From the Director

Mary-Ann Warmerdam, Director
Department of Pesticide Regulation

Pesticide Regulations Improve California's Air Quality

The California Department of Pesticide Regulation (DPR) is pleased to announce that volatile organic compound (VOC) pesticide emissions that contribute to smog in California dropped significantly in 2008, the first year restrictions on agricultural fumigant applications specifically targeting air quality were in effect.

The most substantial reductions were in the San Joaquin Valley, Ventura County and Southeast Desert in Southern California, three of five areas in the state that do not meet federal air quality standards. VOCs combine with nitrogen oxides in sunlight to form ozone, a major air pollutant.

While impressive, these reductions are a snapshot and do not yet establish a trend. Weather and pest infestations change from year to year.

San Joaquin Valley

DPR's Draft Annual Report on Volatile Organic Chemical Emissions from Pesticides for 1990-2008 released Feb. 3 found that VOC pesticide emissions declined by an impressive 30 percent from 1990 levels in the San Joaquin Valley. The valley is comprised of all of Fresno, Kings, Madera, Merced, San Joaquin, Stanislaus and Tulare counties and part of Kern.

The report concluded that 14.5 tons of VOC pesticide emissions were released per day in 2008 in the San Joaquin Valley from May through October, the peak ozone season in California. This compares with 20.6 tons during the same period in 1990.

We credit the reduction in VOC pesticide emissions to farmers' adoption of low-emission application methods for fumigants, including tarps and application through drip irrigation systems. Typically, these gaseous pesticides are applied to the soil before planting to control disease, weeds and other pests in the soil. Pesticide applications to almond-growing sites showed the most significant decrease in emissions – 26 percent.

The regulations are based on 1990 emission levels because that is the year when the federal Clean Air Act first required states to track and reduce air pollution.

The 2008 data reflect a change that requires reporting of the fumigation method for every application to DPR within the five areas of the state that do not meet federal air quality standards. We previously relied on survey data. These new data have resulted in a more accurate estimate regarding how often each of the methods is used and improved our ability to accurately track the applications.

For perspective, pesticide emissions comprise only about 6 percent of all VOC emissions in the San Joaquin Valley. The sources of most emissions include vehicles, manufacturing and industrial activities and farming operations.

Ventura County

VOC pesticide emissions declined by 54 percent from 1990 levels and 58 percent from 2007 levels. The report found that 1.73 tons of VOC pesticide emissions were released per day in 2008 in Ventura County from May through compared with 3.79 tons during the same period in 1990 and 3.36 tons in 2007.

The regulations set a phased-in 2012 VOC pesticide emission level in Ventura County of 3 tons per day, a 20 percent reduction from 1990 levels. Pesticide emissions comprise approximately 6 percent of all VOC emissions in Ventura County. Other sources of emissions include vehicles, consumer products and oil and gas production.

Approximately 75 percent of VOC pesticide emissions in Ventura County are from fumigants, gaseous chemicals farmers use before planting to control disease, weeds and pests in the soil. The decrease in emissions is due to:

- A switch by farmers to lower emission products and low-emission application methods.

- A 21 percent decline in the use of fumigants between 2007 and 2008, likely due to an emission allowance system managed by the Ventura County Agricultural Commissioner in coordination with DPR. A significant portion of the decline in fumigant use was for soil fumigation/preplant applications. Ventura County is the state's only area under a pesticide emission allowance system. Unique in the United States, this system is included in the 2008 regulations and requires DPR to analyze the previous year's pesticide-use report data from the county to estimate that year's VOC emissions.

Southeast Desert

In the Southeast Desert, comprised of parts of Los Angeles, Riverside and San Bernardino counties, VOC pesticide emissions declined by 75 percent from 1990 levels and 79 percent from 2007 levels. The report found that .28 tons of VOC pesticide emissions were released per day in 2008 from May through October compared with 1.15 tons during the same period in 1990 and .76 tons in 2007.

Most of the decrease in fumigant emissions was due to low-emission application methods on carrots, strawberries and other crops.

Pesticide emissions comprise approximately 1 percent of all VOC emissions in the Southeast Desert. Other sources of emissions include vehicles and farm equipment, manufacturing and industrial activities and consumer products.

