Module 6
Soil Fumigant RED Requirements

Fumigant Management Plans and Post Application Summary Reports
What is a Fumigant Management Plan (FMP)?

- A written, site-specific plan prepared *before* fumigation begins

- Plan all aspects of a safe and effective fumigation to help:
  - Prevent accidents
  - Ensure, demonstrate & verify compliance
  - Define procedures in case of accidents or unforeseen events
FMPs – Who?

- Completed by grower, commercial applicator, crop consultant, or others
- Certified applicator in charge:
  - Verifies accuracy
  - Signs
- May be farm-wide
  - Common information in one place
  - Separate sections for information unique to each fumigant application
- Must be available to handlers, enforcement personnel, and emergency response personnel
FMPs - First Phase

- General information
  - Site, applicator, applications

- Steps taken to verify compliance
  - GAPs and worker protection

- Procedures
  - Air monitoring; hazard communication; posting treated areas and record-keeping
  - In case of accidents or unforeseen events

- Safe handling information provided

- Post application summary report
FMPs – Second Phase

- Buffer zones
  - How they were calculated, including credits
- Site map or sketch
- Procedures
  - Posting buffer zones
  - Emergency preparedness and response (if triggered)
- Records
  - Applicator training
  - Notice given to States of applications (if required)
Post Application Summary

- Deviations from FMP
  - E.g., date of application, procedures, personnel, etc.
- Summary of weather, site conditions
- Description of problems or complaints
- Actual dates of tarp activities, sign removal, etc.
- Must complete within 30 days of application
Record Keeping

- Keep FMPs and Post Application Summaries for 2 years
  - supervising certified applicator
  - owner/operator (if not the certified applicator)

- Keep with other records required for application of RUPs
FMP Templates and Tools

- Adobe Acrobat templates
- Microsoft Word templates
- Web-based tool
FMP Sample Template

2010 SOIL FUMIGANT MANAGEMENT PLAN (METHYL BROMIDE/CHLOROPICRIN PRODUCTS)
The below text fields will expand as the text is entered. After completing each field, use Tab key to go to next text field or check box.

I. Certified Applicator Supervising the Fumigation

<table>
<thead>
<tr>
<th>Name:</th>
<th>Phone number:</th>
<th>License and/or certificate number:</th>
<th>Commercial applicator</th>
<th>Private applicator</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

II. General Site Information

Application block/field location (e.g., county, township-range-section quadrant), address including zip code, or global positioning system (GPS) coordinates:

III. Owner/operator of Application Block

<table>
<thead>
<tr>
<th>Name:</th>
<th>Address:</th>
<th>Phone number:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

IV. Recordkeeping

☐ The owner/operator of the application block has been informed that he/she as well as the certified applicator must keep a signed copy of the site-specific FMP and the post-application summary for 2 years from the date of application.

V. General Application Information

<table>
<thead>
<tr>
<th>Target application date/window:</th>
<th>EPA Registration Number:</th>
<th>Fumigant Product Name:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Application method:</th>
<th>Application Rate (lbs or gallons of product/treated acre):</th>
<th>Injection Depth (inches):</th>
<th>Application Block Size (acres):</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tarp bedded</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tarp broadcast</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deep untarp broadcast (CA only)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hot gas – outdoor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hot gas – greenhouse</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hand held probes (tree hole)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

VI. Emergency Response Plan

Description of evacuation routes (a diagram or drawing may be attached to the FMP):

☐ Check here if diagram or drawing is attached

Locations of telephones:

Contact information for first responders:

Local/state/federal contacts:

Other contact information for emergencies:

Emergency procedures/responsibilities in case of an incident, equipment/tarp/seal failure, complaints or elevated air concentration levels suggesting potential problems, or other emergencies:
### VII. Communication Between Applicator, Owner/Operator, and Other On-site Handlers

- Pesticide product labels and material safety data sheets are at the application site and available for employees to review.

Will the certified applicator be at the application site during all handler activities that take place after the application is complete until the entry restricted period expires?  
- Yes  
- No

If no, describe how the certified applicator will share the label requirements with owner/operator and/or handlers who will be present at the application site after the application is complete until the entry restricted period expires.

