaulin/Shallow/Broadcast – Closing shoes and compaction roller–with tarp eligible for 60% credit	1145	100*
6447.3(a)(4)	Tarpaulin/Shallow/Bed –with tarp eligible for 60% credit	1146	100*
6447.3(a)(5)	Tarpaulin/Deep/Broadcast –with tarp eligible for 60% credit	1147	48
	Tarpaulin/Deep/Broadcast-Strip–with tarp eligible for 60% credit	1148	74*
6447.3(a)(6)	Drip System - Hot Gas –with tarp eligible for 60% credit	1149	100*
	Other label method for Methyl Bromide (with or without chloropicrin)**	1190	---
<b>6448.1</b>	<b>1,3-Dichloropropene Fumigation Methods (with or without chloropicrin)</b>	<b>1200 series</b>	
6448.1(d)(1)	Nontarpaulin/Shallow/Broadcast or Bed	1201	65*
6448.1(d)(2)	Tarpaulin/Shallow/Broadcast	1202	65*
	Tarpaulin/Shallow/Bed	1203	65*
6448.1(d)(3)	Nontarpaulin/Shallow/Broadcast /Three Water Treatments	1204	44
6448.1(d)(4)	Tarpaulin/Shallow/Bed/Three Water Treatment	1205	44
6448.1(d)(5)	Nontarpaulin/Deep/Broadcast (without chloropicrin)	1206	26
	Nontarpaulin/Deep/Broadcast (with chloropicrin)	1206	64*
6448.1(d)(6)	Tarpaulin/Deep/Broadcast	1207	26
	Tarpaulin/Deep/Bed	1208	26
6448.1(d)(7)	Chemigation (Drip System)/Tarpaulin	1209	29

\*Method prohibited within the San Joaquin Valley, Southeast Desert, and Ventura nonattainment areas during May 1 – October 31

\*\* For use only outside of the May 1 – October 31 time period: or areas outside of the nonattainment areas; or for exempted applications (such as described in Sections 6447, 6448, 6449, 6450, and 6451)

† Method no longer allowed. Codes are for applications that were made before 2015 when the method was allowed. .

Regulation Section	Field Fumigation Method	FFM Code	Emission Rating (%)
6448.1(d)(5)	Nontarpaulin/Deep/Strip	1210	26
6448.1(d)(5)	Nontarpaulin/Deep/GPS-targeted	1211	26
6448.1(d)(2)	Tarpaulin/Shallow/Broadcast –with tarp eligible for 60% credit	1242	10
	Tarpaulin/Shallow/Bed–with tarp eligible for 60% credit	1243	65*
6448.1(d)(4)	Tarpaulin/Shallow/Bed/Three Water Treatment –with tarp eligible for	1245	44
6448.1(d)(6)	Tarpaulin/Deep/Broadcast –with tarp eligible for 60% credit	1247	10
	Tarpaulin/Deep/Bed–with tarp eligible for 60% credit	1248	26
6448.1(d)(6)	Tarpaulin/Deep/Broadcast-strip –with tarp eligible for 60% credit	1249	21
6448.1(d)(7)	Chemigation (Drip System)/Tarpaulin –with tarp eligible for 60% credit	1259	29
	Other label method for 1,3-Dichloropropene (with or without	1290	---
<b>6449.1</b>	<b>Chloropicrin-Fumigation Methods</b>	<b>1100-1300</b>	
6447.3(a)(1)	Nontarpaulin/Shallow/Bed	1101†	64*
6447.3(a)(2)	Nontarpaulin/Deep/Broadcast	1102	64*
6447.3(a)(3)	Tarpaulin/Shallow/Broadcast – Nobel Plow	1103	44
	Tarpaulin/Shallow/Broadcast – Nobel Plow – Strip	1104	64*
	Tarpaulin/Shallow/Broadcast – Closing shoes and compaction roller	1105†	64*
6447.3(a)(4)	Tarpaulin/Shallow/Bed	1106	64*
6447.3(a)(5)	Tarpaulin/Deep/Broadcast	1107	44
	Tarpaulin/Deep/Broadcast – Strip	1108	64*
6447.3(a)(3)	Tarpaulin/Shallow/Broadcast – Nobel Plow–with tarp eligible for 60% credit	1143	7
	Tarpaulin/Shallow/Broadcast – Nobel Plow – Strip –with tarp eligible for 60% credit	1144	7
	Tarpaulin/Shallow/Broadcast – Closing shoes and compaction roller–with tarp eligible for 60% credit	1145†	7
6447.3(a)(4)	Tarpaulin/Shallow/Bed –with tarp eligible for 60% credit	1146	7
6447.3(a)(5)	Tarpaulin/Deep/Broadcast –with tarp eligible for 60% credit	1147	7
	Tarpaulin/Deep/Broadcast – Strip –with tarp eligible for 60% credit	1148	7
6448.1(d)(1)	Nontarpaulin/Shallow/Broadcast or Bed	1201	64*
6448.1(d)(2)	Tarpaulin/Shallow/Broadcast	1202	44
	Tarpaulin/Shallow/Bed	1203	64*
6448.1(d)(3)	Nontarpaulin/Shallow/Broadcast /Three Water Treatments	1204	43
6448.1(d)(4)	Tarpaulin/Shallow/Bed/Three Water Treatment	1205	43
6448.1(d)(5)	Nontarpaulin/Deep/Broadcast	1206	64*
6448.1(d)(6)	Tarpaulin/Deep/Broadcast	1207	44
	Tarpaulin/Deep/Bed	1208	44

