About Proposed Control Measures for Fumigant Pesticides

May 2007

DPR has proposed regulations to reduce smog-producing emissions from fumigant pesticides.

The Department of Pesticide Regulation (DPR) has proposed regulations to reduce smog-producing emissions from fumigant pesticides. The regulations focus on both limiting the total pounds of pesticide emissions and reducing the amount of fumigant emitted from each application.

The proposed regulations would:

- Limit fumigant emissions in certain geographic areas. Pesticide registrants (companies that make or market pesticides) would be responsible for limiting emissions from their products and would have to restrict sales when a certain level of cumulative emissions is reached. Emissions from fumigants could be reduced in various ways, such as reducing application rates, using low-emission application methods, or reducing treated acreage.
- Require strict recordkeeping and reporting of field fumigant use in five geographic areas.
- Define specific requirements on how field fumigations must be done, prohibiting some high-emission methods and setting limits on others. This would apply statewide.
- Set up new statewide licensing and other requirements for applicators who do field fumigations.

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WHAT FUMIGANTS DO THE RULES APPLY TO?

Smog is formed when volatile organic compounds (VOCs) react with other substances in the air in the presence of sunlight. The regulations apply to all seven VOC-releasing farm fumigants:

- Methyl bromide
- 1,3-Dichloropropene (brand names, Telone, Inline)
- Chloropicrin
- Metam-sodium (Vapam, Sectagon), which produces methyl isothiocyanate (MITC), a VOC
- Potassium N-methyldithiocarbamate, also called metam-potassium (K-Pam), which produces MITC
- Dazomet, also called tetrahydro-3,5-dimethyl-2H-1,3,5-thiadiazine-2-thione (Basamid), which produces MITC

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- Sodium tetrathiocarbonate (brand name, Enzone), which produces carbon disulfide gas

(The regulations do not apply to sulfuryl fluoride because it does not release VOCs.)

The regulations set up a mechanism to apply restrictions to any new VOC-releasing fumigants that are registered. The rules also propose an expedited approval process if new application methods are developed that lower emissions.

What are VOCs?

VOCs are carbon compounds that evaporate easily into the atmosphere. The primary source is vehicle exhaust. VOCs are also emitted by industrial operations and thousands of products, including paint, cleaning supplies, building materials, office equipment (such as printers), permanent markers, glues, pesticides, and many cleaning, disinfecting, cosmetic, degreasing, and hobby products. Fuels are made up of VOC-emitting organic chemicals. All these products can release VOCs while they are being used and, to some degree, when they are stored.

What are fumigants?

Fumigants are gaseous pesticides used to treat structures, storage bins, commodities, and soil before planting. The regulations apply only to products used for field fumigation, that is, they are applied to or injected into soil.

About one-fourth of the pounds of pesticides used in agriculture are fumigant compounds. Because they are usually applied at a rate of several hundred pounds an acre, and are very volatile, fumigants account for an even higher proportion of VOCs emitted by pesticides. Statewide, more than half of pesticide VOCs come from fumigant applications. In some areas of the state, up to three-quarters or more of the pesticide VOCs are from fumigants.

Do the regulations apply to all fumigant uses?

No, they are limited to field soil treatments because more than 90 percent of fumigant emissions come from field fumigations.

The new rules would not apply to fumigant use in greenhouses, certain nursery fumigations, potting soil, individual tree replant sites, harvested commodities, or structures.

What prompted the regulations?

Under the federal Clean Air Act, each state must make continuing progress in cleaning up its air. Every state must have an approved plan (called a “State Implementation Plan,” or SIP) to meet federal air quality standards, including the standard for ozone. Ground-level ozone (smog) is the nation's most pervasive air pollutant. It can damage lung tissue, cause respiratory illness, and harm farm crops.

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

DPR has been working for several years to reduce VOC emissions from pesticides. In 2006, a federal court judge ordered DPR to put regulations in place by January 2008 that will reduce pesticide VOCs.

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Why aren't you reducing VOC emissions from other sources?

We are. For many years, the California Air Resources Board (ARB) has been a world leader in advancing the cause of cleaner air. The ARB has put rules in place to reduce vehicle exhaust, industrial emissions, and VOCs emitted by a wide range of consumer products.

