

APPENDIX B

STAFF REPORT

PROPOSED AMENDMENTS TO RULE 74.2, ARCHITECTURAL COATINGS

Ventura County Air Pollution Control District

**669 County Square Drive
Ventura, California 93003**

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DISCLAIMER

This report contains references to company and product names to illustrate product availability. Mention of these names is not to be considered an endorsement by the Ventura County Air Pollution Control District.

EXECUTIVE SUMMARY

Staff is proposing to adopt amendments to Rule 74.2, Architectural Coatings, to reduce the reactive organic compound (ROC) emissions from the coating of structures and their appurtenances. This rule development is based on the Suggested Control Measure (SCM) adopted by the California Air Resources Board (ARB) on October 26, 2007. The SCM was based on ARB's evaluation of the feasibility of South Coast AQMD Rule 1113 ROC limits for other air districts without having to rely on SCAQMD's coating emissions averaging provisions.

Ventura County is designated as a serious nonattainment area for the federal ozone standard and as a severe nonattainment area for the state ozone standard. The California Clean Air Act requires areas designated as severe nonattainment for ozone to adopt control measures required in Sections 40913, 40914, and 40919 of the California Health and Safety Code (H & SC):

- Section 40913 requires districts to develop a plan to achieve California's ambient air quality standard by the earliest practicable date. Control Measure R-329 in the District's 2007 Air Quality Management Plan references the architectural coatings rule. Rule 74.2 is being amended to implement this measure.
- Section 40914 requires each district plan to demonstrate that the plan includes "every feasible measure." Districts must adopt the most effective and feasible control measures to reduce ROC emissions from architectural coatings. The October 26, 2007, adoption of the 2007 SCM included Resolution 07-46, which contained a Finding of the proposed SCM as "feasible," and that it should be adopted by districts that need additional emission reductions for the attainment of state or federal ambient air quality standards. Amendments to Rule 74.2 are being proposed to meet this requirement.
- Section 40919 requires districts classified as serious or severe nonattainment for ozone to adopt Best Available Retrofit Control Technology (BARCT) for all existing sources. BARCT means an emission limitation that is based on the maximum degree of reduction achievable, taking into account environmental, energy, and economic impacts by each class or category of sources (H & SC Section 40406). Staff has found that the SCM requirements meet the BARCT requirement based on the CARB staff report that contains analyses of emission

control, environmental impacts, energy impacts, and economic impacts. Therefore the proposed rule meets the requirements of H & SC Section 40919.

Staff is proposing to reduce ROC emissions from architectural coating operations in Ventura County by reducing the ROC content of the following coating categories: Flat Coatings; Nonflat Coatings; Aluminum Roof Coatings; Bituminous Roof Coatings, Concrete/Masonry Sealers, Dry Fog Coatings, Floor Coatings; Mastic Texture Coatings, Primers, Sealers and Undercoaters; Reactive Penetrating Sealers; Roof Coatings; Rust Preventative Coatings; Traffic Marking Coatings; Wood Coatings; and Zinc-Rich Primers.

Proposed amendments to Rule 74.2 will affect many architectural coatings used on new structures and their appurtenances and used to maintain existing structures and appurtenances. This rule impacts field-applied architectural coatings rather than those applied in a spray booth.

According to the ARB architectural coating survey of 2004, the California inventory of ROC emissions from architectural coatings (excluding cleanup solvents) is approximately 95 tons per day. This translates to about 2.1 tons of ROC per day emissions in Ventura County based on a population factor. The estimated emission reduction from this proposed revision is about 24 percent or 0.5 tons of ROC per day. Although ARB staff estimated a 28 percent emission reduction in the 2007 SCM Staff Report, a more conservative estimate has been made to compensate for lost emission reductions if the rule is not 100 percent effective.

ARB staff estimated the cost-effectiveness of the SCM by dividing the total annual cost to reformulate all noncomplying products in a given coating category by the total annual emissions for that category. Based on their analyses, the cost-effectiveness for the individual ROC categories ranges from essentially no cost to \$13.90 per pound of ROC reduced. The average cost-effectiveness was weighted by emission reductions across all the categories ROC limits proposed for change and was approximately \$1.12 per pound of ROC reduced. This cost-effectiveness value assumes that average resin costs for reformulation will increase by 20 percent.

Ventura County APCD staff also estimated the cost-effectiveness of proposed amendments to Rule 74.2. The estimate of \$1.38 per pound of ROC reduced is based on the cost to coating manufacturers for reformulating coatings apportioned by the population of the county. There are currently no architectural coating manufacturers in the county.

ARB staff also performed a cost analysis to determine the potential price increases of reformulated coatings for consumers. A worst-case analysis assumes that all the costs of the SCM are passed along to the consumers, which is highly unlikely because compliant competitive coatings are already available. This analysis showed a range of no price increase for the flat coatings to a cost increase of \$27.30 per gallon for floor coatings. Because the complying share of floor coatings is 85 percent, many manufacturers have already reformulated their coatings to meet the proposed ROC limit. Therefore, ARB staff determined that it was appropriate for the remaining manufacturers to meet the proposed limit. Overall, ARB staff estimated the average cost increase per unit at about \$1.21 per gallon if all costs were passed on to the

consumer. Currently, the average cost per gallon for consumers is about \$19.20. Thus the maximum increase is approximately six percent.

This report contains five additional sections: (1) Background, (2) Proposed Rule Requirements, (3) Comparison of Proposed Rule Requirements with Other Air Pollution Control Requirements, (4) Impact of the Proposed Rule, and (5) Environmental Impacts and Methods of Compliance. The first section provides background information including regulatory history, latest air pollution control technology and source description. The second section explains the key features of proposed amendments to Rule 74.2. The third section compares the proposed requirements with existing federal requirements and Best Available Control Technology (BACT). The fourth section is an analysis of the effect of the proposed rule on ROC emissions and socioeconomic impacts. The last section examines the environmental impacts of compliance methods and the mitigation of those impacts.

BACKGROUND

Introduction

Architectural Coatings are defined as any coating applied to a stationary structure and their appurtenances, to mobile homes, to portable buildings, to pavements, or to curbs. Architectural coatings are formulated with a variety of components including pigments, resins, solvents, and different additives such as driers, anti-skinning agents, anti-sag agents, dispersing agents, defoaming agents, preservatives and fungicides. The primary source of air emissions from architectural coatings is the solvent component in solvent-based coatings and the co-solvents from waterborne coatings.

Currently, architectural coatings in Ventura County are regulated by Rule 74.2, which was first adopted on June 19, 1979, and was based on the ARB's 1977 Model Rule. ARB and the air districts subsequently revised this model rule in 1985, 1989, and 2000. The 2000 SCM was the basis for the last major revisions to this rule.

