

APPENDIX 1

- a. SUMMARY OF APPLICATION METHOD ADJUSTMENT FACTORS AND METHOD USE FRACTIONS
- b. 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.

| Fumigation Method ¹ | AMAF | | | | | |
|--|----------------|----------------|----------------|----------------|----------------|------------------------|
| | 1,3-D | Chloropicrin | Methyl Bromide | Metam | Dazomet | Na Tetrathio carbonate |
| 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.

| Fumigation Method ¹ | % of Amount Applied | | | | | |
|--|---------------------|--------------|----------------|--------------------|---------|-------------------------------------|
| | 1,3-D ² | Chloropicrin | Methyl Bromide | Metam ³ | Dazomet | Na Tetrathio carbonate ⁴ |
| 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 | | | |

¹ Fumigation methods are described in detail in the memo Barry et al., 2007.

² Use of 1,3-D was suspended in early 1990.

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

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

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

| Fumigation Method ¹ | % of Amount Applied | | | | | |
|--|---------------------|--------------|----------------|--------------------|---------|-------------------------------------|
| | 1,3-D ² | Chloropicrin | Methyl Bromide | Metam ³ | Dazomet | Na Tetrathio carbonate ⁴ |
| 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) | | | | | | |

¹ Fumigation methods are described in detail in the memo Barry et al., 2007.

² Use of 1,3-D was suspended in early 1990.

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

⁴ DPR assumes 100% conversion of sodium (Na) tetrathio carbonate 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.

| Fumigation Method ¹ | % of Amount Applied | | | | | |
|--|---------------------|--------------|----------------|--------------------|---------|-------------------------------------|
| | 1,3-D ² | Chloropicrin | Methyl Bromide | Metam ³ | Dazomet | Na Tetrathio carbonate ⁴ |
| 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 | | | |

¹ Fumigation methods are described in detail in the memo Barry et al., 2007.

² Use of 1,3-D was suspended in early 1990.

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

⁴ 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.

| Fumigation Method ¹ | % of Amount Applied | | | | | |
|--|---------------------|--------------|----------------|--------------------|---------|-------------------------------------|
| | 1,3-D ² | Chloropicrin | Methyl Bromide | Metam ³ | Dazomet | Na Tetrathio carbonate ⁴ |
| 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 | | | |

¹ Fumigation methods are described in detail in the memo Barry et al., 2007.

² Use of 1,3-D was suspended in early 1990.

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

⁴ 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.

| Fumigation Method ¹ | % of Amount Applied | | | | | |
|--|---------------------|--------------|----------------|--------------------|---------|-------------------------------------|
| | 1,3-D ² | Chloropicrin | Methyl Bromide | Metam ³ | Dazomet | Na Tetrathio carbonate ⁴ |
| 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 | | | |

¹ Fumigation methods are described in detail in the memo Barry et al., 2007.

² Use of 1,3-D was suspended in early 1990.

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

⁴ DPR assumes 100% conversion of sodium (Na) tetrathio carbonate 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 ¹ | % of Amount Applied | | | | | |
|--|---------------------|--------------|----------------|--------------------|---------|-------------------------------------|
| | 1,3-D | Chloropicrin | Methyl Bromide | Metam ² | Dazomet | Na Tetrathio-carbonate ³ |
| 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 | | | |

¹ Fumigation methods are described in detail in the memo Barry et al., 2007.

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

³ 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.

| Fumigation Method ¹ | % of Amount Applied | | | | | |
|--|---------------------|--------------|----------------|--------------------|---------|-------------------------------------|
| | 1,3-D | Chloropicrin | Methyl Bromide | Metam ² | Dazomet | Na Tetrathio-carbonate ³ |
| 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 | | | |

¹ Fumigation methods are described in detail in the memo Barry et al., 2007.

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

³ 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.

| Fumigation Method ¹ | % of Amount Applied | | | | | |
|--|---------------------|--------------|----------------|--------------------|---------|-------------------------------------|
| | 1,3-D | Chloropicrin | Methyl Bromide | Metam ² | Dazomet | Na Tetrathio-carbonate ³ |
| 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 | | | |

¹ Fumigation methods are described in detail in the memo Barry et al., 2007.

² DPR assumes 100% conversion of metam to MITC and percentages are relative to the amount of MITC applied

³ 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 ¹ | % of Amount Applied | | | | | |
|--|---------------------|--------------|----------------|--------------------|---------|-------------------------------------|
| | 1,3-D | Chloropicrin | Methyl Bromide | Metam ² | Dazomet | Na Tetrathio-carbonate ³ |
| 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) | | | | | | |

¹ Fumigation methods are described in detail in the memo Barry et al., 2007.