### VIII. Handler Information *(use EPA’s Microsoft Word or Acrobat Adobe version of the handler information template)*

- Information for all handlers is attached to the FMP

**Comments/notes:**

### IX. Tarps *(check here if section is not applicable)*

- Brand name and tarp manufacturer:  
- Lot Number:  
- Batch Number:  
- Part Number:  
- Thickness:

Schedule for checking tarps for damage, tears, and other problems:

Maximum time following notification of damage that the person(s) responsible for tarp repair will respond:

Minimum time following damage that tarp will be repaired:

Minimum size of damage that will be repaired:

Other factors used to determine when tarp repair will be conducted:

Equipment/methods used to perforate tarps:  
- mechanical:  
- hand:

Schedule and target dates for perforating tarps:

Equipment, schedule and target dates for removing tarps:

### X. Soil Conditions

- Soil texture/clay content:
- Organic Content:  
- < 1%  
- ≥1% - 2%  
- ≥2% - 3%  
- >3%

**Soil Temperature:** Has the air temperature been above 100°F in any of the 3 days prior to application?  
- Yes  
- No

If yes, record the soil temperature measurement:

**Soil Moisture:** *(check the box of the method used to determine the soil moisture)*

- USDA Feel and Appearance Method:  
- Instrument:  
- Percent soil moisture estimate:

- Instrument used:
- Percent soil moisture:

- Other:  
- Describe method:
- Percent soil moisture:
XI. Weather Conditions

Summary of the weather **on the day of the application** (a printed copy may be attached to the FMP):

☐ Check here if printed copy is attached to the FMP or complete the following:

Wind Speed: _____ Inversion conditions: _____ Air-Stagnation Advisories: _____ Other: _____

Summary of the weather **during the 48-hour period following the fumigant application** (a printed copy may be attached to the FMP):

☐ Check here if printed copy is attached to the FMP or complete following:

Wind Speed: _____ Inversion conditions: _____ Air-Stagnation Advisories: _____ Other: _____

XII. Posting Signs – Fumigant Treated Area

Name(s) of person(s) posting Fumigant Treated Area signs: _____

Treated Area Signs posting date: _____ Treated Area Signs removal date: _____

XIII. Air Monitoring Plan

If monitoring indicates air concentrations greater than or equal to 1.5 ppm for chloropicrin or greater than or equal to 5 ppm for methyl bromide, handlers must stop work and leave the application block.

Will the product applied contain at least 20% chloropicrin? ☐ Yes or ☐ No

If Yes, if sensory irritation is experienced check which of the following be procedures will be followed:

☐ Intend to cease operations or ☐ Intend to continue operations with respiratory protection

<table>
<thead>
<tr>
<th>Handler Tasks to be Monitored</th>
<th>Monitoring Equipment</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Full Face Respirator Response Plan**

If either: (1) a handler experiences any sensory irritation when wearing an full face air-purifying respirator, or (2) a methyl bromide air sample is greater than 5 ppm or a chloropicrin air sample is greater than or equal to 1.5 ppm, then all handler activities must cease and handlers must be removed from the application block and the following case the emergency plan detailed will be implemented:
# FMP Sample Template

## XIV. Good Agricultural Practices (GAPs)

- Check here if applicable mandatory GAPs are attached to the FMP (this could be a copy of the label highlighting the applicable GAPs). If this box is not checked, the checklist below must be completed.

### General
- Tarps
- Weather Conditions
- Soil Temperature
- Soil Moisture
- Soil Preparation

### Bedded and Broadcast Shank Applications
- Tarps
- Soil Preparation
- Application Depth and Spacing
- Prevention of End Row Spillage
- Calibration, Set-up, Repair, and Maintenance for Application Rigs

### Tree Replant Application Using Handheld Equipment
- Soil Preparation
- Application Depth
- System Flush
- Soil sealing

- Hot Gas Applications to Soil, Potting Mixes, and Tobacco Seedling Trays
- Pre-Plant Soil Fumigation in Greenhouses
- Control of Armillaria mellea (oak root fungus) for orchard replant applications
- Non-tarp nematode control (only for deep shank orchard replant and handheld tree-hole application in CA)