CARB, in cooperation with the local air pollution control agencies and the architectural coatings industry, revised the Suggested Control Measure

(SCM) for architectural coatings in 2007. The need to revisit the SCM has arisen because of: (i) advances in coatings technology over the past seven years, and (ii) the need for emission reductions to attain health-based air quality standards in many districts. CARB, in cooperation with the local air districts, has developed a new SCM that acts as a model rule for districts when adopting and amending their local architectural coating rules.

Staff has reviewed CARB's work and participated on the California Air Resources Board's Architectural Coatings Working Group during the development of the SCM. As part of the SCM development process, CARB prepared a Staff Report including an economic analysis and analyzing the SCM for environmental impacts. For the sake of statewide uniformity and the need for additional emission reductions, the District is proposing to adopt the SCM adopted by ARB on October 26, 2007.

EPA promulgated the National Volatile Organic Compound Emission Standards for Architectural Coatings (National Architectural Coatings Rule) in 1998. The 2007 SCM is more stringent than the national rule for all coating categories.

Emission Inventory

The quantity of ROC emissions from the use of architectural coatings is best determined using the ARB's survey of coatings sold in the state. According to their most recent survey in 2005

(architectural coatings sold in 2004), approximately 95 tons of ROC per day were emitted from the use of architectural coatings in California. Using a population factor of about 2.2% for a Ventura County relative to the population of California, the estimated emission inventory for this source category is about 2.1 tons of ROC per day.

PROPOSED RULE REQUIREMENTS

This section summarizes the major proposed requirements of proposed amendments to Rule 74.2. The proposed new ROC limits are listed in Table 1. All of the proposed coating categories were thoroughly researched by ARB staff in the SCM staff report to determine the technical feasibility of the proposed limits. One measure was the percentage of coatings that are available today that comply with the proposed future limits. The complying market share for each new coating ROC limit ranged from 3 percent for Rust Preventative coatings to 100 percent for Driveway Sealers. In all cases, products are available today that comply with proposed new limits. The major changes are listed below:

1. Lowered the ROC limit for nineteen coating categories including: Nonflats; Nonflats-High Gloss; Aluminum Roof; Bituminous Roof; Concrete Sealers; Driveway Sealers; Dry Fog; Floor; Mastic Texture; Roof, Rust Preventative, Specialty Primers, Sealers and Undercoaters; Traffic Marking; Waterproofing Membranes; Wood; and Zinc-Rich Primers. The limits will go into effect January 1, 2011 except for Flats, Rust Preventative, Primer, Sealers and Undercoaters, and Specialty Primers, Sealers and Undercoaters which will go into effect on January 1, 2012.
2. Deleted fifteen coating categories including: Antenna; Anti-fouling; Clear Brushing Lacquer; Lacquers; Sanding Sealers; Varnishes; Clear Fire Retardant; Opaque Fire Retardant; Flow; Quick-Dry Enamel; Quick-Dry Primer Sealer Undercoater; Swimming Pool Repair; Temperature Indicator; Waterproofing Sealers; and Water Proofing Concrete/Masonry Sealers.
3. Added ten new coating categories including: Aluminum Roof, Basement Specialty; Concrete/Masonry Sealer; Driveway Sealer;

Reactive Penetrating Sealer; Stone Consolidants; Tub & Tile Refinish; Waterproofing Membrane; Wood Coatings; and Zinc-Rich Primers.

4. Averaging Provision did sunset in 2005 and was not included in 2007 SCM.

In order to more easily understand the applicability of these new coating categories, ARB staff has summarized the transitions as follows:

Aluminum Roof Coating: This is a new category that was formerly covered by Metallic Pigmented.

Basement Specialty Coating: This new category was formerly covered by Waterproofing Sealer and Waterproofing Concrete/Masonry Sealer.

Concrete/Masonry Sealer: This new category was formerly covered by Waterproofing Sealer, Waterproofing Concrete/Masonry Sealer, and other categories.

Driveway Sealer: This proposed new category was formerly covered by the default ROC limits (Flat, Nonflat, or Nonflat- high gloss).

Fire Retardant Coatings: This coating category will be eliminated and these coatings will be subject to the default ROC limits.

Table 1. Proposed ROC Limits

COATING CATEGORY	CURRENT LIMIT ^{1,2}	EFFECTIVE 1/1/2011	EFFECTIVE 1/1/2012
Flat Coatings	100		50
Nonflat Coatings	150	100	
Nonflat-High Gloss	250	150	
SPECIALTY COATINGS			
Aluminum Roof Coatings		400	
Basement Specialty Coatings		400	
Bituminous Roof	300	50	
Bituminous Roof Primer	350		
Bond Breaker	350		
Concrete Curing Compounds	350		
Concrete/Masonry Sealers	350	100	
Driveway Sealers	100	50	
Dry Fog Coatings	400	150	
Faux Finishing Coatings	350		
Fire Resistive Coatings	350		
Floor Coatings	250	100	
Form-Release Compounds	250		
Graphic Arts-Sign Paints	500		
High Temperature Coatings	420		
Industrial Maintenance	250		
Low Solids Coatings ³	120		
Magnesite Cement Coatings	450		
Mastic Texture Coatings	300	100	
Metallic Pigmented Coatings	500		
Multi-Color Coatings	250		
Pretreatment Wash Primers	420		
Primers, Sealer & Undercoaters	200		100
Reactive Penetrating Sealers		350 ⁴	

¹ The specified limits remain in effect unless revised limits are listed in subsequent columns in the table.

² Conversion factor: one pound ROC per gallon (U.S.) = 119.95 grams ROC per liter.

³ Units for low-solid coatings are grams of ROC per liter (pounds of ROC per gallon) of coating, including water and exempt compounds.

⁴ The ROC limits for Tub & Tile Refinish, Stone Consolidants, and Reactive Penetrating Sealers will become effective on date of rule adoption.

Table 1 (continued) Proposed ROC Limits

COATING CATEGORY	CURRENT LIMIT	LIMIT EFFECTIVE 1/1/2011	LIMIT EFFECTIVE 1/1/2012
Recycled Coatings	250		
Roof Coatings	250	50	
Rust Preventative	400		250
Shellacs - Clear	730		
Shellacs - Opaque	550		
Specialty Primers, Sealers, & Undercoaters	350		100
Stains	350	250	
Stone Consolidants		450 ⁴	
Swimming Pool Coatings	340		
Traffic Marking Coatings	150	100	
Tub & Tile Refinish		420 ⁴	
Waterproofing Membranes	250		
Wood Coatings		275	
Wood Preservatives	350		
Zinc-Rich Primers	500	340	

Reactive Penetrating Sealer: This new category was formerly covered by Waterproofing Sealer and Waterproofing Concrete/Masonry Sealer, and the new ROC limit will become effective on date of rule adoption.

Stone Consolidant: This new category was formerly covered by Waterproofing Concrete/Masonry Sealer, and the new ROC limit will become effective on date of rule adoption.

Tub and Tile Refinish: This new category was formerly covered by the default ROC limits (Nonflat-High Gloss) and the new ROC limit will become effective on date of rule adoption.