What about reducing VOCs from nonfumigant pesticides?

DPR is requiring manufacturers of nonfumigant pesticides to reformulate products so they emit less VOCs, mainly by changing the solvents in them. This will take several years to do.

Reformulation isn't possible with fumigants. In fumigants, the active ingredient (not a solvent) is itself the volatile organic compound. The focus has to be on requiring low-emission application methods, or on reducing the frequency of applications or the amount applied.

Modifying field fumigation practices is the only practical way to meet the reduction goals in time for the court-ordered deadline of January 2008 since:

- Fumigant emissions account for such a significant portion of total pesticide VOC emissions, and
- Changes in fumigant use practices can start as soon as these regulations are adopted.

Who decides the amount of VOC reduction needed?

California made a commitment to the federal government to reduce pesticide VOCs by 20 percent, compared with a base year, in parts of the state that violate federal air standards. (The federal court ordered DPR to use 1991 as the base year.)

Controls DPR put in effect over the past several years have not reduced pesticide VOCs enough in three of the state's five "nonattainment areas."

What is a "nonattainment area"?

The federal Clean Air Act requires California to track and reduce VOCs by certain amounts in parts of the state with the dirtiest air.

In 1994, the Air Resources Board and DPR committed to track and reduce pesticidal sources of VOCs in five regions that did not meet the federal ozone standard. These ozone nonattainment areas (NAAs) were Sacramento Metro, San Joaquin Valley, Southeast Desert, Ventura, and South Coast.

Because of the controls DPR already put in place, the Sacramento Metro and South Coast NAAs are now meeting their VOC reduction goals for pesticides. The remaining three nonattainment areas do not.

What three nonattainment areas (NAAs) do not meet federal clean air standard for pesticide VOCs?

The NAAs are San Joaquin Valley, Southeast Desert, and Ventura.

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

The Southeast Desert NAA includes the desert portions of Riverside (Coachella

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Valley), Los Angeles (Lancaster/Palmdale), and San Bernardino (Barstow) counties.

The Ventura NAA encompasses all of Ventura County.

How will the new regulations reduce pesticide VOCs?

Registrants will be required to limit pesticide VOC emissions from their products to a specified amount, in the nonattainment areas. Registrants can choose to do this in various ways, as long as they do not exceed the emission limits allocated to them by DPR.

The proposed regulations will set fumigant emission limits for the three nonattainment areas that do not meet the VOC reduction requirement: San Joaquin Valley, Southeast Desert, and Ventura.

(While the regulations also will specify emission limits for the Sacramento Metro and South Coast nonattainment areas, pesticide VOCs in these areas have been reduced significantly over the past decade. Fumigant emissions in these two areas could increase several-fold and still be under the limits. Therefore, the emission limits for these two areas should have no impact on current fumigation practices.)

The emission limits will be in effect each year between May 1 and October 31, the "ozone season" in California when the air standard is exceeded most often.

How will the emission limits be managed?

DPR will give each fumigant registrant an emission allocation for its product. Each registrant must keep emissions under the allocation, using one or more of these approaches:

- Requiring applicators to use a low-emission method.
- Requiring a reduced application rate.
- Reducing acreage to be treated.
- Shifting fumigation dates so treatment occurs before May 1 or after October 31.

Working with the registrants, growers will have the choice of which method meets their agronomic needs. However, based on the most recent data, all growers in the three pesticide NAAs would need to adopt the lowest emission method for the NAA to stay under the emission limit. Otherwise, the only way to stay under the emission limit would be to treat fewer acres or reduce application rates.

In the Ventura NAA, using low-emission methods will not reduce pesticide VOCs enough to achieve the required goal. Here, the only alternative will be to significantly reduce treated acreage or application rates.

What are the low-emission application methods?

Different methods of applying fumigants emit different amounts of VOCs. DPR has estimated the percentage of VOCs emitted for each fumigant and for each application method. Lower-emission methods are typically those that are:

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

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Other ways of limiting emissions are also specified in the regulations, depending on which fumigant is used. They include reduced application rates, soil moisture requirements, injection depth specifications, soil compaction requirements, and a mandate for a tarpaulin repair response plan.

