Off-Site Mitigation Measures on Soil Fumigant Labels

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First Phase of Label Revisions  
(became effective December 2010)

Included the following elements:

- All soil fumigants were classified as restricted use pesticides.
- List of required good agricultural practices.
- Handler respiratory protection.
First Phase of Label Revisions (continued)

- Tarp restrictions.
- Rate reduction and use limitations.
- Training information for workers.
- Fumigant management plans.
Second Phase of Revisions
(tentatively scheduled for late 2011/early 2012)

This phase will include the following elements:

- Outreach to first responders.
- Applicator training.
- Buffer zones.
Second Phase of Revisions (continued)

- Application restrictions near difficult to evacuate sites.
- Emergency preparedness and response measures.
- Registrant training for first responder and community outreach programs.
We’ll focus only on label requirements that affect off-site movement of fumigants.

- 1,3-D and Chloropicrin
- Methyl Bromide and Chloropicrin
- 100% Chloropicrin
- Methyl Iodide and Chloropicrin
Six categories of application methods allowed on the labels:

- Drip
- Hot gas
- Tarped
- Untarped
- Tree replant
- Greenhouse
Requirements that are the same for all application methods:

- Weather
- Soil Preparation
- Soil Temperature
- Soil Moisture
Weather:

- The weather forecast for the day of the application and the 48 hour period following the fumigation must be checked to determine if unfavorable weather conditions exist or are predicted.
Weather (continued)

- Wind speed at the field must be at least 2 mph at the start of the application and forecasted to reach at least 5 mph during application. No maximum wind speed.

- Do not apply if a shallow, compressed temperature inversion is forecasted to persist more the 18 consecutive hours during the 48 hours following application.
Soil Preparation

- Soil must be in good tilth and free of large clods.
- Plant residue that is present must not interfere with the app. or soil seal.
Soil Preparation

Methyl Iodide:

- In the event trash pulled up after completing a treatment pass, the trash must be covered with tarp and edges of tarp must be buried under at least 4 inches of compacted soil before making the next pass.
Soil Temperature:

- If air temperatures have been above 100 deg. F in any of the 3 days prior to application, then soil temperature must be measured and recorded.
Soil Temperature:

1,3-D:
- The minimum soil temperature at the depth of injection is 40°F; the maximum must not exceed 90°F.

100% Chloropicrin:
- must not exceed 90°F.

Methyl Iodide:
- Must not be less than 55°F or above 90°F.
Soil Moisture:

- The soil must be moist 9 in. below the surface. If insufficient the moisture must be adjusted.
- There should be 50 to 75 percent available soil water moisture.
# Drip Application Methods:

<table>
<thead>
<tr>
<th></th>
<th>1,3-D</th>
<th>100% Chloropicrin</th>
<th>Methyl Iodide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dripline Placement</td>
<td>Either on surface or buried at least 5 inches deep</td>
<td>Untarped – at least 5 inches deep Tarped – no depth requirement</td>
<td>2-4 inches deep</td>
</tr>
<tr>
<td>Tarp Required</td>
<td>Yes</td>
<td>No</td>
<td>Yes – highly retentive tarps</td>
</tr>
<tr>
<td>Days Before Perforation Allowed</td>
<td>5</td>
<td>5</td>
<td>14</td>
</tr>
<tr>
<td>Buffer Zone</td>
<td>100 feet. No buffer zone if another application is not made to the field for at least 3 years.</td>
<td>None</td>
<td>100 – 410 feet</td>
</tr>
<tr>
<td>Acreage Limitation</td>
<td>None</td>
<td>None</td>
<td>30 Acres</td>
</tr>
</tbody>
</table>
# Tarped Application Methods:

<table>
<thead>
<tr>
<th></th>
<th>1,3-D</th>
<th>100% Chloropicrin</th>
<th>Methyl Bromide</th>
<th>Methyl Iodide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific Type Tarp Required</td>
<td>no</td>
<td>no</td>
<td>Yes, by DPR regulations</td>
<td>Yes, by label requirement</td>
</tr>
<tr>
<td>Days Before Perforation Allowed</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>14</td>
</tr>
<tr>
<td>Buffer Zone</td>
<td>100 feet. No buffer zone if another applic. is not made to the field for at least 3 yrs.</td>
<td>None</td>
<td>100 – 4600 feet</td>
<td>Broadcast: 200 – 725 feet Bedded: 200 – 1395 feet</td>
</tr>
<tr>
<td>Acreage Limitation</td>
<td>None</td>
<td>None</td>
<td>100 Acres</td>
<td>20 Contiguous Acres</td>
</tr>
</tbody>
</table>
Untarped Application Methods:

<table>
<thead>
<tr>
<th></th>
<th>1,3-D</th>
<th>100% Chloropicrin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Depth</td>
<td>Broadcast: 12 in.</td>
<td>Broadcast: 12 in.</td>
</tr>
<tr>
<td></td>
<td>Bedded: 12 in.</td>
<td>Bedded: 10 in.</td>
</tr>
<tr>
<td>Buffer Zone</td>
<td>100 feet. No buffer zone if another application is not made to the field for at least 3 years.</td>
<td>None</td>
</tr>
<tr>
<td>Acreage Limitation</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>
Greenhouse Applications: Drip 1,3-D and 100% Chloropicrin

- The maximum area that can be treated is 50,000 ft$^2$.
- All applications must be tarped.
- During the application, keep doors, vents and windows to the outside open and fans or other mechanical ventilation systems running within the application block.
- Leaks through which gases could enter adjacent enclosed areas must be sealed.
Tree Replant Applications: 1,3-D and Methyl Bromide

- This application method is applied to individual tree sites in an existing orchard where shank or drip applications are not possible.

- The maximum rate for applications to individual tree holes using hand-held equipment is 1.0 lb Product/100 ft² in light soils and 1.5 lb Product/100 ft² in fine-textured soils.
Tree Replant Applications: 1,3-D and Methyl Bromide (continued)

- The fumigant must be injected at least 18 inches into the soil.
- Maximum acreage limitation is 40 acres for methyl bromide.
Outdoor applications:
- All applications must be tarped.
- A maximum of 10 acres allowed for outdoor hot gas applications.
Preplant Soil Fumigations in Greenhouses:

- During the application, keep doors, vents and windows to the outside open and fans or other mechanical ventilation systems running within the application block.
- Leaks through which gases could enter adjacent enclosed areas must be sealed.
- A maximum of 45,000 ft² for greenhouse hot gas applications.
Hot Gas Applications to Soil and Potting Mixes:

- Fumigation should take place outdoors or in a well ventilated area away from desirable plants or occupied buildings.
- The soil/potting mix material must be at least 60°F but must not exceed 90°F. The material must be loose and moist enough for good seed germination.
- To ensure a good seal, pile the potting soil mix material on a concrete floor or wet ground.
Hot Gas Application: Methyl Bromide Only (continued)

- Pile to a depth of 18 inches. Piles two to three feet high can also be treated provided perforations are made in the pile surface at one foot intervals to assist penetration.
- Cover with a tarp that is 4 mil or greater in thickness.
- Seal the edges of tarps by burying, covering with moist sand, or soil or by means of sand snakes.
The End or... just the Beginning?