\*Method prohibited within the San Joaquin Valley, Southeast Desert, and Ventura nonattainment areas during May 1 – October 31

\*\* For use only outside of the May 1 – October 31 time period; or areas outside of the nonattainment areas; or for exempted applications (such as described in Sections 6447, 6448, 6449, 6450, and 6451)

† Method no longer allowed. Codes are for applications that were made before 2015 when the method was allowed. .

<b>Regulation Section</b>	<b>Field Fumigation Method</b>	<b>FFM Code</b>	<b>Emission Rating (%)</b>
6448.1(d)(7)	Chemigation (Drip System)/Tarpaulin	1209	12
6448.1(d)(5)	Nontarpaulin/Deep/Broadcast/Strip	1210	64
6448.1(d)(5)	Nontarpaulin/Deep/Broadcast/GPS-targeted	1211	64
6448.1(d)(2)	Tarpaulin/Shallow/Broadcast –with tarp eligible for 60% credit	1242	7
	Tarpaulin/Shallow/Bed–with tarp eligible for 60% credit	1243	7
6448.1(d)(4)	Tarpaulin/Shallow/Bed/Three Water Treatment –with tarp eligible for 60% credit	1245	7
6448.1(d)(6)	Tarpaulin/Deep/Broadcast –with tarp eligible for 60% credit	1247	7
	Tarpaulin/Deep/Bed–with tarp eligible for 60% credit	1248	7
6448.1(d)(6)	Tarpaulin/Deep/Broadcast-strip –with tarp eligible for 60% credit	1249	7
6448.1(d)(7)	Chemigation (Drip System)/Tarpaulin –with tarp eligible for 60% credit	1259	7
	Other label method for Chloropicrin**	1390	---
<b>6450.1</b>	<b>Metam-Sodium and Metam-Potassium Fumigation Methods</b>	<b>1400 series</b>	
6450.1(d)(1)	Sprinkler/Broadcast or Bed/One Water Treatment	1401	77*
6450.1(d)(2)	Sprinkler/Broadcast or Bed/Two Water Treatments	1402	28
6450.1(d)(3)	Sprinkler/Broadcast or Bed/Three Water Treatments	1403	21
6450.1(d)(4)	Nontarpaulin/Shallow/Broadcast or Bed/One Water Treatment	1404	77*
6450.1(d)(5)	Nontarpaulin/Shallow/Broadcast or Bed /Two Water Treatments	1405	28
6450.1(d)(6)	Nontarpaulin/Shallow/Broadcast or Bed/Three Water Treatments	1406	21
6450.1(d)(7)	Chemigation (Drip System) Tarpaulin	1407	9
	Chemigation (Drip System) Nontarpaulin	1408	9
6450.1(d)(8)	Rotary Tiller	1409	14
	Power Mulcher	1410	14
	Soil Capping	1411	14
6450.1(d)(9)	Flood	1412	77*
6450.1(d)(12)	Drench	1413	100
6450.1(d)(7)	Chemigation (Drip System) Tarpaulin –with tarp eligible for 30%	1447	9
6450.1(d)(2)	Night 1A.M. Start/Sprinkler/Broadcast or Bed/Two Water Treatments	1452	77*
6450.1(d)(10)	1A.M. Start/Nontarpaulin/Shallow/Broadcast or Bed/Two Water Treatments	1455	13
6450.1(d)(11)	4A.M. Start/sprinkler/Broadcast or Bed/Two Water Treatments	1472	35
	Other label method for Metam-Sodium and Metam-Potassium**	1490	---