**Description of other product specific GAPs from label that will be followed:**
# FMP Sample Template

## Handler Information

<table>
<thead>
<tr>
<th>Handler Name, Address, and Phone Number</th>
<th>Employer Name, Address, and Phone Number</th>
<th>Tasks Handlers are Trained and Authorized to Perform* (check number(s) from below)</th>
<th>PPE (check all that apply)</th>
<th>Respirator Information (leave blank if &quot;no respirator&quot; is checked under PPE)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>☑ Long-sleeved shirt/long-pants, shoes, socks</td>
<td>Make:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>☑ Chemical-resistant apron</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>☑ Chemical-resistant foot wear and socks</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>☑ Protective eyewear (NOT goggles)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>☑ Chemical-resistant gloves</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>☑ Half-mask air-purifying respirator</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>☑ Full-face air-purifying respirator</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>☑ Self-contained breathing apparatus</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Other:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>☑ No respirator</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>PPE training date:</td>
<td></td>
</tr>
</tbody>
</table>

- The above handler has received Fumigant Safe Handling information within the past 12 months.

*1. Loaders, drivers, tractor co-pilots, haulers, cross-dippers, or other direct application participants
2. Cleaning up fumigant spills (does not include emergency personnel not associated with the application)
3. Tasks with liquid contact potential
4. Tasks, performing, renovating, repairing, or monitoring tanks until:
   - 14 days after the application is complete if tanks are not perforated and removed during those 14 days,
   - 48 hours after tank perforation is complete if tanks will not be removed within 14 days after application
5. Taking air samples (breathing zone)
6. Handling or disposing of fumigant containers
7. Cleaning, handling, adjusting, or repairing equipment that may contain fumigant residuals
8. Installing, repairing, operating, or servicing equipment in the application block
9. Performing scouting, crop advising, or monitoring tasks in the application block
10. Performing other VAP handling tasks

Comments/Notes:
### 2010 SOIL FUMIGANT POST APPLICATION SUMMARY
(METHYL BROMIDE/CHLOROPICRIN PRODUCTS)

(Only fill-in information if it is different from the FMP or where the label requires that measurements/information are recorded in post-application summary)

The below text fields will expand as the text is entered. After completing each field, use Tab key to go to next text field or check box.

#### General Application Information

<table>
<thead>
<tr>
<th>Application date:</th>
<th>EPA Registration Number:</th>
<th>Fumigant Product Name:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Application method:</th>
<th>Application Rate (lbs or gallons of product/treated acre):</th>
<th>Injection Depth (inches):</th>
<th>Application Block Size (acres):</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Tarp bedded</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Tarp broadcast</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Deep untap broadcast (CA only)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Hot gas – outdoor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Hot gas – greenhouse</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Hand held probes (tree hole)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Weather Conditions

Summary of the weather on the day of the application (a printed copy may be attached to the post-application summary):

<table>
<thead>
<tr>
<th>Wind Speed:</th>
<th>Inversion conditions:</th>
<th>Air-Stagnation Advisories:</th>
<th>Other:</th>
</tr>
</thead>
</table>

Summary of the weather during the 48-hour period following the fumigant application (a printed copy may be attached to the post-application summary):

<table>
<thead>
<tr>
<th>Wind Speed:</th>
<th>Inversion conditions:</th>
<th>Air-Stagnation Advisories:</th>
<th>Other:</th>
</tr>
</thead>
</table>

#### Tarp Damage and Repair (check here if section is not applicable □)

<table>
<thead>
<tr>
<th>Location and size of tarp damage:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description of tarp/tarp seal/tarp equipment failure:</td>
</tr>
<tr>
<td>Date and time of tarp repair:</td>
</tr>
</tbody>
</table>

Additional comments or other deviations from FMP (if applicable):

#### Tarp Perforation/Removal (check here if section is not applicable □)

| Description of tarp removal procedures (if different than in the FMP): |
| Date tarps were perforated: | Date tarps were removed: |

---

**EPA**

United States Environmental Protection Agency

Module 6: Post Application Template
## Post Application Summary Sample Template

### Complaints
(check here if section is not applicable □)

- Person filing complaint: □ On-site handler □ Person off-site
- If off-site person, name, address, and phone number of person filing complaints:

