

**BEFORE THE DIRECTOR OF THE  
DEPARTMENT OF PESTICIDE REGULATION  
STATE OF CALIFORNIA**

**In the Matter of the Environmental Monitoring Branch**

Request for Approval of  
Reduced Volatile Organic Compound Emissions  
Field Fumigation Method

**DECISION**

**(California Code of Regulations, Title 3, section 6452)**

**DEPARTMENT OF PESTICIDE REGULATION**

**Environmental Monitoring Branch**

**1001 I Street**

**Sacramento, California 95814**

**Summary**

The Department of Pesticide Regulation (DPR) granted approval for the interim use of several methods that used totally impermeable film (TIF) tarps (Leahy, 2013). The interim uses allowed the use of TIF tarps with all tarped application methods approved in the volatile organic compound (VOC) regulations. However, methods that were not included in the 2013 Director's decision need to be added to the allowed methods for use within several ozone nonattainment areas (NAAs) during May–October, under Title 3, California Code of Regulations (3 CCR) section 6447.3 et seq. The regulations include a provision for the DPR Director to grant interim approval of fumigation methods that reduce VOC emissions (3 CCR section 6452). DPR has completed its evaluation of the shallow and deep TIF tarp broadcast strip shank fumigations as specified in 3 CCR section 6452. DPR has determined that the TIF tarp strip fumigation methods meet the standard for approval as an interim method, as described below. Effective immediately, DPR grants approval for interim use of the shallow and deep TIF tarp broadcast strip methods. The TIF tarp methods may be used for three years from the date of this decision.

**Background**

VOCs contribute to the formation of ozone, a major air pollutant in several regions of California. Under the federal Clean Air Act, California's State Implementation Plan for ozone includes an element to track and reduce VOC emissions from pesticides. On January 25, 2008, DPR adopted regulations to control VOC emissions from fumigants during the May–October peak ozone season in five ozone NAAs: Sacramento Metro, San Joaquin Valley, Southeast Desert, South Coast, and Ventura. The regulations include provisions that only allow fumigation methods for which DPR has adequate data to determine the VOC emission rates. However, the regulations include a provision for interim approval of fumigation methods with emissions no greater than the field fumigation methods allowed in the regulations in the respective areas (3 CCR section 6452).

**Regulatory Standards and Considerations**

Section 6452, 3 CCR sets different standards by which to evaluate whether a new fumigation method will be allowed; one for the Sacramento Metro and South Coast ozone NAAs; and one for the San Joaquin Valley, Southeast Desert, and Ventura ozone NAAs. Sacramento Metro and South Coast have a less stringent standard because no further VOC reductions from pesticides are needed in these ozone NAAs. Both “low-emission” and “high-emission” methods can be used in these two areas. Only “low-emission” methods are allowed in the San Joaquin Valley, Southeast Desert, and Ventura ozone NAAs during the May–October peak ozone season. The key information is the emission rating (percent of the fumigant applied that is emitted to the air) and the emission rate (emission rating multiplied by the maximum application rate). Either the emission rating or the emission rate can be no greater than the current methods allowed within the ozone NAAs by the regulations. Table 1 shows the standards for approval of an interim fumigation method.

Table 1. Emission criteria for approving new fumigation methods.

<b>Maximum Allowed Emission Rating and Emission Rate</b>	<b>Sacramento Metro, South Coast NAAs</b>	<b>San Joaquin Valley, Southeast Desert, Ventura NAAs</b>
1,3-Dichloropropene (1,3-D) emission rating (%)	65	44
1,3-D emission rate (pounds/acre)	216	146
Chloropicrin emission rating (%)	64	44
Chloropicrin emission rate (pounds/acre)	256	176
Methyl bromide emission rating (%)	100	48
Methyl bromide emission rate (pounds/acre)	400	192

In assessing whether the new method meets the standard, DPR must assess the scientific data submitted to establish the emission rating, normally consisting of field monitoring data. In evaluating this data, 3 CCR section 6452 requires DPR to consider the following factors:

- Whether the information is sufficient to estimate emissions.
- Whether the results are valid as indicated by the quality control data.
- Whether the conditions studied represent agricultural fields.

### **Summary and Evaluation of the Submitted Information**

Environmental Monitoring Branch staff have reviewed fumigant emission data for shallow broadcast TIF tarp applications with 1,3-dichloropropene (1,3-D) and chloropicrin (Johnson, 2013 and Barry, 2013). All of the TIF tarps included in the studies are assigned by U.S. Environmental Protection Agency a 60 percent buffer zone credit by labeling based on reductions in emissions. The method has already been approved for methyl bromide and chloropicrin, but has not been approved for 1,3-D applications.