\*Method prohibited within the San Joaquin Valley, Southeast Desert, and Ventura nonattainment areas during May 1 – October 31

\*\* For use only outside of the May 1 – October 31 time period; or areas outside of the nonattainment areas; or for exempted applications (such as described in Sections 6447, 6448, 6449, 6450, and 6451).



<b>Regulation Section</b>	<b>Field Fumigation Method</b>	<b>FFM Code</b>	<b>Emission Rating (%)</b>
<b>6450.2</b>	<b>Dazomet Fumigation Methods</b>	<b>1500 series</b>	
	Soil incorporation	1501	17
	Surface application – water incorporation	1502	17
	Other label method for Dazomet**	1590	---
<b>6451.1</b>	<b>Sodium Tetrathiocarbonate Fumigation Methods</b>	<b>1600 series</b>	
	Chemigation (Drip)	1601	10
	Chemigation (mini-sprinkler)	1602	10
	Chemigation (flood, basin)	1603	10
	Chemigation (furrow, border)	1604	10
	Chemigation (foggers, jets, misters, other)	1605	10
	Other label method for Sodium Tetrathiocarbonate**	1690	---
<b>6446.1</b>	<b>Methyl Iodide Fumigation Methods</b>	<b>1700 Series</b>	
	Day Tarpaulin/Shallow/Broadcast***	1701	100
	Day Tarpaulin/Shallow/Bed***	1702	100
	Day Tarpaulin/Deep/Broadcast***	1703	100
	Day Chemigation (Drip)/Tarpaulin***	1704	100
	Day Auger-Probe***	1705	100

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\*\*\*Methyl Iodide is no longer registered. Codes are for applications that were made in 2011 when the chemical

**APPENDIX 1c - California Department of Pesticide Regulation****Volatile Organic Compound Regulations Field Fumigation Methods (FFM), FFM Codes for Pesticide Use Reporting, and Emission Ratings**

<b>Regulation Section</b>	<b>Field Fumigation Method</b>	<b>FFM Code</b>	<b>Emission Rating (%)</b>
<b>6447.3</b>	<b>Methyl bromide fumigation methods (with or without chloropicrin)</b>	<b>1101-1190</b>	<b>---</b>
6447.3(a)(1)	Nontarpaulin/shallow/bed	1101*†	100
6447.3(a)(2)	Nontarpaulin/deep/broadcast	1102*	74
6447.3(a)(3)	Tarpaulin/shallow/broadcast – Noble plow	1103	48
6447.3(a)(3)	Tarpaulin/shallow/broadcast – Noble plow – strip	1104*	74
6447.3(a)(3)	Tarpaulin/shallow/broadcast – closing shoes and compaction roller	1105*†	100
6447.3(a)(4)	Tarpaulin/shallow/bed	1106*	100
6447.3(a)(5)	Tarpaulin/deep/broadcast	1107	48
6447.3(a)(5)	Tarpaulin/deep/broadcast – strip	1108*	74
6447.3(a)(6)	Drip system – hot gas	1109*	100
6447.3(a)(3)	Tarpaulin/shallow/broadcast – Noble plow – with tarp eligible for 60% credit	1143	48
6447.3(a)(3)	Tarpaulin/shallow/broadcast – Noble plow – strip – with tarp eligible for 60% credit	1144*	74
6447.3(a)(3)	Tarpaulin/shallow/broadcast – closing shoes and compaction roller – with tarp eligible for 60% credit	1145*	100
6447.3(a)(4)	Tarpaulin/shallow/bed – with tarp eligible for 60% credit	1146*	100
6447.3(a)(5)	Tarpaulin/deep/broadcast – with tarp eligible for 60% credit	1147	48
6447.3(a)(5)	Tarpaulin/deep/broadcast – strip – with tarp eligible for 60% credit	1148*	74
6447.3(a)(6)	Drip system – hot gas – with tarp eligible for 60% credit	1149*	100
	Other label method for methyl bromide (with or without chloropicrin)	1190**	