Waterproofing Membrane: This new category was formerly covered by Waterproofing Sealer and Waterproofing Concrete/Masonry Sealer.

Wood Coatings: This new category contains all the former categories listed under Clear Wood including Clear Brushing Lacquer, Lacquer, Sanding Sealer, and Varnishes. It also contains those Waterproofing Sealers applied to wood substrates.

Zinc-Rich Primers: This new category was formerly covered by Metallic Pigmented coatings.

It is useful to know that the one-liter (1.057 quart) or smaller containers are still exempt from rule requirements. Also, another three-year sell through provision is allowed for all noncomplying coatings for proposed new ROC limits. This sell-through provision is designed to allow the coatings to be sold up to 3 years after the effective date if it was in compliance at the time of manufacture. This should minimize the need to ship these coatings back to the manufacturer or create additional hazardous waste.

COMPARISON OF PROPOSED RULE REQUIREMENTS WITH OTHER AIR POLLUTION CONTROL REQUIREMENTS

H & SC Section 40727.2 requires districts to compare the requirements of a proposed revised rule with other air pollution control requirements. These other air pollution control requirements include federal regulations, Best Available Control Technology

(BACT), and any other District rule applying to the same equipment or process. Proposed amendments to Rule 74.2 is more stringent than those in the United States Environmental Protection Agency’s national rule and are based on the ARB’s 2007 SCM.

Even considering the averaging provision, SCAQMD Rule 1113 may be considered to be BACT and is more stringent than proposed amendments to Rule 74.2. No other District rules have air pollution control requirements that would conflict with Rule 74.2 requirements.

not be BACT if such limitations have not been demonstrated to be achievable in practice.

Comparison with National Rule

There are many differences between proposed amendments to Rule 74.2 and the national architectural coatings rule, which became effective on September 13, 1999. The national rule only applies to manufacturers and importers of architectural coatings while Rule 74.2 applies to manufacturers, distributors, retailers, and users of architectural coatings. The national rule also has generally higher (less restrictive) ROC limits than Rule 74.2. For example, the proposed ROC limits in the national rule for the three largest categories (flats, non-flats, and industrial maintenance coatings) are 250, 380, and 450 grams per liter, respectively. This compares with the ROC limits of 50, 100 (excluding high-gloss non-flats), and 250 grams per liter, respectively, for the same categories in proposed amendments to Rule 74.2. The national rule also includes 30 additional specialty categories not included in proposed amendments to Rule 74.2. The “national” categories are covered under one of the existing coating categories in Rule 74.2. ARB staff analyzed these additional national categories and found it was not necessary to add most of them to the SCM because: there are complying products that may be regulated under other coating categories in existing district rules; they are not architectural coatings; or they are not sold in California. Staff has also analyzed the additional coating categories in the national rule and concluded that for all but two of the categories (Calcime Recoater Coating and Concrete Surface Retarder), they are not needed because they would be subject to another coating category in the proposed rule or to another district coating rule. Staff has also determined that the Calcimine Recoater Coating is unique to the New England area and the Concrete Surface Retarder is not a coating and, therefore, these categories are not necessary for the proposed rule.

Comparison with BACT (SCAQMD Rule 1113)

SCAQMD Rule 1113 ROC Limits would be Best Available Control Technology (BACT) because it would be the most effective emission control device, emission limit, or technique that has been required or used for this type of equipment. These limits would

Table 2. Comparison of Proposal with SCAQMD Rule 1113 ROC Limits

Coating Category	ROC Limit – Rule 74.2 (proposed)	ROC Limit – SCAQMD (Adopted)
Al Roof Coating	400	100
Concrete Curing ⁵	350	100
Floor Coating	100	50
Indus. Maintenance	250	100
Nonflats	100	50
Nonflat –Hi Gloss	150	50
Rust Preventative	250	100
Stains	250	100
Waterproof Sealers	275 (wood)	100
Zinc-Rich Primers	340	100

For the 10 coating categories listed in Table 2, the proposed ROC limits for Rule 74.2 are less stringent than the adopted limits in South Coast AQMD’s Rule 1113. An important caveat is that the South Coast rule contains an averaging provision that allows industry to more easily comply with the more stringent limits in Table 2. The SCAQMD’s averaging provisions allow manufacturers to average the ROC content of their coatings that over-comply with the proposed limits with other coatings that do not comply as long as the overall emission reductions are equivalent or lower. Ventura County is not proposing to renew an existing averaging provision because the Environmental Protection Agency has identified an this provision as a deficiency in the State Implementation Plan because of enforceability issues (FR Sept 20, 2002, Vol. 67, Number 183). Moreover, ARB staff established limits in the 2007 SCM that could be met without the need for industry to develop averaging programs. Another drawback of the averaging provision is that this regulatory scenario may tend to favor larger paint manufacturers with large product portfolios that can facilitate averaging schemes.

Another important difference between proposed amendments to Rule 74.2 and SCAQMD Rule 1113 is that wood coatings in Rule 1113 are not eligible for the one quart small container exemption. Proposed Rule 74.2 retains the one quart small container exemption for all coating categories. The most recent

⁵ The 100 grams per liter ROC limit does not apply to roadways or bridges.

ARB survey reported that only three percent of the sales volume was derived from small containers (quarts or less).

Comparison of Air Pollution Control Requirement Elements

Health and Safety Code Section 40727.2.(c) requires the district review the following elements in the comparative analysis between proposed amendments to Rule 74.2 and federal and BACT rules:

- Averaging provisions, units and any other pertinent provisions associated with emission limits.
- Operating parameters and work practice requirements.
- Monitoring, reporting and recordkeeping requirements, including test methods, format, content and frequency.
- Any other element the district determines warrants review.

The averaging provisions in Rule 74.2 sunset in 2005, and no new averaging provisions are being proposed. The coating (emission) limits in proposed amendments to Rule 74.2 are stated as grams of ROC

per liter of coating less water and less exempt organic compounds. These units are identical to the units in both the national rule and SCAQMD Rule 1113.

There are no air pollution control requirements involving operating parameters in any of the rules subject to this analysis. Proposed amendments to Rule 74.2 include a work practice requirement that calls for closing coating and solvent containers when not in use. Similar requirements are found in the national rule and SCAQMD Rule 1113.

There are no monitoring or recordkeeping requirements in proposed amendments to Rule 74.2. Test Methods have been included in proposed Rule 74.2 are needed to determine ROC content and other coating characteristics. These test methods do not conflict with test methods cited in the national rule or SCAQMD Rule 1113. District staff has determined there are no other air pollution control requirement elements that warrant review in this comparative analysis.

IMPACT OF THE PROPOSED RULE REVISIONS

ROC Emissions Impacts

The emission reduction potential of proposed amendments to Rule 74.2 is estimated at 0.5 tons of ROC per day. This estimate is based on the SCM reductions estimated by CARB staff adjusted for the population of Ventura County, which is 2.2 percent of the state population, and adjusted for 80 percent rule effectiveness. The estimated rule effectiveness is based on the potential for abuse of the quart exemption and possible misuse of coatings by ignoring label recommendations. Without the correction for rule effectiveness, the estimated emission reductions based on the SCM analysis would have been 0.62 tons of ROC per day.

