

REDUCING SMOG-PRODUCING EMISSIONS FROM FIELD FUMIGANTS

September 2009 Update

Restrictions on farm fumigants reduce smog-producing emissions from pesticides.

To cut smog-producing emissions of volatile organic compounds (VOCs) from all pesticides, the Department of Pesticide Regulation (DPR) put regulations into place to reduce VOC emissions from field fumigants. The rules changed how field fumigations could be done in many regions of the state:

- The regulations are designed to keep VOC emissions below a target level from May to October, in certain geographic areas. Depending on the area, this can require emission limits on individual fumigant applications.
- Some high-emission field fumigation methods are prohibited. In certain areas, only low-emission methods can be done.
- Pesticide use reports in five geographic regions must specify the application method for field fumigations.
- Companies that do field fumigations must have a supervisor with special training. This requirement applies statewide.

Which fumigants do the rules apply to?

The rules apply to field fumigations with seven farm fumigants that release VOCs: methyl bromide; 1,3-dichloropropene (brand names, Telone, Inline); chloropicrin; metam-sodium (Vapam, Sectagon); potassium N-methyldithiocarbamate, also called metam-potassium (K-Pam); dazomet, also called tetrahydro-3,5-dimethyl-2H-1,3,5-thiadiazine-2-thione (Basamid); and sodium tetrathiocarbonate (Enzone)

Background Information

What are volatile organic compounds (VOCs)?

VOCs are gases that can combine with other substances in the air to form ground-level ozone (smog). Ozone can damage lung tissue, cause respiratory illness, and harm farm crops. Motor vehicle exhaust and industrial emissions, gasoline vapors, and chemical solvents as well as natural sources emit VOCs, as do thousands of products, including pesticides.

Statewide, pesticides account for about two percent of all VOCs but in several regions, they are among the top ten sources.

How is California reducing VOCs?

Under the U.S. Clean Air Act, each state must meet federal air quality standards. States must specify how they plan to do that in a federally approved State Implementation Plan (SIP). Under California's SIP, DPR must track and control VOC emissions from pesticide products used in agriculture and by commercial structural applicators in five ozone nonattainment areas (NAAs). The California Air Resources Board (ARB) is responsible for VOC emissions from pesticides in consumer products.

How much pesticide VOC reduction is needed?

Under the SIP, California is expected to reduce pesticide VOCs by from 12 percent to 20 percent (depending on the NAA), compared to 1990 levels.

How do the regulations reduce pesticide VOCs?

DPR's rules are designed to limit VOC emissions from fumigants, which account for a high proportion of pesticide VOCs. Depending on how much reduction in pesticide VOCs are needed in an NAA, low-emission application methods may be required. Emission restrictions

may also be placed on individual growers in these areas.

DPR is also exploring alternative approaches to reducing fumigant emissions, and ways to reduce nonfumigant VOC emissions.

Are all fumigant uses affected?

The restrictions do not apply to fumigant use in greenhouses, certain nursery fumigations, potting soil, individual tree and vine replant sites, harvested commodities, or structures. The regulations affect only field soil treatments because more than 90 percent of fumigant emissions come from these applications.

What about reducing VOCs from non-fumigant pesticides?

DPR is working with manufacturers of nonfumigant pesticides to reformulate products so they emit less VOCs. The Department has also sponsored university research into insecticides with low-VOC potential and is promoting cleaner, more efficient application technologies.

Areas Affected

What is a nonattainment area?

A nonattainment area (NAA) is a geographic region designated by the U.S. Environmental Protection Agency (U.S. EPA) as failing to meet federal air quality standards for one or more "criteria" air pollutants.

Statewide, pesticides account for about two percent of all VOCs, but in several regions, they are among the top ten sources.

Criteria pollutants are those known to be hazardous to human health.

The five NAAs affected by the VOC regulations are Sacramento Metro, South Coast, San Joaquin Valley, Southeast Desert, and Ventura.

Because of the controls DPR already put in place, pesticide VOC emissions in the Sacramento Metro and South Coast NAAs have been well under target levels for a number of years. Further pesticide VOC reductions are not needed in these NAAs.

On the other hand, pesticide VOC emissions in the San Joaquin Valley, Desert, and Ventura NAAs are not consistently low enough to meet SIP standards. Therefore, in these areas, further control measures are needed.

What counties are in the three NAAs that need controls to ensure VOC reductions?

San Joaquin Valley NAA: All of San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, and Tulare counties and the valley portion of Kern County.

Southeast Desert NAA: The desert portions of Riverside (Coachella Valley), Los Angeles (Lancaster/Palmdale), and San Bernardino (Barstow) counties.

Ventura NAA: All of Ventura County.

For NAA maps and geographic sections, go to www.cdpr.ca.gov, click on "A-Z Index," then "Nonattainment area maps."

Fumigation Methods Allowed

What are low-emission application methods?

Lower-emission methods are typically those that are:

- Covered with tarpaulins,
- Covered with several post-fumigation water treatments, or
- Applied through drip irrigation.

Other ways of limiting emissions in the regulations include reduced application rates, soil moisture requirements, injection depth specifications, soil compaction requirements, and a mandate for a tarpaulin repair response plan.

What fumigant application methods are allowed?

Outside the five NAAs: Farmers can use any application method allowed by the product labeling, except for methyl bromide fumigations. DPR had already restricted methyl bromide applications to reduce air toxins and only methods allowed in those regulations can be used.

In the Sacramento and South Coast NAAs (where pesticide VOCs have already been reduced below emission targets): Only certain standardized fumigant application methods can be used between May 1 and October 31. These are methods for which DPR has emission data, and include nearly all those that are commonly used.

For a map of the areas affected by the rules, go to www.cdpr.ca.gov, click on "A-Z Index," then "Nonattainment area maps."