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† Method prohibited since 2015

Regulation Section	Field Fumigation Method	FFM Code	Emission Rating (%)
<b>6448.2</b>	<b>1,3-dichloropropene fumigation methods (with or without chloropicrin)</b>	<b>1201-1290</b>	<b>---</b>
6448.2(d)(1)	Nontarpaulin/shallow/broadcast or bed	1201*	49
6448.2(d)(2)	Tarpaulin/shallow/broadcast	1202*	40
6448.2(d)(2)	Tarpaulin/shallow/bed	1203*	46
6448.2(d)(3)	Nontarpaulin/shallow/broadcast or bed/three water treatments	1204	35
6448.2(d)(4)	Tarpaulin/shallow/bed/three water treatments	1205*	45
6448.2(d)(5)	Nontarpaulin/deep/broadcast (without chloropicrin)	1206	29
6448.2(d)(5)	Nontarpaulin/deep/broadcast (with chloropicrin)	1206*	29
6448.2(d)(6)	Tarpaulin/deep/broadcast	1207	25
6448.2(d)(6)	Tarpaulin/deep/bed	1208	33
6448.2(d)(7)	Chemigation (drip system)/tarpaulin	1209*	52
6448.2(d)(5)	Nontarpaulin/deep/strip	1210	29
6448.2(d)(5)	Nontarpaulin/deep/GPS targeted	1211	29
6448.2(d)(5)	Nontarpaulin/24 inches deep/broadcast (without chloropicrin)	1224	19
6448.2(d)(5)	Nontarpaulin/24 inches deep/broadcast (with chloropicrin)	1224*	19
6448.2(d)(5)	Tarpaulin/24 inches deep/broadcast	1225	17
6448.2(d)(5)	Nontarpaulin/24 inches deep/strip (without chloropicrin)	1226	19
6448.2(d)(5)	Nontarpaulin/24 inches deep/strip (with chloropicrin)	1226*	19
6448.2(d)(5)	Nontarpaulin/24 inches deep/GPS targeted (without chloropicrin)	1227	19
6448.2(d)(5)	Nontarpaulin/24 inches deep/GPS targeted (with chloropicrin)	1227*	19
Interim approval‡	Nontarpaulin/tree-hole	1230	14
6448.2(d)(2)	Tarpaulin/shallow/broadcast – with tarp eligible for 60% credit	1242	11
6448.2(d)(2)	Tarpaulin/shallow/bed – with tarp eligible for 60% credit	1243	18
6448.2(d)(4)	Tarpaulin/shallow/bed/three water treatments – with tarp eligible for 60% credit	1245	15
6448.2(d)(6)	Tarpaulin/deep/broadcast – with tarp eligible for 60% credit	1247	8
6448.2(d)(6)	Tarpaulin/deep/bed – with tarp eligible for 60% credit	1248	17
6448.2(d)(6)	Tarpaulin/deep/strip – with tarp eligible for 60% credit	1249	9
6448.2(d)(5)	40% TIF tarpaulin/deep/broadcast	1250	20
6448.2(d)(7)	Chemigation (drip system)/TIF tarpaulin	1259	16
6448.2(d)(5)	40% TIF tarpaulin/24 inches deep/broadcast	1264	14
	Other label method for 1,3-dichloropropene (with or without chloropicrin)	1290††	

\*Method prohibited within the San Joaquin Valley, Southeast Desert, and Ventura nonattainment areas during May 1 – October 31.