Socioeconomic Impacts Analysis

H & SC Section 40728.5 requires a district to perform an assessment of the socioeconomic impacts before adopting, amending, or repealing a rule that will significantly affect air quality or emission limitations. The district board is required to actively consider the socioeconomic impact of the proposal and make a good faith effort to minimize adverse socioeconomic impacts.

H & SC Section 40728.5 defines “socioeconomic impact” as the following:

1. The type of industry or business, including small business, affected by the rule.
2. The impact of the rule on employment and the economy of the region.
3. The range of probable costs, including costs to industry or business, including small business.
4. The availability and cost-effectiveness of alternatives to the proposed rule.
5. The emission reduction potential of the rule.
6. The necessity of adopting the rule to attain state and federal ambient air standards.

The South Coast Air Quality Management District (SCAQMD) amended their architectural coating Rule 1113 in 1996, 1999, 2001, 2002, 2003, 2004, 2006 and 2007. The final ROC limits from the latest adoption are more stringent than the 2007 SCM limits adopted by CARB, as shown in Table 2. SCAQMD routinely runs regional economic models to determine socioeconomic impacts of their rule adoptions and did so for their Rule 1113 adoptions. Staff has evaluated the published results of this modeling analysis and believes that it provides a worst-case scenario for potential employment

impacts in Ventura County when interpolated by population correction factors. The applicability of these results to Ventura County is premised on the idea that economic relationships between suppliers and users of architectural coatings do not differ significantly between those in Ventura and those in the South Coast.

Although the SCM is not a state regulation, CARB nevertheless analyzed the economic impacts that would result from implementation of the SCM ROC limits. Traditionally, Ventura County APCD has not used regional economic models in their socioeconomic analyses and is not proposing to do so in this rule development. Correspondence from CARB staff to the Districts states that the analysis (Chapter 7, Economic Impacts, from the SCM staff report) is appropriate for use by local air districts for determining costs and economic impacts from the proposed architectural coating rules. In addition, CARB emphasizes that it is not necessary for the districts to use a regional economic model to perform the economic analysis for the purpose of adopting amendments to Rule 74.2 “because the cost increase associated with the SCM is small (in comparison with the regional economy).”

Thus, for the purpose of this socioeconomic analysis, staff has summarized the relevant published cost, economic, and employment impacts from CARB and SCAQMD reports without doing additional economic surveys or running economic computer models.

Types of Affected Business and Industry Including Small Business

Proposed amendments to Rule 74.2 would potentially impact: (i) industries engaged in manufacturing paint, varnishes, enamels and allied products (SIC 2851); (ii) end users of architectural coatings, including do-it-yourself consumers, painting contractors (SIC 1721) that may be small businesses, and maintenance personnel; and (iii) suppliers, sellers, and solicitors of architectural coatings (SIC 5198, 5231). New construction and maintenance of the following may be impacted by this proposal: buildings; transportation infrastructure; industrial structures such as aboveground tanks; and any stationary structure or appurtenance.

Employment and Economy Impacts

Introduction: SCAQMD and CARB used different approaches in analyzing the employment and economic impacts of the proposed standards. The SCAQMD used a regional economic model to

quantify the employment impacts for all businesses in the region. In contrast, the CARB analysis focused on the impact of the SCM on the profitability of coating manufacturers to determine employment impacts for their industry only. CARB relied heavily on survey responses from coating manufacturers. CARB staff evaluated employment, business creation, and business competitiveness for the coating manufacturers in California.

While CARB determined there would be little impact on coating manufacturers using their assessment techniques, the SCAQMD analysis actually predicts employment gains for coating manufacturers in the chemical industry. Both analyses support a determination that proposed amendments to Rule 74.2 will not have an unacceptable adverse impact on employment and the economy in Ventura County.

CARB Analysis: According to CARB staff, the SCM is not expected to cause a noticeable change in California employment and payroll of the coating manufacturers because the analysis shows that the proposal will not significantly alter their profitability.

CARB staff estimated profitability impacts by analyzing the impact of these costs on return on equity (ROE) for selected sample coating manufacturers. The approach used to determine these economic impacts was as follows:

1. A sample of three representative businesses of different sizes was selected from a list of 164 affected businesses based on the sales revenues and the quantity of noncompliant coatings they manufactured.
2. Compliance with the proposal was estimated for each of these businesses.
3. Estimated cost was adjusted for federal and state taxes.
4. The three-year average ROE was calculated where data were available for each of these businesses by averaging their ROEs for 2004 through 2006. ROE is calculated by dividing the net profit by shareholders' equity (net worth for privately held companies).
5. The adjusted cost was then subtracted from the net profit data. The results were used to calculate an adjusted three-year average ROE.
6. The adjusted ROE was then compared with the ROE before the subtraction of the adjusted cost to determine the potential impact on the profitability of the businesses.

ROE reductions ranged from a decline of 1.1 percent for large businesses to a decline of 4.7 percent for small businesses. A decrease of 10 percent in ROE or more was considered to be a significant adverse impact. The threshold value of 10 percent has been used consistently since 1990 by CARB staff to determine impact severity of proposed regulations. This threshold is consistent with the thresholds used by EPA and others.

In reaching this conclusion, CARB assumed that coating manufacturers, both within and outside of California, would absorb all the costs from the adoption of this proposal. This represents the maximum impact on the manufacturers. This assumption of absorption of all costs would mean decreased profits for the coating manufacturers. However, since coating manufacturing profitability is unlikely to be significantly reduced, employment, business creation and expansion, and business competitiveness should not be significantly affected for that industry, according to CARB staff. CARB noted that its estimates of the reductions in ROE might be high. It also noted, however, that since its analysis was based on assumptions that may not be true for all businesses, it was possible that some businesses might be adversely affected.

SCAQMD Analysis: A more broad-based approach to examining employment and economic impacts within the District is to scale the results of the SCAQMD analysis of the SCAQMD Rule 1113 ROC limits, which would be a worst-case analysis of the economic impacts on proposed amendments to Rule 74.2. In examining these impacts, SCAQMD staff assumed all costs would be passed on to the user. SCAQMD staff, in their 1999 socioeconomic report and computer modeling of employment impacts, estimated that 374 jobs could be forgone in the year 2002, which is when the interim ROC standards became effective for SCAQMD and 1,464 jobs could be forgone in the year 2006 when the final ROC limits became effective. In 2015, the number of jobs foregone will be 2,120 resulting from adopting

amendments to Rule 1113. On average, approximately 1,492 jobs will be foregone annually between 2002 and 2015 in the South Coast district or about 0.02 percent decline in employment based on non-farm employment in the South Coast district at about 6.5 million jobs. In comparison, a 0.02 percent decline in non-farm employment in Ventura County represents approximately 60 jobs lost based on non-farm employment of 300,000 jobs. These results were projected through the use of the Regional Economic Models, Inc. (REMI) computer model.

