

Appendix H

REVISED

**Proposed Revision to the Pesticide Element of the 1994 Ozone
SIP for the Ventura County Nonattainment Area**

(August 13, 2007)

(This page intentionally left blank.)

REVISED
**Proposed Revision to the Pesticide Element of the 1994 Ozone SIP for the
Ventura County Nonattainment Area**

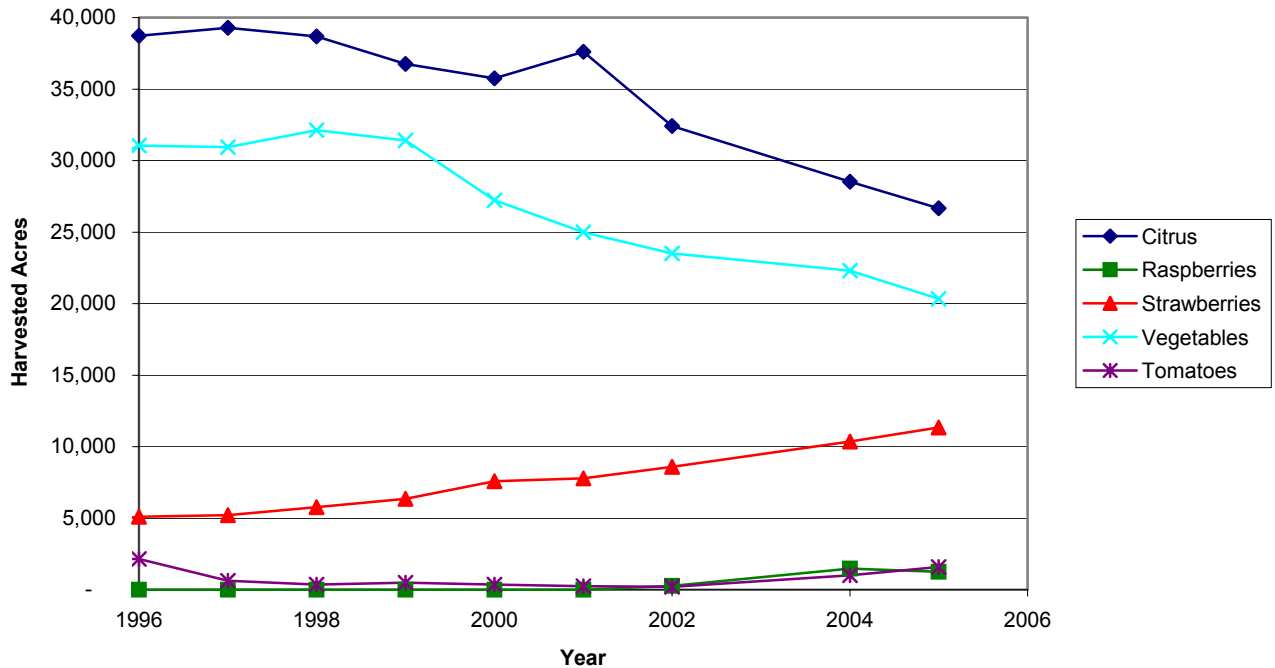
In the 1994 Ozone SIP, the Department of Pesticide Regulation (DPR) committed to obtain Reactive Organic Gas (ROG) emission reductions from pesticides in the five 1-hour ozone nonattainment areas. For the Ventura County nonattainment area (Ventura), the target was a 20 percent ROG emission reduction from the 1990 base year emissions by 2005 (see 62 Federal Register 1169-1170; January 8, 1997).

In all nonattainment areas, DPR's proposed fumigant regulations will achieve all of the ROG reductions from pesticides that are required by the 1994 Ozone SIP. DPR's proposed regulation expects to achieve all the reductions in 2008. Reductions will be achieved by instituting a regulatory cap on pesticide emissions and placing annual limits on fumigant emissions to ensure the overall pesticide emission cap is not exceeded. The measures include changing to application methods with lower emissions. Monitoring studies demonstrate that emissions differ between methods of applications. Emissions can be significantly reduced through tarping, irrigating after applications, or applying through drip irrigation systems. Changing to these applications can provide a feasible means for meeting the overall emission limits for fumigants. Quantifying the difference in emission rates associated with different fumigant application methods also accounts for the revisions to earlier estimates of pesticide ROG emissions, including revisions to the baseline estimates. Widescale adoption of low emission practices will assist in meeting the pesticide emission cap, but will not likely meet the entire demand. The measures anticipate a mechanism to allocate, track and oversee fumigant emissions.