The other areas of California not meeting federal air quality standards – Sacramento Metro and South Coast – were not affected by the regulations because they already meet the targeted reductions.

Next Steps

In California, the Air Resources Board (ARB) has the lead role in reducing air pollutants generally. DPR regulates pesticides, including developing and carrying out strategies to reduce pesticide VOC emissions. VOC reductions from pesticides are part of the state's overall strategy to comply with federal air quality standards.

California is the first state in the nation to identify pesticides that contribute most to air quality problems and take steps to reduce those emissions. DPR initially targeted fumigants for regulation because it was the fastest, most efficient way to reduce overall VOC pesticide emissions in California.

Only seven fumigants, all designated as restricted materials, are registered for use in California. Using a restricted material requires a permit issued by a county agricultural commissioner who evaluates under what conditions the product can be used and can impose restrictions developed by DPR to ensure the safety of farmworkers, the public and the environment.

In contrast, there are hundreds of nonfumigants registered in the state. Most do not require a permit to use, making them more challenging to regulate than fumigants. DPR's goal is to implement restrictions by 2014 to reduce VOC nonfumigant emissions.

DPR is very proud of our contributions to improving air quality while balancing the ability of farmers to implement changes necessary to reduce pesticide emissions. We remain committed to more reductions in VOC pesticide emissions through reformulation of nonfumigants, more efficient application technologies and pest control strategies less reliant on pesticides.

We have formed strategic partnerships with industry and are working with agricultural organizations to develop pesticide alternatives. We award grants to commodity groups to develop innovative solutions to VOC emissions and pesticide drift. DPR has a Web-based VOC emission calculator for fumigants that enables farmers to enter product information and the application rates for products and obtain potential emissions for an application scenario. We are developing a similar calculator for nonfumigants.

Public comments on the Draft Annual Report on Volatile Organic Chemical Emissions from Pesticides: Emissions for 1990-2008 will be accepted until March 19, 2010. The report and information on how to submit comments are posted at: www.cdpr.ca.gov.

Contact: Lea Brooks, DPR Communications Director, lbrooks@cdpr.ca.gov, 916-445-3974

See table of VOC emissions and photo of tarping below.

May–October (ozone season) ***adjusted*** fumigant and non-fumigant pesticide VOC emissions.

NAA	1990 Emissions (tons/day)		2004 Emissions (tons/day)		2005 Emissions (tons/day)		2006 Emissions (tons/day)		2007 Emissions (tons/day)		2008 Emissions (tons/day)	
1 – Sacramento Metro												
Fumigants	0.384	(14%)	0.111	(9%)	0.085	(7%)	0.162	(12%)	0.189	(18%)	0.064	(7%)
Non-Fumigants	2.408	(86%)	1.124	(91%)	1.154	(93%)	1.192	(88%)	0.864	(82%)	0.846	(93%)
2 - San Joaquin Valley												
Fumigants	5.536	(27%)	6.362	(37%)	6.910	(33%)	6.808	(32%)	6.123	(36%)	3.367	(23%)
Non-Fumigants	14.981	(73%)	10.967	(63%)	13.844	(67%)	14.517	(68%)	11.107	(64%)	11.108	(77%)
3 - Southeast Desert												
Fumigants	0.840	(73%)	0.762	(77%)	0.474	(64%)	0.413	(65%)	0.575	(75%)	0.119	(41%)
Non-Fumigants	0.313	(27%)	0.233	(23%)	0.266	(36%)	0.221	(35%)	0.189	(25%)	0.167	(59%)
4 - Ventura												
Fumigants	3.140	(83%)	3.302	(84%)	3.119	(86%)	3.175	(86%)	2.935	(87%)	1.247	(72%)
Non-Fumigants	0.647	(17%)	0.622	(16%)	0.497	(14%)	0.508	(14%)	0.428	(13%)	0.483	(28%)
5 – South Coast												
Fumigants	9.372	(86%)	0.702	(37%)	0.594	(30%)	0.422	(28%)	0.411	(28%)	0.377	(29%)
Non-Fumigants	1.468	(14%)	1.220	(63%)	1.375	(70%)	1.060	(72%)	1.076	(72%)	0.905	(71%)