In the San Joaquin Valley, Southeast Desert, and Ventura NAAs : Only low-emission methods can be used between May 1 and October 31.

Go to www.cdpr.ca.gov, and click on the red "Fumigant/VOC regs" Quick Link at the top of the page to download fact sheets on the fumigation methods that can be used in each of the five NAAs.

What happens if new application methods are developed that have lower emissions?

Researchers are encouraged to develop lower-emission methods. DPR has an expedited approval process if new application methods are developed that lower emissions. Information on any additional fumigation methods approved by DPR is posted on www.cdpr.ca.gov, click on "Fumigant/VOC regs."

Emission Controls

What determines the need for emission controls?

Late each year, DPR uses the previous year's pesticide use data to calculate what the pesticide VOC emissions were in each NAA that year. If pesticide VOC emissions were at a level that indicates more controls are needed to meet SIP limits, that may trigger an emission allowance system in the NAA in the upcoming year.

The rules are designed to limit VOC emissions, not fumigations.

Even if emission allowances are imposed in an NAA, it does not mean that all requested fumigations cannot be done. The outcome depends how many fumigations are requested and which fumigants growers plan to use. (Emissions vary among fumigants and methods.)

Once farmers receive an emission allowance, it is up to them to decide if they can conduct fumigations as planned or if they need to revise their plans, for example, by using lower-emission fumigation methods or products.

Where will fumigation emission allowances be used in 2010?

In 2008 and 2009, fumigant emission allowances were required only in Ventura County and will continue there in 2010.

In the San Joaquin Valley and Southeast Desert NAAs, the requirement that only low-emission fumigation methods be used is expected to be sufficient to achieve required VOC reductions through 2010. If needed, allowances may be triggered in 2011.

How are the emission rules enforced?

All farm fumigants are restricted materials and require a permit from the County Agricultural Commissioner (CAC). When the CAC office issues permits, staff explain to growers what the rules are in that county. For example, in three NAAs,

From May 1 to October 31, all fumigations in the nonattainment areas must be done using certain application methods.

only low-emission methods can be used and, in Ventura County, growers must request an emission allowance.

Before using a fumigant, farmers must send CACs a notice of intent (NOI) with the application time and date, and fumigation method. This allows CAC staff to review the proposed fumigation to ensure the method is allowed in the NAA. In addition, CAC staff routinely conduct inspections to ensure that pesticide applications are done in accordance with the law.

The permit is issued on the condition that the farmer obey all laws and regulations, including controls on VOC emissions. If a farmer makes an application that violates conditions on the permit, it can result in suspension or revocation of the permit and referral to local or state agencies for further enforcement action.

How does the emission allowance system work?

At the beginning of each year, farmers in an NAA where the emission allowance system will be needed must request an allowance. (In 2010, allowances will be used only in Ventura County.)

Allowance requests must include the name of the product, the application rate, crop, acres, fumigation method, and projected month of application.

This control mechanism is in effect from May 1 to October 31, the “ozone season” in California when air pollution is a significant problem. Farmers who fumigate before May 1 or after October 31 do not need to apply for an emission allowance.

Commissioners forward emission requests to DPR. If the total amount of fumigant use requested by growers is above the NAA’s emission limit, DPR will impose proportionate reductions to bring VOC emissions below the limit.

The Commissioner issues fumigant permits conditioned on applicators staying under their emission allowance. Applicators can choose to meet the emission allowance by changing to a lower-emission application method or product, using a lower application rate, or by treating less acreage. They may also schedule their application before May 1 or after October 31, when the emission restrictions do not apply.

Why are the controls in Ventura County being phased in over five years?

Ventura County has already met its required reductions in overall VOCs by greater-than-expected decreases in VOC emissions from vehicles. At the same time, suddenly imposing the fumigant rules could have caused short-term but possibly significant losses in the Ventura County economy, and the potential

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for long-term loss of farmland to urban development. To avoid this, DPR received approval from U.S. to phase in emission reductions in Ventura County over five years. This gives farmers time to develop strategies to comply with fumigant restrictions which will go into full effect in 2012.

Licensing Requirements

What are licensing requirements for fumigations?

When licensed pest control businesses do field fumigations, the work must be supervised by a qualified applicator that has a special field fumigation license. The person acting in a supervisory capacity for a pest control business that conducts field fumigations must also get the special field fumigation license. This is a statewide requirement.

Private applicators who do field fumigations are not required to hold the special fumigation license.

More information is available at www.cdpr.ca.gov, click on "Licensing."

Use Reporting

What are the use reporting requirements for field fumigations?

DPR uses pesticide use reports to help determine VOC emissions for each NAA. (Different methods of applying fumigants emit different amounts of VOCs.)

As part of their routine pesticide use reporting, applicators must include a four-digit code corresponding to the method used in each fumigation. This requirement is in effect year-round. It is mandatory in all five NAAs, and voluntary in other parts of the state.

More information on fumigant use reporting, including revised forms and a list of the method codes, can be found at www.cdpr.ca.gov, click on the red "Fumigant/VOC regs" Quick Link, and then "Reporting of fumigation methods used."

MORE INFO?

You can view or download fact sheets and other information about the rules from DPR's Web site, www.cdpr.ca.gov, click on "Fumigant/VOC Regs" in the red Quick Links at the top of the page

About the Department of Pesticide Regulation

The California Department of Pesticide Regulation (DPR) protects human health and the environment by regulating pesticide sales and use and by fostering reduced-risk pest management. DPR's strict oversight includes product evaluation and registration, environmental monitoring, residue testing of fresh produce, and local use enforcement through the County Agricultural Commissioners. DPR is one of six boards and departments within the California Environmental Protection Agency.

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