The REMI model is an economic and demographic forecasting and simulation model designed to examine the economic and demographic effects resulting from policy initiatives or external events in a local economy. The employment impacts from the REMI model runs for the SCAQMD ROC limits are summarized in Table 3.

The sector with the greatest job impacts from the proposal is the construction sector (SICs 15-17). The increased costs of paints and contractor-provided painting services would reduce consumer spending on other goods and services. As a result, it is expected that there would be jobs forgone in the industries of eating and drinking (SIC 58), rest of retail (SICs 52-57,59), wholesale (SICs 50-51), miscellaneous business services (SIC 73), medical (SIC 80), and miscellaneous professional services (SICs 81, 87, 89). The chemical industry (SIC 28) is expected to add jobs in the SCAQMD because increased expenditures made on reformulated coatings (and other associated activities) in this sector. Because there are no coating manufacturers in Ventura County, these added jobs are not included in our assessment.

Conclusion: Because there are no architectural coating manufacturers in the county, there should be no local impact on ROE and very little impacts on employment, business creation and expansion, and business competitiveness for these companies.

TABLE 3 - Employment Impact of SCAQMD Rule 1113 ROC Limits

INDUSTRY(SIC)	2002	2006	2015	Avg. Annual	INDUSTRY(SIC)	2002	2006	2015	Avg Annual
Lumber (24)	-1	-5	-6	-5	Local/Interurban (41)	-2	-9	-12	-9
Furniture (25)	-4	-13	-15	-12	Air Transp. (45)	-1	-4	-4	-4
Stone, Clay (32)	-1	-5	-7	-5	Other Transp. (44, 46-47)	-1	-5	-7	-5
Primary Metals (33)	0	-2	-3	-2	Communication (48)	-4	-14	-12	-11
Fabricated Metal (34)	-2	-8	-13	-9	Public Utilities (49)	-3	-10	-13	-10
Non-electric Machinery (35)	-3	-8	-9	-7	Banking (60)	-10	-38	-44	-34
Electric Equipment (36)	-2	-7	-8	-7	Insurance (63, 64)	-8	-30	-38	-29
Motor Vehicle (371)	-1	-2	-3	-2	Credit & Finance (61-62)	-8	-33	-42	-31
Rest of Transp. Equip(372-379)	-1	-3	-5	-4	Real Estate (65)	-11	-37	-25	-26
Instruments (38)	-2	-8	-10	-8	Eating & Drinking (58)	-34	-123	-146	-110
Misc. Manufacturing (39)	-1	-4	-7	-5	Rest of Retail (52-57, 59)	-76	-271	-311	-241
Food (20)	-3	-12	-14	-11	Wholesale (50-51)	-17	-62	-78	-59
Tobacco Manufacturing (21)	0	0	0	0	Hotels (70)	-2	-12	-24	-15
Textiles (22)	-1	-3	-4	-3	Personal Services & Repair (72, 76)	-15	-58	-79	-56
Apparel (23)	-3	-10	-12	-9	Private Household (88)	-6	-20	-22	-17
Paper (26)	0	-2	-5	-3	Auto Repair/ Service (75)	-9	-36	-42	-32
Printing (27)	-2	-8	-14	-9	Misc. Business Serv. (73)	-26	-109	-185	-124
Chemicals	30	107	81	74	Amuse & Recreation (79)	-14	-54	-66	-49
Petroleum Products (29)	-1	-3	-3	-2	Motion Pictures (78)	-1	-5	-9	-6
Rubber (30)	0	-2	-7	-4	Medical (80)	-4	-22	-61	-33
Leather (31)	0	-1	-1	-1	Prof. Serv. (81, 87, 89)	-21	-85	-132	-92
Mining (10,12-14)	-1	-2	-3	-2	Education (82)	-21	-79	-87	-68
Construction (15-17)	-44	-170	-233	-168	Non-Profit Org. (83)	-23	-93	-112	-83
Railroad (40)	0	0	0	0	Agri./Forest/Fish (07-09)	-3	-13	-19	-13
Trucking (42)	-3	-11	-13	-11	Government	-8	-60	-237	-122
					TOTAL	-374	-1464	-2120	-1492

The employment and economy impacts from South Coast's 10 percent increase in architectural coatings prices (as noted, SCAQMD staff assumed all manufacturing cost increases would be passed on) may be scaled for Ventura County. The number of jobs in the District is approximately one twentieth the number for SCAQMD. Thus, if one extrapolates SCAQMD data from Table 2 to VCAPCD, the number of jobs lost would be $(1492 + 74)/20$ or 78. Note that we have added the 74 manufacturing jobs created in SCAQMD that acted to reduce total job

loss by 74 because we expect no similar job creation in Ventura County, given that Ventura County has no architectural coating manufacturers.

Range of Probable Costs

The employment and economic impacts discussed above are the result of cost increases, if any, caused by adoption of the proposed rule. In this section, we discuss the likely cost impacts. We have examined these cost impacts on manufacturers and consumers

by looking at both the CARB and SCAQMD analyses. CARB staff prepared a detailed assessment of the expected costs in the SCM staff report. They examined both the economic impacts on the coating manufacturers and the consumers of coatings.

Proposed amendments to Rule 74.2 may impact consumers and other users of architectural coatings in the form of increased coating costs. CARB staff determined the maximum potential cost to consumers by assuming that manufacturers will pass on all increases in reformulation costs. An evaluation of cost impacts to coating manufacturers is needed to perform this worst-case cost analysis for consumer impacts.

Cost Data Sources: CARB staff relied on industry responses to the 2007 ARB Economic Impacts Survey for coating costs specific to manufacturers. ARB received 36 responses from a group of 147 manufacturers who would be impacted by the proposed ROC limits. These responses were

manufacturers' best estimate of the costs of meeting the proposal including evaluation of nonrecurring and recurring costs. Nonrecurring costs include research and development costs, product and consumer testing costs, new or modified capital equipment costs, and one-time marketing/label changes. Recurring costs include raw material costs, recordkeeping costs, and reporting costs.

The 2007 ARB Economic Survey responses represented a wide range of manufacturer sizes including a variety of large, medium, and small companies, representing about 39 percent of the architectural coatings market in California. Table 4 lists these respondents. Many companies will not be impacted by the proposal including those companies whose products already comply with the proposed limits and those companies that do not market products in those categories affected by the proposal. Twelve out of the 36 respondents indicated that they would not incur any costs to meet the SCM proposed limits.