Land use changes in Ventura have created difficulties in meeting the fumigant cap in the proposed 2008 Pesticide Plan. Overall pesticide ROG emissions, and fumigant emissions in particular, have increased over the last several years in the Ventura nonattainment area, from approximately 3.3 tpd in 1991 to an estimated 4.8 tpd in 2004. Fumigants represent 80-90% of the overall pesticide emissions in Ventura. The increased emissions are due to changes in Ventura cropping patterns. Crops that require annual fumigation are replacing crops that require minimal fumigation. For example, fumigant use for strawberries accounts for most of the pesticide ROG emissions in the Ventura nonattainment area, and strawberry acreage has increased from 4,500 acres in 1996 to 10,300 acres in 2004 (McPhail 1997, 1999, 2001, 2003, 2006; Figure 1). Smaller acreage increases occurred for raspberries and fresh market tomatoes that require annual fumigation. The increased strawberry, raspberry, and tomato acreage coincides with a decrease in acreage for crops that require less fumigation, such as citrus (grapefruit, lemon, orange) and most vegetables (broccoli, cabbage, carrot, cauliflower, celery, lettuce, parsley, spinach). Under the proposed measures, Ventura would be required to reduce its pesticide emissions in 2008 by 46%

(2.2 tpd) based on 2004. Adoption of Best Available Control Technology (BACT) will not allow all of the planted acres to remain economically viable and to meet pesticide emission cap.

Figure 1
Trends of harvested acres in Ventura



DPR estimates that approximately 83% of the fumigant emissions in the Ventura nonattainment area come from applications that already employ Best Available Control Technology (BACT), such as tarping, intermittent irrigation following fumigation, or application using drip irrigation systems (Barry, et al. 2007). Comments received on the proposed regulations indicate that BACT adoption may be greater than currently estimated. However, even if all fumigant applications adopted BACT, an additional 34% (1.3 tpd) fumigant emission reduction from 2008 levels would be needed to achieve the overall pesticide SIP commitment. To achieve this reduction, growers and applicators will need to employ some combination of acreage reduction, application rate reduction, and shifting applications outside the May – October window. The likely scenario would be that land would not remain in agricultural production. DPR estimates that 5,800 – 7,500 acres would be lost if the 1.3 tpd ROG reduction is achieved solely through acreage reduction (Spurlock 2007).

A draft analysis of the proposed regulations predicts that most growers will reduce fumigant application rates to achieve the needed ROG reductions in Ventura, with the fumigated area reduced by several hundred acres (Goodhue, et al. 2007). The reduced application rates would cause a decrease in yields, with the most likely scenario leading to a loss of \$11 million, and a maximum loss of

\$31 million. Separate analyses by ARB (Dean 2007) and the California Strawberry Commission (Murai 2007) estimated losses of up to \$80 million and \$286 million, respectively, based on a 10,000 acres reduction.

In the short term, the loss of these high value crops would likely have a negative economic impact on the farm economy and farm employment in Ventura. Growers would be expected to recuperate that loss by converting the land to other uses. Although it is unknown what the new uses would be, a reasonable possibility is that a significant number of acres would be converted to non-agricultural uses (such as housing developments). The conversion of agricultural land to other uses would likely result in various adverse environmental impacts, the extent of which cannot be analyzed at this time.

An extensive amount of research is being conducted by federal and state agencies as well as commodity groups on ways to reduce pesticide emissions. ARB has funded some of these approaches. With the enactment of the 2007-08 budget, DPR will restore its Pest Management Alliance grant program that funds pesticide use reduction programs. These efforts will lead to improved BACT but not in time for the 2008 season. DPR expects that, as further research is completed over the next few years, the ability for growers in Ventura County to further reduce pesticide emissions will also increase.

