

Potential VOC Reductions from Regulation of Coatings and Consumer Products

Issue/Proposed Strategy

Volatile Organic Compound (VOC) emissions from Coatings and Consumer Products (including Household Products, Architectural Coatings, Industrial Maintenance Coatings, and Personal Care Products categories) amounted to 49 tons per day in the 8-Hour Ozone Nonattainment Area and 75 tons per day Statewide in 2006. Coatings and Consumer Products 2010 VOC emissions are projected to decrease, in part due to anticipated new federal VOC rules. However, these new regulations are behind schedule and promulgation is unlikely to occur this year. Consequently, the Division and the RAQC are exploring the potential benefits of additional state regulation for these source categories.

Category**	8-Hour Ozone Non-Attainment Area		Colorado Statewide	
	2006 base	2010 base	2006 base	2010 base
<i>Household Products</i>	21.4	17.9	32.6	27.5
<i>Architectural Coatings</i>	20.1	16.8	31.1	26.2
<i>Industrial Maintenance</i>	0.5	0.4	0.6	0.5
<i>Personal Care Products</i>	7.1	7.0	10.9	10.8
Totals	49.1	42.1	75.2	65.0

NOTES:
**Based on Emission Inventory Information as of June 30th 2008*
***Because VOC adjustments for other product categories may make them less viable (e.g. significant solvent reduction makes the product unusable), VOC emissions from the following categories were excluded from this analysis:*
Automotive Aftermarket
Traffic Markings
Pesticides Application.

Originally, the US EPA planned to propose three federal rules for categories of Consumer & Commercial Products early in 2008 that would lower the VOC content limits in many consumer products including (1) aerosol coatings (new rule), (2) architectural and industrial maintenance (AIM) coatings (amendments), and (3) household and institutional consumer products (CP) (amendments). However, there have been numerous delays with the federal rulemaking that creates uncertainty as to when these rules will be promulgated.

In anticipation of the new rules, the EPA drafted guidance, referred to as the "Credit Memo," allowing VOC reduction credits of ~30% for the above-listed product categories. However, with the rule delay, the APCD and RAQC may now assume only 75% of the ~30% reduction for purposes of SIP credit. This is reflected in the estimated emissions

above. As indicated, despite anticipated population growth, VOC emissions for these VOC source categories are projected to decrease somewhat by 2010.

Although, it is unclear as whether these reductions are ‘real,’ as it seems likely that a new federal rule will not be proposed until 2009, and thus not effective until 2010, with a likely phase-in period through 2013 or beyond.

Currently, the EPA rules for AIM and CP are based on the 1996 version of California Air Resources Board (CARB) rules. The EPA has been contemplating new regulations to be based on the Ozone Transport Commission’s (OTC) model rule, which are based on a California Model rule from 2000. The OTC model rule is less stringent than current California rules for consumer products and for architectural and industrial maintenance products. These California rules have been updated several times since 2000, some as recently as June 26, 2008. Comprising three state regulations, CARB sets 150 VOC content limits in 115 product categories.

Table 2 provides information on which states have adopted Coating and Consumer Product VOC limitation rules based on either or both the California and OTC rules.

Table 2: Consumer Product Rules in Other States

State	Consumer Product VOC Regulation Basis(es)
California	Recently revised (6/26/08) – referred to as CARB(2008)
Arizona	Windshield washing fluid provisions only
Delaware	Mixture of Federal and OTC rules
Maine	OTC and CARB 2005 version
Massachusetts	OTC and CARB 2005 version
Michigan	OTC and CARB 2005 version
New Jersey	CARB 2005 version
New York	CARB 2005 version
Pennsylvania	CARB 2005 version
Texas	Windshield washing fluid only
Virginia	OTC and CARB 2005 version

Adopting more stringent regulation(s) for AIM and CP in Colorado similar to CARB’s would further reduce VOCs in Colorado.

Estimated Additional Air Quality Benefits CARB-type AIM (Coatings) Regulations

For many coatings categories, CARB’s model rule limits for VOC in coatings range between:

- 50% to 80% lower than current EPA regulatory levels, and
- 0% to 70% lower than levels likely to be proposed by EPA in 2009.*

** This is highly speculative but based on discussions with EPA early this year. At that time EPA was contemplating basing its rule on the OTC Year 2000 Model Rule.*

Below is an analysis of two groupings of Consumer Product control strategies involving (1) the future EPA rules and (2) the recent CARB(2008) rules. The “future EPA rules option” recaptures the remaining 25% of the 30% (e.g. 7.5%) VOC reduction that was not included in the 2010 base case inventory because of the EPA credit memo. Because of the above-mentioned uncertainty associated with the final form of the federal consumer product rules it is impossible to know the accuracy of these projected reductions. Although referred to as “future EPA rule”, this regulation would probably need to closely resemble the CARB CP and AIM regulations that were on the books back in 2005.