---

### Description of Incidents
(check here if section is not applicable □)

- Description of incident, equipment failure, or other emergency: __________________________
- Date and time: __________________________
- Description of emergency procedures followed: __________________________
- Was the incident reported to the state agency? □ Yes □ No

---

### Communication Between Applicator, Owner/Operator, and Other On-site Handlers
(check if no changes from the FMP □)

- Was the certified applicator at the application site during all handler activities that took place after the application was completed until the entry restricted period expired? □ Yes □ No
- Date contacted: __________________________

---

### Posting Signs – Fumigant Treated Area

- Date(s) of Fumigant Treated Area sign removal: __________________________
- Description of deviations from FMP (if applicable): __________________________

---

### Handler Information for Changes Since the FMP

- Have there been any changes to the handler information since the FMP was completed (including handlers that were on-site that were not listed in FMP)? □ Yes □ No
  - If yes, the updated handler information must be attached to the post application summary. (use EPA’s Microsoft Word or Acrobat Adobe version of the handler information template)

---

### Other Deviations from the FMP

- Additional comments/notes: __________________________
Figure 1. Example of Introductory Screen - Web-based Program

2010 Fumigant Management Plan

Enter your User Name: drewsk
Enter Your Password: [password field]
Submit User Name and Password

Navigate To: Applicator And General Information

List of Sections on This Entry
- Applicator and General Information
  - Tarps
  - Soil And Weather Conditions
  - PPE For Handlers
  - Emergency Response Plan
  - Posting Signs/Communications
  - Site Map
- Handler Information
- Air Monitoring Plan
  - For Handlers without Respiratory Protection
  - For Handlers with Respiratory Protection
  - Air Monitoring Plan for Methyl Bromide Formulation with > 80% Methyl Bromide

Methyl Bromide Checklist
- General Site Information
- Supervision of Handlers
- Weather Conditions
- Soil Conditions
- Shank Applications
- Hot Gas Applications
- Tree Replant (non-shank) Application
- PPE For Handlers
- Hazard Communication
- Record Keeping

Post Application Summary
- General Application Information
- Weather Conditions
- Soil Conditions
- Tarp Damage and Repair
- Tarp Removal
- Complaints
- Description of Incidents
- Elevated Air Concentration Levels
- Posting Signs - Treated Area
- Other

Air Monitoring Results
- When Respiratory Protection is Not in Use – Sensory Irritation Experienced
- When Respiratory Protection is in Use – Direct Read Instrument Air Monitoring

Continue to Applicator And General Information Screen -->
Figure 3. Example of screen illustrating general site information
Figure 4. Example of screen illustrating general application information

![Screen Illustrating General Application Information](image)
True or False?

1. A site specific FMP must be prepared by a certified applicator.

2. An FMP has requirements that are in addition to those that are on the label.

3. FMPs and Post-Application Summaries must be kept for 1 year by the fumigator and owner/operator.
4. The label requires that FMPs are available:
   a) for viewing on site by handlers involved in the application
   b) to enforcement personnel, upon request
   c) to emergency response personnel, in case of an emergency
   d) for viewing by neighbors, upon request
   e) a, b, and c
   f) a, b, c, and d
Summary

- **Fumigant Management Plans**
  - Are required to prepare for safe and effective applications
  - Must be filled out by grower, commercial applicator, crop advisor, or other
  - Will be implemented in 2 phases
  - May be farm-wide, with sections on application-specific information
  - Must be
    - Signed and verified by certified applicator in charge
    - Kept for 2 years
    - Available to handlers, inspectors and emergency personnel

- **Post Application Reports**
  - Show any deviations from the FMP
  - Document measurements taken
  - Must be
    - Completed within 30 days of application
    - Kept with the FMP
EPA Contact Information

- **General Contact:**
  - John Leahy (703) 305-6703

- **Team Leaders:**
  - Steven Weiss (703) 308-8293
  - Cathryn O’Connell (703) 308-0136

- **Chemical Review Managers:**
  - Methyl bromide: Susan Bartow (703) 603-0065
  - Metam sodium: Dana Friedman (703) 347-8827 and Jose Gayoso (703) 347-8652
  - Dazomet: Dana Friedman (703) 347-8827
  - 1,3-D & Chloropicrin: Andrea Carone (703) 308-0122

E-mail: lastname.firstname@epa.gov