TABLE 4 - Manufacturers Responding to Economic Impact Survey

1	3M Company	19	Jones Blair
2	Ace Hardware Paint Division	20	Kelly Moore Paint Company
3	Bay Systems North America LLC	21	Life Paint Company
4	Bonakemi	22	Minuteman Int. – Multi Clean Division
5	Carlise Coating & Waterproofing Inc.	23	Mortex Manufacturing Co. Inc.
6	Connlin Company Inc.	24	Pacific Polymers International Inc.
7	Ellis Paint Company	25	Ponderosa Paint Company
8	Epmar Corporation	26	RJ McGlennon Inc.
9	ER Systems Inc.	27	Sherwin Williams
10	Frazee	28	Specialty Coat and Chemical
11	Gemini Industries	29	Technical Roofing and Solutions Inc.
12	Griggs Paint of Domcom Enterprises Inc.	30	The Garland Company
13	Henry Company	31	United Gilsonite Laboratories
14	Hillyard	32	United States Gypsum
15	Ingels Inc.	33	Valspar Architectural Coatings
16	Insi-X Products Corporation	34	Waterlox Coatings Corporation
17	Jasco Chemical Corporation	35	XIM Products Inc.
18	JFB Hart Coatings Inc.	36	ZRC Worldwide

In addition to the cost data supplied by manufacturers, CARB staff researched the raw material costs needed for coating reformulation. Sample complying and noncomplying product formulations were developed based on responses to ARB's 2005 Survey, product data sheets, and input from manufacturers. ARB determined the costs from changing raw materials needed for reformulation by obtaining information from the Chemical Market Reporter Magazine, chemical manufacturers, and

distributors of raw materials. In cases where a price range or multiple prices were found for a particular ingredient, ARB used the highest price found in the analysis. For ingredients where no price information was available, a default value of \$1.50 per pound was assigned to those ingredients. This value is higher than most of the ingredient prices used in the raw material cost analysis including resins, which are the most expensive main ingredients.

In amending SCAQMD Rule 1113, cost estimates were based on cost information supplied by resin suppliers and some coating manufacturers. For the most part, resin suppliers were the most cooperative in providing price information.

Costs to Manufacturers: CARB staff determined costs to manufacturers in California outside of the SCAQMD to reformulate noncompliant coatings to comply with the proposed ROC limits for each of the affected coating categories. The detailed calculations and assumptions may be found in the SCM staff report. The total annualized cost of the proposed SCM was \$12.3 million, which consists of \$4 million per year in nonrecurring costs and \$8.3 million in annual recurring costs. For comparison, the total annualized cost to manufacturers estimated by SCAQMD to meet the more stringent ROC limits was \$73.6 million in 2006. The average annual cost of compliance in the South Coast district was estimated by AQMD staff at \$58.3 million from 2002 to 2015. These numbers were as reported in their respective economic analyses. A comparison of the total annual costs reported by CARB and SCAQMD analyses show much higher costs of compliance in the South Coast AQMD, most likely a result of their more stringent ROC limits and/or additional administrative requirements.

Conclusion: Since Ventura County is proposing to adopt the SCM rather than the South Coast AQMD Rule 1113, the cost to coating manufacturers will be significantly lower. Apportioning that cost to Ventura County using a population factor (4.1% of the state's population excluding the South Coast district), the annualized costs to manufacturers to comply with proposed amendments to Rule 74.2 would be about \$505,000 per year. As a comparison the Ventura County Gross County Product is about \$24 billion. This cost of compliance would be significantly higher at \$893,000 per year to adopt the limits in South Coast AQMD Rule 1113 based on a cost-effectiveness analysis performed by SCAQMD in 2006.

Cost to Consumers

CARB Analysis: CARB staff projected the maximum potential impact on consumers by assuming that all the costs of reformulation in the previous section are passed on in the form of higher coating price. Using this assumption, the product cost increases for all impacted categories ranges from a net savings to \$6.82 per reformulated gallon with an average increase of 30 cents per gallon. The retail price increase is estimated using a 4X multiplier if

both the wholesaler and retailer each double the price. Part of this cost increase results from the training and service provided by wholesalers and retailers to their customers. Thus, the estimated maximum retail price increase would range from a net savings to \$27.30 per reformulated gallon with an average increase of \$1.21 per gallon as shown in the third column of Table 5. Assuming the average retail price of noncomplying coatings currently ranges from \$11.84 to \$38.70 per gallon with an average price of \$19.20, the maximum increase in retail prices is 47 percent and the average increase is approximately six percent. The largest price increases occur at industrial maintenance and other commercial coating applications.

CARB staff also estimated the expected costs to consumers. For ordinary consumers who use flat house paint, non-flat house paints, and Primers/Sealers/Undercoaters, CARB staff projects a price ranging from a net savings to a maximum \$4.40 per reformulated gallon with an average potential increase of about \$1.65 per gallon. They note that consumers may purchase currently available compliant flat and non-flat coatings with no increase in price due to reformulation. The competition among suppliers of these coatings will likely constrain any price increases from reformulated coatings. Thus, costs to consumers from proposed amendments to Rule 74.2 should be small.

SCAQMD Analysis: Results of the SCAQMD analysis are similar to the results of the CARB analysis. Based on available information, South Coast AQMD staff estimated that the Rule 1113 ROC standards would result in maximum price increases for future complying coatings of up to 20 percent. The 1999 SCAQMD Socioeconomic Report for Rule 1113 projects a worst-case 20 percent increase across-the-board for all major categories. The SCAQMD price determinations for complying coatings were supported by information received by them from resin suppliers and coating manufacturers. The following sources were cited by SCAQMD to provide coating price estimates:

- A case study by Devoe & Reynolds Co. published in *Stirring Up Innovation* (1994) noted a 10 percent increase in costs for <250 g/l industrial maintenance, non-flat and wood stain coatings.
- A Superior Coating paper at the April 28, 1998, SCAQMD Architectural Coatings Technology Conference (*Superior Performance Coatings*) noted a 0 to 10 percent increase in the cost per gallon of

- zero-ROC non-flat, primer sealer and undercoater, rust preventative, industrial maintenance and stain coatings.
- Another paper at the 1998 Architectural Coating Technology Conference indicated examples of zero-ROC flats, non-flats, primer sealer and undercoaters, rust preventatives, quick-dry enamels, floor coatings, industrial maintenance coatings, wood sealers and wood stain coatings that have superior or matching coating performance while simultaneously reducing production and application costs (*ROC free Paints and Inks at No Extra Cost* by G.

- Sugerman of PPA Technologies, a resin supplier).
- Norman Mowrer of Ameron International also presented a paper at the 1998 Technology Conference that reported reduced costs for industrial maintenance coatings based on cost per performance characteristics.

Conclusion: Although the maximum expected price impacts on consumers are significant, the actual cost impacts are likely to be small because of competitive pricing pressures from existing complying coatings.

