Module 2
Soil Fumigant RED Requirements

Overview of Soil Fumigant Uses
## Soil Fumigant Use By Crop

<table>
<thead>
<tr>
<th>Crop</th>
<th>Chloropicrin</th>
<th>Metam Sodium Metam Potassium</th>
<th>Methyl Bromide</th>
<th>1,3-Dichloropropene</th>
<th>Methyl Iodide</th>
<th>Total Pounds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pounds</td>
<td>PCT</td>
<td>Pounds</td>
<td>PCT</td>
<td>Pounds</td>
<td>PCT</td>
</tr>
<tr>
<td>Potatoes</td>
<td>300,000</td>
<td>2</td>
<td>32,500,000</td>
<td>20</td>
<td>12,700,000</td>
<td>10</td>
</tr>
<tr>
<td>Strawberries</td>
<td>3,500,000</td>
<td>60</td>
<td>200,000</td>
<td>2</td>
<td>4,400,000</td>
<td>50</td>
</tr>
<tr>
<td>Tomatoes</td>
<td>1,400,000</td>
<td>10</td>
<td>3,100,000</td>
<td>10</td>
<td>3,700,000</td>
<td>10</td>
</tr>
<tr>
<td>Carrots</td>
<td>7,400,000</td>
<td>50</td>
<td></td>
<td></td>
<td>1,100,000</td>
<td>10</td>
</tr>
<tr>
<td>Tobacco</td>
<td>1,600,000</td>
<td>20</td>
<td></td>
<td></td>
<td>60,000</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Onions</td>
<td>300,000</td>
<td>5</td>
<td>3,400,000</td>
<td>15</td>
<td>1,400,000</td>
<td>5</td>
</tr>
<tr>
<td>Peppers</td>
<td>1,100,000</td>
<td>20</td>
<td>1,900,000</td>
<td>15</td>
<td>1,300,000</td>
<td>15</td>
</tr>
<tr>
<td>Watermelons</td>
<td>400,000</td>
<td>5</td>
<td>1,600,000</td>
<td>10</td>
<td>700,000</td>
<td>5</td>
</tr>
<tr>
<td>Cotton</td>
<td>20,000</td>
<td>&lt;1</td>
<td>60,000</td>
<td>&lt;1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cucumbers</td>
<td>500,000</td>
<td>5</td>
<td>200,000</td>
<td>2</td>
<td>300,000</td>
<td>2</td>
</tr>
<tr>
<td>Peanuts</td>
<td>50,000</td>
<td>&lt;1</td>
<td>300,000</td>
<td>&lt;1</td>
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</tr>
</tbody>
</table>

EPA proprietary data, Average usage 2006 through 2008
Module 2: Soil Fumigant Uses

EPA proprietary data, Average usage 2006 through 2008
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EPA proprietary data, Average usage 2006 through 2008

Legend
- 18,935 - 45,000
- 45,001 - 250,000
- 250,001 - 850,000
- 850,001 - 1,500,000
- 1,500,001 - 3,754,770

Metam Potassium Pounds Applied
1,3-Dichloropropene Pounds Applied

Legend
- 43,934 - 240,000
- 240,001 - 630,000
- 630,001 - 1,250,000
- 1,250,001 - 5,000,000
- 5,000,001 - 6,944,610

EPA proprietary data, Average usage 2006 through 2008
Module 2: Soil Fumigant Uses

EPA proprietary data, Average usage 2006 through 2008

Methyl Bromide Pounds Applied

Legend
- 6,528 - 26,000
- 26,001 - 90,000
- 90,001 - 325,000
- 325,001 - 750,000
- 750,001 - 5,703,625
Chloropicrin Pounds Applied

EPA proprietary data, Average usage 2006 through 2008

Legend
- 1,512 - 85,000
- 85,001 - 200,000
- 200,001 - 325,000
- 325,001 - 1,700,000
- 1,700,001 - 3,541,930

Module 2: Soil Fumigant Uses
## Application Methods

<table>
<thead>
<tr>
<th></th>
<th>Methyl Bromide</th>
<th>Chloropicrin</th>
<th>Metam Sodium/Potassium</th>
<th>Dazomet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shank injection</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Spray blade</td>
<td></td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Chemigation, drip</td>
<td></td>
<td></td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Chemigation, sprinkler</td>
<td></td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Chemigation, center pivot</td>
<td></td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Hand held probe for tree holes</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rotor tiller</td>
<td></td>
<td></td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Hot gas</td>
<td>●</td>
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</tr>
</tbody>
</table>
Shank Injection Applications

Bedded Tarped
Shank Injection Applications

Broadcast Tarped
Shank Injection Applications

Untarped broadcast
Chemigation Applications

Center pivot
Chemigation Applications

low release height-solid stream center pivot
Chemigation Applications

Solid set sprinklers

Drip irrigation
Other Application Methods

- Rotor tiller
- Tree hole
- Hot gas
- Spray blade
Review Questions

*True or False?*

1. Fumigation of soil for potatoes is a major use.

2. Fumigant usage across the country is similar.

3. Application methods differ by chemical.
Summary

- Use of soil fumigants on major food crops ranges from about 2 to 45.5 million pounds per year
- Largest use on potatoes, strawberries, tomatoes & carrots
  - Data lacking for nursery uses
- Amounts used vary by chemical, application method & geographic location
EPA Contact Information

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  - Metam sodium: Dana Friedman (703) 347-8827 and Jose Gayoso (703) 347-8652
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www.epa.gov/oppsrrd1/reregistration/soil_fumigants