‡[https://www.cdpr.ca.gov/docs/county/cacltrs/exec/2024/13-d\\_tree\\_hole\\_interim\\_approval\\_letter.pdf](https://www.cdpr.ca.gov/docs/county/cacltrs/exec/2024/13-d_tree_hole_interim_approval_letter.pdf)

††Method prohibited since 2024

Regulation Section	Field Fumigation Method	FFM Code	Emission Rating (%)
<b>6449.1</b>	<b>Chloropicrin fumigation methods</b>	<b>1101-1390</b>	---
6447.3(a)(1)	Nontarpaulin/shallow/bed	1101*†	64
6447.3(a)(2)	Nontarpaulin/deep/broadcast	1102*	64
6447.3(a)(3)	Tarpaulin/shallow/broadcast – Nobel plow	1103	44
6447.3(a)(3)	Tarpaulin/shallow/broadcast – Nobel plow – strip	1104*	64
6447.3(a)(3)	Tarpaulin/shallow/broadcast – closing shoes and compaction roller	1105*†	64
6447.3(a)(4)	Tarpaulin/shallow/bed	1106*	64
6447.3(a)(5)	Tarpaulin/deep/broadcast	1107	44
6447.3(a)(5)	Tarpaulin/deep/broadcast – strip	1108*	64
6447.3(a)(3)	Tarpaulin/shallow/broadcast – Noble plow – with tarp eligible for 60% credit	1143	7
6447.3(a)(3)	Tarpaulin/shallow/broadcast – Noble plow – strip – with tarp eligible for 60% credit	1144	7
6447.3(a)(3)	Tarpaulin/shallow/broadcast – closing shoes and compaction roller – with tarp eligible for 60% credit	1145†	7
6447.3(a)(4)	Tarpaulin/shallow/bed – with tarp eligible for 60% credit	1146	7
6447.3(a)(5)	Tarpaulin/deep/broadcast – with tarp eligible for 60% credit	1147	7
6447.3(a)(5)	Tarpaulin/deep/broadcast – strip – with tarp eligible for 60% credit	1148	7
6448.2(d)(1)	Nontarpaulin/shallow/broadcast or bed	1201*	64
6448.2(d)(2)	Tarpaulin/shallow/broadcast	1202	44
6448.2(d)(2)	Tarpaulin/shallow/bed	1203*	64
6448.2(d)(3)	Nontarpaulin/shallow/broadcast or bed/three water treatments	1204	43
6448.2(d)(4)	Tarpaulin/shallow/bed/three water treatments	1205	43
6448.2(d)(5)	Nontarpaulin/deep/broadcast	1206*	64
6448.2(d)(6)	Tarpaulin/deep/broadcast	1207	44
6448.2(d)(6)	Tarpaulin/deep/bed	1208	44
6448.2(d)(7)	Chemigation (drip system)/tarpaulin	1209	12
6448.2(d)(5)	Nontarpaulin/deep/broadcast/strip	1210	64
6448.2(d)(5)	Nontarpaulin/deep/broadcast/GPS targeted	1211	64
6448.2(d)(5)	Nontarpaulin/24 inches deep/broadcast	1224*	64
6448.2(d)(5)	Tarpaulin/24 inches deep/broadcast	1225	44
6448.2(d)(5)	Nontarpaulin/24 inches deep/strip	1226*	64
6448.2(d)(5)	Nontarpaulin/24 inches deep/GPS targeted	1227*	64

\*Method prohibited within the San Joaquin Valley, Southeast Desert, and Ventura nonattainment areas during May 1 – October 31.