Table 5 - Estimates of Projected Maximum Coating Price Increases (ARB, 2007)

Coating Category	Typical Non-Complying Cost per Gallon	Cost Increase to Consumers per Gallon ⁶
Aluminum Roof	\$14.63	\$1.16
Bituminous Roof	\$11.84	\$6.43
Concrete Masonry Sealer	\$14.09	-\$0.88
Dry Fog	\$34.86	-\$3.96
Flat	\$17.81	-\$0.33
Floor	\$16.96	\$27.30
Mastic Texture	\$17.72	\$8.61
Non Flat	\$19.44	\$4.40
Non Flat High Gloss	\$23.96	-\$3.39
Primer Sealer Undercoater	\$16.90	\$2.51
Roof	\$29.94	\$1.95
Rust Preventative	\$30.30	-\$2.51
Specialty Primer Sealer Undercoater	\$25.19	-\$6.32
Traffic Marking	\$14.18	\$4.00
Waterproofing Membrane	\$33.38	\$16.97
Wood Coatings	\$38.70	-\$6.34
Weighted Average		\$1.21

Cost to Small Business

The costs of the proposal to small businesses including small coating manufacturers, retailers, wholesalers, and painting contractors were evaluated based on studies performed by CARB and SCAQMD. CARB staff again focused on the cost incurred by coating manufacturers while the SCAQMD evaluated the cost impacts on painting contractors. Staff believes that these studies are applicable to Ventura County because the economic

factors affecting architectural coating manufacturers, wholesalers, retailers and painting contractors is similar to other areas of California.

CARB Analysis: CARB staff analyzed the impact of the SCM on the competitiveness of small business coating manufacturers that compete with large coating manufacturers. According to CARB staff, smaller coating manufacturers tend to cater to niche markets that are based on competitive factors other than price. These companies depend on specialty

⁶ Cost increase per gallon is four times the sum of raw material cost differences plus recurring costs of reformulation plus nonrecurring costs of reformulation divided by the number of noncomplying gallons.

coatings, brand loyalty, customer service, and other non-price related factors.

According to CARB staff, small business retailers and wholesalers generally sell products from all types of manufacturers and should be unaffected by proposed amendments to Rule 74.2. High performance coatings that currently comply with the proposed ROC limits are available now from many different manufacturers. A list of coatings complying with the proposed standards was compiled by CARB staff and is shown in Appendix A. Thus, retailers should have an ample supply and a variety of products to sell.

SCAQMD Analysis: The SCAQMD staff analyzed the cost impacts to painting contractors in their analysis of amendments to their Rule 1113. Based on data from industry sources, the estimated average annual cost of their ROC limits in the South Coast district was \$32 million dollars to consumers and \$26.3 million dollars to painting contractors (SIC 1721) from 2002 through 2015. According to SCAQMD staff, painting contractors and consumers could incur additional costs beyond these amounts. For the painting contractor, it could be the cost of training, learning, and testing the new reformulated coatings, and litigation costs. These additional costs are based on claims made by some coating manufacturers and some paint contractors and not on any empirical studies. These costs assume coating manufacturers pass through all reformulation costs to end-users.

Conclusion: An estimate of cost impacts to painting contractors in Ventura County was made by assuming that the cost breakdown (consumer vs. painting contractor) is similar to that found in the South Coast AQMD. This is a reasonable assumption because the type and quantity of work performed by painting contractors is expected to be similar in both regions on a per capita basis. SCAQMD staff estimates that 45 percent of the cost impact is experienced by painting contractors. Thus, the maximum cost impact to Ventura County area painting contractors would be 45 percent of \$505,000, which is \$227,000.

Emission Reduction Potential of the Rule

The emission reduction potential of proposed amendments to Rule 74.2 is estimated at 0.5 tons of ROC per day. This estimate is based on the SCM ROC reductions 15(tons/day) estimated by CARB staff corrected by the population of Ventura County, which is 4.1 percent of the population of California

excluding the South Coast AQMD and corrected by a rule effectiveness forecast of 80 percent. The rule effectiveness is an estimate of lost emission reductions resulting from misuse of the small container exemption and misuse of coatings in violation of label recommendations.

Cost-Effectiveness

Both CARB and SCAQMD staff reported cost-effectiveness calculations for the SCM and Rule 1113 standards, respectively. The SCM, which is based partly on SCAQMD Rule 1113, is the basis for proposed amendments to Rule 74.2. In addition, ARB staff performed a sensitivity analysis with the increase in resin costs as the dependent parameter. This CARB analysis was performed using resin costs increasing at 10 percent, 20 percent, and 50 percent per year. Both reports include cost-effectiveness values for each of the major coating categories that are proposed for amendment.

The overall cost-effectiveness of the new standards in the 2007 SCM is \$1.12 per pound of ROC reduced according to CARB, which assume a conservative 20 percent increase in raw material resin costs. This is much less than the 1999 projection of \$6.65 per pound of ROC reduced for SCAQMD Rule 1113 over the years 2002-2015(based on 1998 Dollars). The individual coating category cost-effectiveness results from the ARB analysis are summarized in Table 6. This table shows that many categories are cost-effective and some of them are associated with cost savings. The \$13.90 per pound ROC reduced for Floor Coatings results from the fact that large number of noncomplying coatings are sold in small volumes. However, the complying share of the floor coating market is 85 percent since many manufacturers have already reformulated their coatings. Therefore, it is reasonable to assume that the remaining manufacturers can also reformulate.

Table 6 - Cost-Effectiveness (\$/lb. ROC Reduced)

Coating Category	CARB 2007 SCM
Aluminum Roof	\$0.41
Bituminous Roof	\$1.02
Concrete Masonry Sealer	-\$0.36
Dry Fog	-\$0.52
Flat	-\$0.69
Floor	\$13.90
Mastic Texture	\$2.38
Non Flat	\$7.03
Non Flat High Gloss	-\$1.38
Primer/Sealer/Undercoater	\$2.73
Roof	\$1.38
Rust Preventative	-\$0.46
Specialty Primer/Sealer/Undercoater	-\$0.71
Traffic Marking	\$4.76
Waterproofing Membrane	\$6.55
Wood Coatings	-\$1.13
Overall Cost-Effectiveness	\$1.12

Conclusion: The cost-effectiveness of proposed amendments to Rule 74.2 was calculated based on annualized costs projected by ARB staff. The total annualized cost was estimated at \$505,000 based on apportioning manufacturer reformulation costs by the population of the county. The ROC emission reductions are anticipated to be 0.5 tons per day or 365,000 pounds per year. Therefore, the cost-

effectiveness is the ratio of these numbers (\$505,000/365,000 pounds) or \$1.38 per pound of ROC reduced. This is much less than the \$9 per pound of ROC reduced that is required for Best Available Control Technology for new stationary sources in the county.

Incremental Cost-Effectiveness Analysis

H & SC Section 40920.6(a) requires districts to identify one or more potential control options that achieve at least the same benefit as the proposed rule, assess the cost-effectiveness of those options, and calculate the incremental cost-effectiveness. The only alternative that achieves at least the same benefit is the adoption of final ROC limits from South Coast AQMD Rule 1113. Proposed amendments to Rule 74.2 are based on the SCM which is not as stringent as the ROC limits from SCAQMD Rule 1113. As stated earlier, the cost-effectiveness of the ROC limits in Rule 1113 is \$8.18 per pound of ROC reduced. The incremental cost-effectiveness is calculated by dividing the incremental annualized costs in the district by the incremental annual emission reductions in the district. The incremental cost-effectiveness for this control option is \$15.47 per pound of ROC reduced. These calculations are summarized in Table 7.