² DPR assumes 100% conversion of metam to MITC and percentages are relative to the amount of MITC applied

³ 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.

| Fumigation Method ¹ | % of Amount Applied | | | | | |
|--|---------------------|--------------|----------------|--------------------|---------|-------------------------------------|
| | 1,3-D | Chloropicrin | Methyl Bromide | Metam ² | Dazomet | Na Tetrathio-carbonate ³ |
| 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 | | | |

¹ Fumigation methods are described in detail in the memo Barry et al., 2007.

² DPR assumes 100% conversion of metam to MITC and percentages are relative to the amount of MITC applied

³ 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.

| Fumigation Method ¹ | % of Amount Applied | | | | | |
|--|---------------------|--------------|----------------|--------------------|---------|-------------------------------------|
| | 1,3-D | Chloropicrin | Methyl Bromide | Metam ² | Dazomet | Na Tetrathio-carbonate ³ |
| 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 | | | |

¹ Fumigation methods are described in detail in the memo Barry et al., 2007.

² DPR assumes 100% conversion of metam to MITC and percentages are relative to the amount of MITC applied

³ 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 ¹ | % of Amount Applied | | | | | |
|--|---------------------|--------------|----------------|--------------------|---------|-------------------------------------|
| | 1,3-D | Chloropicrin | Methyl Bromide | Metam ² | Dazomet | Na Tetrathio-carbonate ³ |
| 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 | | | |

¹ Fumigation methods are described in detail in the memo Barry et al., 2007.

² DPR DPR assumes 100% conversion of metam to MITC and percentages are relative to the amount of MITC applied

³ 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.

| Fumigation Method ¹ | % of Amount Applied | | | | | |
|--|---------------------|--------------|----------------|--------------------|---------|-------------------------------------|
| | 1,3-D | Chloropicrin | Methyl Bromide | Metam ² | Dazomet | Na Tetrathio-carbonate ³ |
| 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 | | | |

¹ Fumigation methods are described in detail in the memo Barry et al., 2007.

² DPR DPR assumes 100% conversion of metam to MITC and percentages are relative to the amount of MITC applied

³ 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.

| Fumigation Method ¹ | % of Amount Applied | | | | | |
|--|---------------------|--------------|----------------|--------------------|---------|-------------------------------------|
| | 1,3-D | Chloropicrin | Methyl Bromide | Metam ² | Dazomet | Na Tetrathio-carbonate ³ |
| 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) | | | | | | |

¹ Fumigation methods are described in detail in the memo Barry et al., 2007.

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

³ 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 ¹ | % of Amount Applied | | | | | |
|--|---------------------|--------------|----------------|--------------------|---------|-------------------------------------|
| | 1,3-D | Chloropicrin | Methyl Bromide | Metam ² | Dazomet | Na Tetrathio-carbonate ³ |
| 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 | | | |

¹ Fumigation methods are described in detail in the memo Barry et al., 2007.

² DPR DPR assumes 100% conversion of metam to MITC and percentages are relative to the amount of MITC applied

³ 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.

| Fumigation Method ¹ | % of Amount Applied | | | | | |
|--|---------------------|--------------|----------------|--------------------|---------|-------------------------------------|
| | 1,3-D | Chloropicrin | Methyl Bromide | Metam ² | Dazomet | Na Tetrathio-carbonate ³ |
| 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 | | | |

¹ Fumigation methods are described in detail in the memo Barry et al., 2007.

² DPR assumes 100% conversion of metam to MITC and percentages are relative to the amount of MITC applied

³ 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 ¹ | % of Amount Applied | | | | | |
|--|---------------------|--------------|----------------|--------------------|---------|-------------------------------------|
| | 1,3-D | Chloropicrin | Methyl Bromide | Metam ² | Dazomet | Na Tetrathio-carbonate ³ |
| 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 | | | |

¹ Fumigation methods are described in detail in the memo Barry et al., 2007.

² DPR assumes 100% conversion of metam to MITC and percentages are relative to the amount of MITC applied

³ 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.

| Fumigation Method ¹ | % of Amount Applied | | | | | |
|--|---------------------|--------------|----------------|--------------------|---------|-------------------------------------|
| | 1,3-D | Chloropicrin | Methyl Bromide | Metam ² | Dazomet | Na Tetrathio-carbonate ³ |
| 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 | | | |

¹ Fumigation methods are described in detail in the memo Barry et al., 2007.