†Method prohibited since 2015

<b>Regulation Section</b>	<b>Field Fumigation Method</b>	<b>FFM Code</b>	<b>Emission Rating (%)</b>
6448.2(d)(2)	Tarpaulin/shallow/broadcast – with tarp eligible for 60% credit	1242	7
6448.2(d)(2)	Tarpaulin/shallow/bed – with tarp eligible for 60% credit	1243	7
6448.2(d)(4)	Tarpaulin/shallow/bed/three water treatments – with tarp eligible for 60% credit	1245	7
6448.2(d)(6)	Tarpaulin/deep/broadcast – with tarp eligible for 60% credit	1247	7
6448.2(d)(6)	Tarpaulin/deep/bed – with tarp eligible for 60% credit	1248	7
6448.2(d)(6)	Tarpaulin/deep/strip – with tarp eligible for 60% credit	1249	7
6448.2(d)(5)	40% TIF tarpaulin/deep/broadcast	1250	44
6448.2(d)(7)	Chemigation (drip system)/TIF tarpaulin	1259	7
6448.2(d)(5)	40% TIF tarpaulin/24 inches deep/broadcast	1264	44
	Other label method for chloropicrin	1390**	

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Regulation Section	Field Fumigation Method	FFM Code	Emission Rating (%)
<b>6450.1</b>	<b>Metam-sodium and metam-potassium fumigation methods</b>	<b>1401-1490</b>	<b>---</b>
6450.1(d)(1)	Sprinkler/broadcast or bed/one water treatment	1401*	77
6450.1(d)(2)	Sprinkler/broadcast or bed/two water treatments	1402	28
6450.1(d)(3)	Sprinkler/broadcast or bed/three water treatments	1403	21
6450.1(d)(4)	Nontarpaulin/shallow/broadcast or bed/one water treatment	1404*	77
6450.1(d)(5)	Nontarpaulin/shallow/broadcast or bed/two water treatments	1405	28
6450.1(d)(6)	Nontarpaulin/shallow/broadcast or bed/three water treatments	1406	21
6450.1(d)(7)	Chemigation (drip system) tarpaulin	1407	9
6450.1(d)(7)	Chemigation (drip system) nontarpaulin	1408	9
6450.1(d)(8)	Rotary tiller	1409	14
6450.1(d)(8)	Power mulcher	1410	14
6450.1(d)(8)	Soil capping	1411	14
6450.1(d)(9)	Flood	1412*	77
6450.1(d)(12)	Drench	1413	100
6450.1(d)(7)	Chemigation (drip system) tarpaulin – with tarp eligible for 30% credit	1447	9
6450.1(d)(2)	Night 1A.M. start/sprinkler/broadcast or bed/two water treatments	1452*	77
6450.1(d)(10)	1A.M. start/nontarpaulin/shallow/broadcast or bed/two water treatments	1455	13
6450.1(d)(11)	4A.M. start/sprinkler/broadcast or bed/two water treatments	1472	35
	Other label method for metam-sodium and metam-potassium	1490**	

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<b>Regulation Section</b>	<b>Field Fumigation Method</b>	<b>FFM Code</b>	<b>Emission Rating (%)</b>
<b>6450.2</b>	<b>Dazomet fumigation methods</b>	<b>1501-1590</b>	<b>---</b>
	Soil incorporation	1501	17
	Surface application – water incorporation	1502	17
	Other label method for dazomet	1590**	
<b>6451.1</b>	<b>Sodium tetrathiocarbonate fumigation methods</b>	<b>1601-1690</b>	<b>---</b>
	Chemigation (drip)	1601	10
	Chemigation (mini-sprinkler)	1602	10
	Chemigation (flood, basin)	1603	10
	Chemigation (furrow, border)	1604	10
	Chemigation (foggers, jets, misters, other)	1605	10
	Other label method for sodium tetrathiocarbonate	1690**	
<b>6446.1</b>	<b>Methyl iodide fumigation methods</b>	<b>1701-1705</b>	<b>---</b>
	Day tarpaulin/shallow/broadcast	1701***	100
	Day tarpaulin/shallow/bed	1702***	100
	Day tarpaulin/deep/broadcast	1703***	100
	Day chemigation (drip)/tarpaulin	1704***	100
	Day auger-probe	1705***	100

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\*\*\*Methyl Iodide is no longer registered. Codes are for applications that were made in 2011 when the chemical