To avoid the potential impacts described above, ARB proposes to revise the Pesticide Element of the 1994 Ozone SIP for Ventura only. This SIP revision would substitute emission reductions from other sources of ROG for a portion of the emission reductions committed to in the 1994 SIP for pesticides. There would be no “backsliding” from the overall 1994 SIP commitments for Ventura, because all the ROG emission reductions committed to in the 1994 SIP would still be achieved. What would change is the source of the emission reductions – a portion of the ROG reductions for Ventura would come from other emission sources instead of pesticides.

ARB staff has calculated the amount of ROG emission reductions that have been achieved in Ventura since 1994. This analysis shows that all of the ROG reductions committed to (except for those anticipated to come from pesticides) have already been achieved in Ventura County (Table 1). Plus, between 2005 and 2008, an additional 1.9 tpd of ROG reductions will be achieved from California’s on-going mobile source and consumer product emission control program (Table 2), beyond the reductions committed to in the 1994 SIP.

**Table 1
2008 Emission Reductions Compared to
1994 SIP Emission Reduction Commitment
in Ventura County APCD***

| | |
|--|-------------|
| Emission Reduction Commitment** | 4.11 |
| | |
| Enhanced Vehicle Inspection and Maintenance | 0.98 |
| On-Road Measures | 1.08 |
| Off-Road Measures | 0.90 |
| Consumer Product Measures | 1.16 |
| Total 1994 SIP New Measure Emission Reductions Achieved | 4.11 |

* All emissions are reported in the 1994 SIP emission inventory currency. Does not include DPR, or local (stationary or area-wide) commitments

** Commitment for Emission Reductions in 2005.

**Table 2
Decline in ROG Emissions from California's
On-going Mobile Source and Consumer Product
Emission Control Program***

| | 2005 | 2008 | Change |
|----------------------------|-------------|-------------|---------------|
| On-road Emissions | 11.4 | 9.0 | 2.4 |
| Off-road Emissions | 4.0 | 4.1 | -0.1 |
| Consumer Product Emissions | 5.7 | 6.1 | -0.4 |
| Total | 21.1 | 19.3 | 1.9 |

* Does not include pesticide emissions, or local (stationary or area-wide) emissions under the jurisdiction of the Ventura County Air Pollution Control District. Does not include benefits of new measure commitments identified in Table 1, above. All emissions are reported in the 1994 SIP emission inventory currency.

Notes: ARB did not have emission reduction commitments beyond 2005 in Ventura County. As such, all declines in baseline achieved through California's on-going mobile source control program are surplus to the emission reduction commitments in the 1994 SIP for Ventura County.

ARB staff's May 7, 2007 Proposed State Strategy proposed to revise the 1994 Ozone SIP to substitute 1.0 tpd of ROG emission reductions from California's on-going mobile source emission control program for 1.0 tpd of the ROG emission reductions committed to for pesticides in the 1994 Ozone SIP in Ventura County in 2008.

ARB received written comments and heard testimony at its June 22, 2007 public meeting on the State Strategy expressing concern about the impact the additional pesticide emissions could have on ozone formation, and about the toxic air contaminants that would result from the continued use of fumigants. ARB also heard testimony that failure to provide substitute emissions for the entire shortfall – estimated by industry representatives at 1.9 tpd -- would result in adverse economic impacts for strawberry farmers, and could force some fields out of production.

Potential Impacts on 8-hour Ozone Planning in Ventura County

Ventura County is designated as nonattainment for the federal 8-hour ozone standard, classified as a “moderate” nonattainment area with an attainment date of June 15, 2010. Effectively this means Ventura must attain the standard in 2009, since nonattainment areas must show attainment for a complete ozone season prior to the attainment date, and the ozone season in California is year round. Because a 2009 attainment requirement allows little time for the implementation of new controls to ozone-forming emissions, attainment by 2009 is largely dependent on reductions from the existing control program. Preliminary photochemical modeling results indicate that Ventura will not attain the standard in 2009. Ventura District staff has indicated that they may recommend that their Board request reclassification as a “serious” ozone nonattainment area. Such a “bump up” would give the area a June 15, 2013 attainment deadline and would require attainment in 2012.