The regulations also require changes in application methods for specific fumigants. For example, a tarp would be required for all applications of methyl bromide or chloropicrin (when chloropicrin is the sole active ingredient being applied). Applications of methyl bromide as a gas through drip irrigation would be prohibited. MITC-generating fumigants could not be applied at night, except when the flood method is used.

Why not reduce VOCs by requiring applicators to use only low-emission methods?

If more applications were done using low-emission methods, VOC emissions would be reduced. However, these low-emission methods may not be feasible for certain fumigant products, crops, or areas.

In addition, the proposed changes in application methods apply statewide, even though in many areas of the state, further pesticide VOC reductions are not needed. Therefore, the proposed regulations allow most standard application methods, except for high-emission methods not essential to agriculture.

Low-emission methods are only half of the story. The other major factor is the amount used. For example in the Ventura nonattainment area, even if all applicators used low-emission methods, the VOC reductions would not be enough to achieve the required goal. In this NAA, 75 percent or more of pesticide VOCs are from fumigant applications. While application method changes here since 1991 have lowered overall emission rates, this has been more than offset by increased use of fumigants in the area. Agricultural production is a dynamic and changing industry and the regulations will account for those changes.

How will DPR divide VOC emissions among registrants?

The 2008 allocation will be based on:

- Pest management needs.
- Advancement of reduced emission methods (registrants who develop new methods that reduce emissions may receive larger allotments).
- Expected changes to specific use patterns for field fumigants, that is, changes in cropping patterns.
- Field fumigant market share.
- Allocation requests from the registrant.
- Regulatory changes that impact allowed use.

The first year, DPR will issue a notice to fumigant registrants and the public with the proposed allocations and how they were developed. After 30 days for public comment, DPR will decide the final allocations by May 1, 2008.

Starting in 2009, by May 15 of the previous year, DPR will propose allocations based on the same factors, as well as consideration of maintaining pesticide VOC emission limits in each NAA, and the fumigation emissions report from the registrants.

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The proposed allocations will be noticed, comments accepted, and a final decision made by November 1 of the previous year.

Who will keep track of emissions?

The registrants will be required to track fumigant emissions within each of the five pesticide NAAs. They will report this information to DPR. In their reports, the registrants will have to differentiate the emissions resulting from different application methods. The regulations will specify the percentage of emissions associated with each fumigant and method.

What happens if registrants do not track VOC emissions or if they exceed their emission allocation?

If a registrant fails to report fumigant emissions or exceeds the emissions allocation, the registrant will be subject to civil penalties of up to $10,000 for each violation. Repeat violators can be fined up to $25,000 for each violation, or DPR may cancel the product registration.

How does the proposal to reduce VOC emissions relate to pesticide drift or air toxins?

In reducing emissions and use, these regulations will also help reduce toxic exposure to fumigants. However, this is not the primary goal.

Measures to specifically control exposure, such as buffer zones and respirator requirements, either have been implemented (methyl bromide, 1,3-dichloro-propene) or are under development (metam sodium/MITC, chloropicrin).

You can check the status of mitigation measures by going to DPR's online Fumigant Resource Center, www.cdpr.ca.gov, click on "A-Z Index," and then "Fumigant Resource Center."

How can DPR ensure the rules are enforceable?

The proposed fumigant rules build on a complex system of controls already in place. No other state has California's system for local enforcement of pesticide laws, and for the permitting of highly hazardous pesticides. More than 400 biologists, working for County Agricultural Commissioners in the state's 58 counties, enforce pesticide laws locally.

Among other duties, Agricultural Commissioners are responsible for issuing the site- and time-specific permits required of those who wish to use restricted pesticides in agriculture. Restricted materials are those pesticides that have a higher potential to have an adverse impact on health or the environment.

All farm fumigants are (or in the case of sodium tetrathiocarbonate, will be) restricted materials. Pesticide dealers are required to get a copy of a permit before selling a restricted material. Sales are tracked, and use requires not only a permit but also special training.

Before using a restricted material, farmers must submit a "notice of intent" to use the pesticide. This gives the Agricultural Commissioner another opportunity to review the intended use.