Table 7 Calculation of Incremental Cost-Effectiveness for SCAQMD ROC Limits Option

I. OPTION CONTROL EFFICIENCY = 46% AND COST-EFFECTIVENESS = \$8.18
II. Baseline Inventory = 2.1 tons/day for Ventura County Arch. Coatings
III. Annualized Cost for Proposal = 0.50 tons/day X \$1.38/lb = \$505,000
IV. Option Emission Reductions = 2.1 tons/day X 46% = 705,180 lbs/year
V. Option Annualized Cost = Cost-Effectiveness X Emis. Reductions = \$8.18 X 705,180 lbs/yr = \$5,768,372
VI. Incremental Annualized Cost = \$5,768,180 - \$505,000 = \$5,263,372
VII. Incremental Annual Emis. Reductions = 705,180 – 365,000= 340,180 lbs/yr
VIII. Incremental Cost-Effectiveness = \$5,263,372 / 340,180 = \$15.47 per pound

ENVIRONMENTAL IMPACTS OF METHODS OF COMPLIANCE

California Public Resources Code Section 21159 requires the District to perform an environmental analysis of the reasonably foreseeable methods of compliance. The analysis must include the following information on proposed amendments to Rule 74.2:

- (1) *An analysis of the reasonably foreseeable environmental impacts of the methods of compliance.*
- (2) *An analysis of the reasonably foreseeable mitigation measures.*
- (3) *An analysis of the reasonably foreseeable alternative means of compliance with the rule or regulation.*

Table 8 lists some reasonably foreseeable compliance methods, the environmental impacts of those methods, and measures that could be used to mitigate the environmental impacts. A more detailed environmental analysis will be found in the staff environmental impact report for proposed amendments to Rule 74.2.

Table 8
Environmental Impacts and Mitigations of Methods of Compliance

Compliance Methods (including all reasonably foreseeable alternative means of compliance)	Reasonably Foreseeable Environmental Impacts	Reasonably Foreseeable Mitigation Measures
Reformulation of architectural coatings	Air Quality Impacts: Reformulation may result in the use of toxic materials.	Operators may use reformulated coatings with less or no toxic materials.
	Water Impacts: Improper disposal of coatings may cause water impacts.	Compliance with wastewater discharge standards and waste disposal requirements will mitigate these impacts.
	Human Health Impacts: Coatings may be replaced with products containing more toxic compounds.	Compliance with OSHA safety guidelines (e.g., personal protective equipment, prevention and response, emergency first aid procedures) reduces these impacts.

OTHER FACTORS

Technological Feasibility:

The ROC limits proposed in the amendments to Rule 74.2 are based on ROC limits fully analyzed for technological feasibility by the Air Resources Board in the SCM and by the South Coast AQMD in its Rule 1113. Currently, coatings that meet the proposed ROC limits are being manufactured and sold in California (see CARB’s Staff Report for the Proposed Suggested Control Measure for Architectural Coatings dated September 2007.)

Enforceability

Labeling requirements, reporting requirements, and testing procedures have been included in the proposed rule to increase its enforceability.

Public Acceptability

Staff is soliciting comments, but expects the rule and any associated costs to be acceptable to affected manufacturers and users for the following reasons:

- Future effective date for some ROC limits at 2012 will allow time for manufacturers to reformulate, if needed.

- A three-year sell-through provision will allow suppliers, retailers, and users to deplete existing coating inventories without penalty and without creating a hazardous waste problem.
- High-performance coatings are available now from many companies that comply with the proposed ROC limits. A list partial list of coatings that are compliant with the proposed ROC limits was tabulated by ARB staff and is provided in Appendix A.
- Coating price increases as a result of this proposal are not expected to be significant.
- Estimated profitability impacts on coating manufacturers are not expected to be significant.

Environmental Compliance and Review

Proposed amendments to Rule 74.2 strengthen the ROC content limits for architectural coatings. The rule creates new lower standards for specified coating categories. In addition, it will raise the ROC limits for a few specified coating categories. The rule may have a potentially adverse environmental impact. Pursuant to county administrative supplement to state CEQA Guidelines, the District staff will propose

reusing the 2001 Environmental Impact Report prepared for the 2001 amendments to Rule 74.2.

Future Technology Assessments

ARB and SCAQMD staffs have committed to conducting technology assessments for each coating category with lower proposed future limits one year prior to the effective date of the lowered limits.

SCAQM has published Rule 1113 status reports on their website (aqmd.gov) for the following years: 2000, 2001, 2002, 2003, 2004, 2005, and 2007. This annual review by SCAQMD staff all proposed limits are feasible. However, the District's rulemaking process is flexible enough for staff to revisit the rule and to make any appropriate changes to the rule as needed in the future.

REFERENCES

Air Resources Board, Final Environmental Impact Report for the Suggested Control Measure for Architectural Coatings (ARB, 2000)

Air Resources Board, Resolution 07-46, Agenda Item No. 07-10-5, October 26, 2007.

Air Resources Board, Staff Report for the Suggested Control Measure for Architectural Coatings (ARB, 2007)

Air Resources Board, Technical Support Document for Proposed Amendments to the SCM for Architectural Coatings, September 2007.

Air Resources Board, 2007 Draft Compliant Products List.

Federal Register, "Revisions to the California State Implementation Plan: San Joaquin, Ventura and Santa Barbara," September 20, 2002 (Vol. 67 No. 183).

Goldstene, James. N., Air Resources Board, Letter to Air Pollution Control Officers, February 1, 2008.

Mersburg, Al, "Superior Performance Coatings." Proceedings of the April 28, 1998, Architectural Coatings Technology Conference, South Coast AQMD.

Mowrer, Norman R., Ameron International. "High Performance Coatings Based on Epoxy Siloxane Hybrid Polymers." Proceedings of the April 28, 1998, Architectural Coatings Technology Conference, SCAQMD.

South Coast AQMD Staff Report for the Amendments to Rule 1113, Architectural Coatings, May 1999.

South Coast AQMD, Socioeconomic Report for the Amendments to Rule 1113, Architectural Coatings, May 1999.

South Coast AQMD Final Socioeconomic Impact Assessment to Proposed Amendments to Rule 1113, October 1996.

Stirring Up Innovation. A case study by Devoe & Reynolds Co (Inform Inc. New York, NY, 1994)

Sugerman, Gerald, "ROC Free Paints and Inks at No Extra Cost." Proceedings of the April 28, 1998, Architectural

Van DeMark, Michael R. and Kathryn Sandefur, "Flat Coatings Technology Assessment" UMR Coatings Institute, University of Missouri-Rolla.