Barry (2013) calculated an emission ratio (mass loss percentage) for chloropicrin from 10 monitored applications and estimated an application method adjustment factor of 7 percent for TIF tarp methods.

For 1,3-D, two studies monitored shallow TIF tarp broadcast fumigations with TIF tarps, but only one of the studies held the tarp cover for the minimum nine days after application as specified in DPR's recommended permit conditions. The method was assigned an emission rating of 10 percent based on the study (Johnson, 2013). Although no study has been submitted for a TIF tarp broadcast strip application, flux modeling of the TIF tarp broadcast study was used to determine an adjustment factor to the method for a strip application (Spurlock, 2014). The TIF tarp broadcast strip method was assigned an adjustment factor that was two times the TIF tarp broadcast method, or 20 percent.

The data indicates that TIF tarp-broadcast-shank-strip injection methods meet the 44 percent emission rating standard for low-emission methods for 1,3-D and chloropicrin.

### **Findings**

For 1,3-D, the data indicates that TIF tarp broadcast-shank-strip injection methods have an emission rating of 20 percent meeting the 44 percent standard for low-emission methods. For TIF tarp broadcast-shank-strip applications of chloropicrin the emission rating of 7 percent meets the 44 percent standard for low-emission methods. Table 2 shows the emission rating assigned to the TIF tarp broadcast-shank-strip method for both 1,3-D and chloropicrin. The low-emission TIF tarp method can be used in all five ozone NAAs. The fumigation method codes for pesticide use reports should identify all applications that use a TIF tarp broadcast-shank-strip method. This will allow DPR to retroactively adjust its VOC emission estimates if future studies demonstrate a decrease in emissions with TIF tarps and a revised emission rating is assigned.

Table 2. Low-emission TIF tarp fumigation methods.

<b>Regulation Section*</b>	<b>Field Fumigation Method</b>	<b>Emission Rating (%)</b>	<b>Fumigation Method Code</b>
<b>6448.1.</b>	<b>1,3-D Fumigation Methods</b>		
6448.1(d)(6)	TIF/Deep/Broadcast/Strip	21	1249
<b>6448.1.</b>	<b>Chloropicrin Fumigation Methods</b>		
6448.1(d)(6)	TIF/Deep/Broadcast/Strip	7	1249

\*The listed regulation section specifies the other method requirements in addition to TIF tarp. These section numbers may change once the regulations are amended to include TIF methods.

### Conclusions

The available data supports approval of TIF tarp shallow broadcast strip injection and TIF tarp deep broadcast strip injection fumigation methods. Effective July 1, 2014, the methods listed in Table 2 are approved for use in the San Joaquin Valley, Southeast Desert, and Ventura ozone NAAs with the following restrictions during May 1–October 31:

- All fumigation method requirements specified in the cited 3 CCR sections of Table 2 still apply. The only change is that a TIF tarp must be used.
- The TIF tarp used for a specific fumigation must meet the requirements for a 60 percent buffer zone credit on the product label.
- TIF tarps cannot be cut or perforated sooner than nine days after fumigation, and cannot be removed sooner than 24 hours after tarp cutting or perforation.
- Pesticide users should report TIF tarp applications using the field fumigation method codes shown in Table 2 immediately or as soon as their pesticide use reporting vendor updates its software. County agricultural commissioners may use enforcement discretion when reviewing field fumigation method codes on use reports since there will be a lag time to inform all affected parties of these changes and to update vendor’s pesticide use reporting software.

Effective immediately, the methods listed in Table 2 are approved for use in the Sacramento Metro and South Coast ozone NAAs with the following restrictions during May 1–October 31:

- All fumigation method requirements specified in the cited 3 CCR sections of Table 2 still apply. The only change is that a TIF tarp must be used.
- The TIF tarp used for a specific fumigation must meet the requirements for a 60 percent buffer zone credit on the product label.
- TIF tarps cannot be cut or perforated sooner than nine days after fumigation, and cannot be removed sooner than 24 hours after tarp cutting or perforation.

- Pesticide users should report TIF tarp applications using the field fumigation method code shown in Table 2 immediately or as soon as their pesticide use reporting vendor updates its software.

DPR grants interim approval of these fumigation methods for three years from the effective date.

By: \_\_\_\_\_ *Original Signed By* \_\_\_\_\_

Date: July 31, 2014

Brian Leahy, Director  
Department of Pesticide Regulation

References

1,3-D: memorandum from Bruce Johnson to Randy Segawa, dated April 12, 2013

Chloropicrin: memorandum from Terrell Barry to Randy Segawa, dated April 10, 2013  
Spurlock