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No other state has California's unique system for local enforcement of pesticide laws.

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What are the new licensing requirements?

The proposed regulations would require that all field fumigations be made by a licensed pest control business. The business must have a qualified applicator holding a license to perform work in a new field fumigation subcategory that DPR will establish.

These licensing requirements will be not be in effect until January 1, 2009. (All other requirements will be effective in January 2008.)

What are the recordkeeping and reporting requirements?

Applicators must keep a record of each field fumigation in all five nonattainment areas (Sacramento Metro, San Joaquin Valley, South Coast, Southeast Desert, and Ventura).

The recordkeeping requirements are similar to the pesticide use reporting requirements. A copy of the pesticide use report can be used, with the application method added. The applicator still sends the original pesticide use report to the County Agricultural Commissioner. However, the applicator will also send the fumigation record (or a copy of the pesticide use report with the application method description) to the registrant and to DPR.

If the goal is to reduce VOCs in nonattainment areas, why are the application methods and other controls being imposed statewide?

Laws and regulations governing pesticide use are enforced locally by the County Agricultural Commissioners. However, the nonattainment areas do not conform to county boundaries. That is, parts of some counties are within an NAA and parts of the same county are outside the NAA. The application method restrictions need to be statewide for consistency, clarity, and enforceability.

What's involved in putting the new rules in effect?

Proposed regulations are posted on DPR's Web site. Anyone may submit written comments (by letter, e-mail or fax) or testify at public hearings regarding all or any part of proposed regulations.

After the comment period closes, DPR reviews all comments and may revise the regulations accordingly. In this instance, the Department's goal is to reduce pesticide VOC emissions; however, we also recognize that alternative methods of doing this may be suggested by commenters and may be equally effective.

Should the regulations be revised, DPR will notice them again for public comment. Anyone who submitted comments will be notified of the revisions.

How can I comment on the proposed regulations?

You can view or download the proposed regulations on DPR's Web site, www.cdpr.ca.gov, clicking on the "Regulations" link. You can also submit e-mail comments on that page.

You can mail written comments to the DPR Regulations Coordinator at the address below. Comments can be

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DPR recognizes that alternative ways of doing this may be suggested by commenters and may be equally effective. Anyone may comment on all or part of the proposed regulations.

Comments on these regulations are due July 13, 2007.

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faxed to 916-324-1452 or sent by e-mail to dpr07002@cdpr.ca.gov.

All comments are due by 5 p.m. July 13, 2007. You may comment on all or any part of the regulations.

For more information, or to get a copy of the regulations sent by postal mail, contact DPR's Regulation Coordinator at the address or e-mail below.

What about public hearings on the proposed regulations?

To widen opportunities for public participation, DPR has scheduled two public hearings:

July 10, 2007, 5 p.m.
Doubletree Hotel Ontario Airport
Lake Gregory Room
222 North Vineyard Avenue
Ontario

July 12, 2007, 5 p.m.
University of California
Kearney Agricultural Center
Nectarine Room
9420 S. Riverbend Avenue
Parlier

Anyone may testify at the hearings. Interpreters will be available to translate for Spanish-speaking people. You may also turn in written comments there. Spoken testimony carries no more weight than written comments.

People who wish to speak will be asked to register before the hearing starts. Usually, registered persons are heard in the order they registered. Other people who wish to speak will be given the opportunity to do so after those who registered have been heard. Because many people may sign up to testify, there may be a limit on how much time you have to speak.

Where can I get more information?

For more information, visit our Web site, www.cdpr.ca.gov, click on the "Regulations" link, then "Proposed Regulations."

You can also contact:

Linda Irokawa-Otani
Regulations Coordinator
Department of Pesticide Regulation
1001 I Street, P.O. Box 4015
Sacramento, CA 95812-4015
Phone: 916-445-4300
E-mail questions: lotani@cdpr.ca.gov
E-mail comments:
dpr07002@cdpr.ca.gov

Go to www.cdpr.ca.gov for more details. Click on "Regulations," then "Proposed Regulations."

Department of Pesticide Regulation
1001 I Street
P.O. Box 4015
Sacramento, CA 95812

www.cdpr.ca.gov
916.445.4300

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.