The photochemical modeling indicates that ozone formation in Ventura responds to both NO_x and ROG reductions. ARB staff’s estimates indicate that Ventura needs NO_x reductions of approximately 16 tons per day (tpd) and ROG reductions of 7 tpd in order to attain the standard in 2012. Existing State and local controls will reduce emissions by approximately 11 tpd NO_x and 6 tpd ROG by 2012. The measures in the proposed State Strategy will provide an additional 5 tpd NO_x and 1 tpd ROG. Since Ventura is impacted by air pollution transport from the South Coast, Ventura’s air quality will also benefit from emission reductions in the South Coast Air Basin. As mentioned previously, 80 to 90 percent of the pesticides applied in Ventura County are fumigants. Nearly half of the fumigants applied are methyl bromide, and methyl bromide is a low reactivity ROG (Carter, et al. 2007). Given these emission reductions and the low reactive nature of methyl bromide, preliminary analysis still shows a very close attainment demonstration for 2012.

ARB staff is revising its ROG substitution proposal for Ventura County, as described below, in light of the reductions needed to ensure expeditious attainment of the federal 8-hour ozone standard, and in light of the comments received in response to the original proposal.

1) In the May 7, 2007 proposal, staff recommended the substitution of 1.0 tpd ROG reductions. Staff is now recommending that ARB provide 1.3 TPD in 2008, reflecting updated DPR estimates of the ROG emission reduction shortfall.

2) In the May 7, 2007 proposal, staff did not identify an end-date for the use of substitute ROG emissions. Staff is now recommending a phase-down that provides 1.3 tpd of ROG reductions starting in 2008, declining to zero by 2012. This will provide DPR with the time necessary to identify and construct additional pesticide measures to achieve the remaining necessary reductions, and will help ensure that reductions are in place by the 2012 “serious” area attainment deadline. The proposed ROG substitution schedule shown below reflects this phase-out.

Table 3
Proposed Commitment for
Surplus Emission Reductions
Used to Meet the 1994 Pesticide SIP Commitment

| Year | ROG (tons per day) |
|-------------|---------------------------|
| 2008 | 1.3 |
| 2009 | 1.0 |
| 2010 | 0.6 |
| 2011 | 0.3 |
| 2012 | 0.0 |

This proposed revision will ensure that all of the pesticide reductions required under the 1994 SIP commitment will be achieved, by 2012, as a result of the pesticide use and application controls included in the proposed 2007 State Strategy.

References

- Barry, T., F. Spurlock, and R. Segawa. 2007. Pesticide Volatile Organic Compound Emission Adjustments for Field Conditions and Estimated Volatile Organic Compound Reductions – Initial Estimates. Memorandum to John Sanders, April 6, 2007. California Department of Pesticide Regulation.
- Carter, W. P.L., and I.L. Malkina, 2007. Investigation of Atmospheric Ozone Impacts of Selected Pesticides. Report to the California Air Resource Board.
- Dean, B. 2007. Consultation on Draft Regulations on Fumigants. Memorandum to Linda Irokawa-Otani, April 18, 2007. California Air Resources Board.
- Goodhue, R.E., R.E. Howitt and P.H. Howard. 2007. Effects of 2007 Proposed Fumigant Use Regulations on Sacramento Valley, San Joaquin Valley, and Ventura County Agriculture, Draft Report, June 28, 2007. Report to the California Department of Food and Agriculture. University of California, Davis, Department of Agricultural and Resource Economics.
- McPhail, W.E. 1997. Annual Crop Report, 1996, October 15, 1997. Ventura County Agricultural Commissioner.
- McPhail, W.E. 1999. Annual Crop Report, 1998, September, 23, 1999. Ventura County Agricultural Commissioner.
- McPhail, W.E. 2001. Annual Crop Report, 2000, August 2001. Ventura County Agricultural Commissioner.
- McPhail, W.E. 2003. Annual Crop Report, 2002, July 15, 2003. Ventura County Agricultural Commissioner.
- McPhail, W.E. 2006. Annual Crop Report, 2005, July 5, 2006. Ventura County Agricultural Commissioner.
- Murai, M. 2007. Comments on the 2007 SIP – Appendix H, June 20, 2007. Letter to Robert Sawyer, California Air Resources Board. California Strawberry Commission.
- Spurlock, F. 2007. Ventura County Acreage Reduction Estimates. Memorandum to Randy Segawa, August 2, 2007. California Department of Pesticide Regulation.