The “CARB(2008) option” provides VOC reduction estimates based on an increased level of stringency beyond what the expected future EPA rules may achieve for each product subcategory. The amount of VOC emission reduction associated with the CARB2008 rules is about 28% for AIM (architectural and industrial maintenance) product category and about 14% for CP (household and personal care) product category. CARB estimates it has reduced consumer product (includes household products and personal care products) VOC by 44% in the past 20 years (*Initial Statement of Reasons for Proposed Amendments to the California Consumer Products Regulation, May 9, 2008, Executive Summary, Page 3.*) If EPA’s future rule is similar to 2005 CARB regulations, it may reduce VOC nationwide by 30%. More stringent, recent CARB(2008) regulations would provide an estimated additional 14% in VOC reductions.

Table 3 provides the estimated 2010 VOC emission reductions associated with consumer product rules by subcategory in the non-attainment area and Table 4 provides the statewide estimates. Although, VOC emission reductions were presented for both the NAA and statewide, realistically any consumer product requirements would need to apply statewide to reduce the burden to product distributors for a market the size of Colorado.

Table 3: 8-Hour Non-Attainment Area (NAA) in 2010

Category	8-Hour Ozone NAA		
	2010 Base EI VOC [tpd]	Future EPA Rules Option in 2010 VOC [tpd]	CARB(2008) Option in 2010 VOC [tpd]
<i>Architectural Coatings</i>	16.8	1.26	4.35
<i>Industrial Maintenance</i>	0.4	0.03	0.10
<i>Household Products</i>	17.9	1.34	2.32
<i>Personal Care Products</i>	7.0	0.53	0.91
Totals:	42.1	3.16	7.68

Table 4: Statewide in 2010

Category	Statewide		
	2010 Base EI VOC [tpd]	Future EPA Rules Option in 2010 VOC [tpd]	CARB(2008) Option in 2010 VOC [tpd]
<i>Architectural Coatings</i>	26.2	1.97	6.79
<i>Industrial Maintenance</i>	0.5	0.04	0.13
<i>Household Products</i>	27.5	2.06	3.56
<i>Personal Care Products</i>	10.8	0.81	1.40
Totals:	65.0	4.88	11.88

Health and Welfare Benefits

Ozone is a highly reactive gas that is damaging to lung tissue and to the respiratory system generally. While health benefits such as, reduced hospitalization, avoided mortality, reduced workplace and school absences, reduced usage of medication, are not quantified here, it is understood that reducing VOC emissions will reduce ozone formation and thus its ill effects. As ozone is damaging to many plants, crops, forests and other plant life will also benefit from VOC reductions.

Program Costs/Considerations

California ARB estimated the cost per ton for a from-scratch AIM regulation based upon its new model rule would be ~\$1.12 per pound, or \$2,240 per ton of VOC reduced. These cost estimates were designed for California's air quality management districts and other states to use.

Additional FTE and other program costs would need to be budgeted for State regulation of VOC content in consumer products. As California has 37 million people compared with about 5 million in Colorado (2010), a Colorado program would need to be scaled to estimate costs. Other states' programs could also be studied for cost estimates. Another consideration is Colorado's geographic isolation from California suppliers, which could result in distribution and supply issues depending on where consumer products are manufactured.

Implementation/Administration

Informal survey indicates that many paint and coating manufacturers formulate and produce paints with varying VOC levels, which they distribute for sale as individual states or regions may allow. Thus, low-VOC paint requirements in Colorado similar to those of South Coast AQMD would be affordable to these coatings manufacturers.

One Colorado-based manufacturer surveyed did not have a low-VOC line, and would thus need to reformulate.

Considering the variability of outdoor temperatures in Colorado, it is important to note that reducing VOC in paints and coatings can render them subject to destruction via freezing and thawing. Low-VOC paints contain more water, and won't reconstitute. Such coatings would need to be labeled-as to storage requirements.

Enforcement of VOC regulations statewide in California:

California allows a 3-year sell-through period for products 'on the shelves.' Many air districts and the OTC model rule have alternative compliance options (averaging of VOC content), but the latest CARB version does not, as that can be resource intensive from an agency's standpoint due to inspecting and recordkeeping. There is usually flexibility for smaller operators.

The South Coast ARB purchases ~2,500 product samples annually, and has their VOC content levels tested. This past year, violations resulted in 52 settled cases and \$2 million in penalties. Formulation errors, retail distribution issues and imported products (from 20 countries) control were among the causes of violations.

Additional information regarding VOC regulation enforcement in other states could be evaluated if consumer products warrant further investigation.

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