² DPR DPR assumes 100% conversion of metam to MITC and percentages are relative to the amount of MITC applied

³ 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.

| Fumigation Method ¹ | % of Amount Applied | | | | | |
|--|---------------------|--------------|----------------|--------------------|---------|-------------------------------------|
| | 1,3-D | Chloropicrin | Methyl Bromide | Metam ² | Dazomet | Na Tetrathio-carbonate ³ |
| 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) | | | | | | |

¹ Fumigation methods are described in detail in the memo Barry et al., 2007.

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

³ 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.

| Fumigation Method ¹ | % of Amount Applied | | | | | |
|--|---------------------|--------------|----------------|--------------------|---------|-------------------------------------|
| | 1,3-D | Chloropicrin | Methyl Bromide | Metam ² | Dazomet | Na Tetrathio-carbonate ³ |
| 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 | | | |

¹ Fumigation methods are described in detail in the memo Barry et al., 2007.

² DPR assumes 100% conversion of metam to MITC and percentages are relative to the amount of MITC applied

³ 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.

| Fumigation Method | Code | AMAF | | | | | | |
|--|------|-------|---------------|----------------|----------|---------|---------|------------------------|
| | | 1,3-D | Chloro-picrin | Methyl Bromide | Metam Na | Metam K | Dazomet | Na Tetrathio-carbonate |
| 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 | | | | |

¹ Fumigation methods are described in detail in the memo Barry et al., 2007.

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

³ 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.

| 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 | 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 | | | | | |

¹Fumigation methods are described in detail in the memo Barry et al., 2007.

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

³DPR 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.

| Fumigation Method | Code | % of Amount Applied | | | | | | |
|--|------|---------------------|---------------|----------------|----------|---------|---------|------------------------|
| | | 1,3-D | Chloro-picrin | Methyl Bromide | Metam Na | Metam K | Dazomet | Na Tetrathio-carbonate |
| 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 | | | | |

¹ Fumigation methods are described in detail in the memo Barry et al., 2007.

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

³ 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 |

¹ Fumigation methods are described in detail in the memo Barry et al., 2007.

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

³ 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.

| 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 | 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 | | | | |

¹ Fumigation methods are described in detail in the memo Barry et al., 2007.

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

³ 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.

| 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 | 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 | | | | |

¹ Fumigation methods are described in detail in the memo Barry et al., 2007.

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

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

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

| Regulation Section | Field Fumigation Method | FFM Code | Emission Rating (%) |
|--------------------|---|------------------|---------------------|
| 6447.3 | Methyl bromide fumigation methods (with or without chloropicrin) | 1101-1190 | --- |
| 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** | |

* 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 prohibited since 2015

| Regulation Section | Field Fumigation Method | FFM Code | Emission Rating (%) |
|--------------------|--|------------------|---------------------|
| 6448.2 | 1,3-dichloropropene fumigation methods (with or without chloropicrin) | 1201-1290 | --- |
| 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.

‡ [Interim Approval of New, Nontarpaulin/Tree-Hole Fumigation Method \(FFM Code 1230\) for 1,3-Dichloropropene - Department of Pesticide Regulation](#)

†† Method prohibited since 2024

| Regulation Section | Field Fumigation Method | FFM Code | Emission Rating (%) |
|--------------------|---|------------------|---------------------|
| 6449.1 | Chloropicrin fumigation methods | 1101-1390 | --- |
| 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

| Regulation Section | Field Fumigation Method | FFM Code | Emission Rating (%) |
|---------------------------|--|-----------------|----------------------------|
| 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** | |

** 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)

| Regulation Section | Field Fumigation Method | FFM Code | Emission Rating (%) |
|--------------------|---|------------------|---------------------|
| 6450.1 | Metam-sodium and metam-potassium fumigation methods | 1401-1490 | --- |
| 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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| Regulation Section | Field Fumigation Method | FFM Code | Emission Rating (%) |
|---------------------------|---|------------------|----------------------------|
| 6450.2 | Dazomet fumigation methods | 1501-1590 | --- |
| | Soil incorporation | 1501 | 17 |
| | Surface application – water incorporation | 1502 | 17 |
| | Other label method for dazomet | 1590** | |
| | | | |
| 6451.1 | Sodium tetrathiocarbonate fumigation methods | 1601-1690 | --- |
| | 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** | |
| | | | |
| 6446.1 | Methyl iodide fumigation methods | 1701-1705 | --- |
| | 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 |

** 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)

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