

II.

EXECUTIVE SUMMARY

A. INTRODUCTION

In this executive summary, we provide an abbreviated version of the information covered in the staff report. The executive summary is written in “question and answer” format and covers the following topics:

- Summary of the proposed suggested control measure (SCM)
- SCM development process and evaluation of alternatives
- Compliance with the proposed SCM
- Environmental Impacts
- Economic Impacts
- Future Plans

B. SUMMARY OF PROPOSED SUGGESTED CONTROL MEASURE (SCM)

What are architectural coatings?

Architectural coatings, as defined in the SCM, are coatings that are applied to stationary structures and their appurtenances at the site of installation, to portable buildings at the site of installation, to pavements, or to curbs. To be classified as an architectural coating, a coating must be applied in the field, at the site of installation, rather than in a shop or factory where pollution control equipment may be installed. The “appurtenances” included in the definition range from pipes to downspouts.

Architectural coatings include, but are not limited to paints, varnishes, stains, industrial maintenance coatings, and traffic coatings. General use flat and non-flat (eggshell, satin, semi-gloss, gloss) coatings account for about 61 percent of the sales of architectural coatings. The remaining sales consist of a variety of specialty coating categories. Architectural coatings, as defined in this SCM, do not include aerosol coatings (e.g., spray paint).

Why are we proposing the SCM?

We are proposing the SCM to help districts meet state implementation plan (SIP) and California Clean Air Act (CCAA) plan requirements. The SIP is California’s master plan for achieving federal air quality standards. It includes the individual local air districts’ air quality programs, the ARB’s mobile source, fuels, and consumer products control programs, California’s vehicle inspection and maintenance programs, and federal measures. The CCAA plans are districts’ plans designed to achieve the State ozone standard.

The SCM is also necessary to help fulfill the conditions of a SIP lawsuit settlement agreement. Specifically, on September 18, 1997, three environmental groups (Communities for a Better Environment, the Coalition for Clean Air, and the Natural Resources Defense Council) filed a lawsuit in the United States District Court for the Central District of California. The lawsuit was filed against the ARB, the South Coast Air Quality Management District, and the United States Environmental Protection Agency, and was related to California's progress in achieving the 1994 SIP commitments. However, a settlement agreement was reached with these groups, under which the ARB staff committed, among other things, to proposing a number of control measures for the Board's consideration, including the SCM for architectural coatings.

We are also proposing the SCM to update the last SCM for architectural coatings, which was approved in 1989. Since that time, technological advances in resin technology have made it possible to meet lower VOC limits. The proposed SCM reflects these advances in technology, consistent with the South Coast AQMD's May 14, 1999, amendments to Rule 1113.

As with all SCMs and model rules, we are also proposing the SCM to promote consistency and uniformity among district rules. This is desirable because it makes it easier for manufacturers and painting contractors to comply with district rules.

Finally, we are proposing the SCM and the associated Program Environmental Impact Report (EIR) to provide assistance to the districts. When the 1989 SCM was approved, several districts that attempted to adopt and implement rules based on it were delayed by legal actions brought by some representatives of the architectural coatings industry. A central issue in these lawsuits was whether the districts had adequately analyzed the potential environmental impacts of their proposed rules, as required by the California Environmental Quality Act (CEQA). The proposed SCM is supported by a comprehensive Program EIR prepared by the ARB, that can be used by each district preparing whatever CEQA document a district chooses to prepare for its own architectural coatings rules. The ARB is committed to assisting the districts in adopting architectural coatings rules based on the proposed SCM.

How are emissions from architectural coatings controlled in the SCM?

Architectural coatings contain solvents, which evaporate when they are applied. Most of the solvents used in architectural coatings are volatile organic compounds (VOCs) that contribute to California's air quality problems. The SCM controls VOC emissions by establishing limits on the VOC content of architectural coatings. These VOC limits are expressed in grams of VOC per liter of coating (or pounds of VOC per gallon), less water and exempt compounds, and vary with each coating category. In general, manufacturers will meet the VOC limits by replacing some of the solvents in architectural coatings with water or other exempt compounds, or by increasing the amount of solids, such as resins and pigments.

What architectural coating categories are in the proposed SCM?

As shown in Table 1 below, the proposed SCM (see Appendix A) will establish VOC content limits for 47 categories (including subcategories) of architectural coatings. These coating categories are very similar to those in existing district rules in California. This is a full update of the 1989 SCM, establishing standards for 47 categories of coatings. However, this SCM lowers limits for only 11 of these 47 categories, relative to typical limits currently in effect in California. These 11 categories account for about 80 percent of the total emissions from the categories in the proposed SCM, and are noted in Table 1 with a double asterisk.

Table 1		
Architectural Coatings Categories in Proposed Suggested Control Measure		
Coating Category	Proposed VOC Limit*	Effective Date
Flat Coatings	100**	1/1/2003
Non-flat Coatings		
- All Others	150**	1/1/2003
- High Gloss	250	1/1/2003
<i>Specialty Coatings:</i>		
Antenna Coatings	530	1/1/2003
Antifouling Coatings	400	1/1/2003
Bituminous Roof Coatings	300	1/1/2003
Bituminous Roof Primer Coatings	350	1/1/2003
Bond Breakers	350	1/1/2003
Clear Wood Coatings		
- Clear Brushing Lacquers	680	1/1/2003
- Lacquers (including lacquer sanding sealers)	550**	1/1/2003
- Sanding Sealers (other than lacquer sanding sealers)	350	1/1/2003
- Varnishes	350	1/1/2003
Concrete Curing Compounds	350	1/1/2003
Dry Fog Coatings	400	1/1/2003
Faux Finishing Coatings	350	1/1/2003
Fire-Resistive Coatings	350	1/1/2003
Fire-Retardant Coatings		
- Clear	650	1/1/2003
- Opaque	350	1/1/2003
Floor Coatings	250	1/1/2003
Flow Coatings	420	1/1/2003
Form-Release Compounds	250	1/1/2003
Graphic Arts Coatings (sign paints)	500	1/1/2003
High-Temperature Coatings	420	1/1/2003
Industrial Maintenance Coatings	250**	1/1/2004
Low Solids Coatings	120	1/1/2003
Magnesite Cement Coatings	450	1/1/2003
Mastic Texture Coatings	300	1/1/2003
Metallic Pigmented Coatings	500	1/1/2003

**Table 1 (continued)
Architectural Coatings Categories in Proposed Suggested Control Measure**

Coating Category	Proposed VOC Limit*	Effective Date
Multi-Color Coatings	250**	1/1/2003
Pre-Treatment Wash Primers	420	1/1/2003
Primers, Sealers, and Undercoaters	200**	1/1/2003
Quick-Dry Enamels	250**	1/1/2003
Quick-Dry Primers, Sealers, and Undercoaters	200**	1/1/2003
Recycled Coatings	250	1/1/2003
Roof Coatings	250	1/1/2003
Rust Preventative Coatings	400	1/1/2003
Shellacs		
- Clear	730	1/1/2003
- Opaque	550	1/1/2003
Specialty Primers, Sealers, and Undercoaters	350	1/1/2003
Stains	250**	1/1/2003
Swimming Pool Coatings	340	1/1/2003
Swimming Pool Repair and Maintenance Coatings	340**	1/1/2003
Temperature-Indicator Safety Coatings	550	1/1/2003
Traffic Marking Coatings	150	1/1/2003
Waterproofing Sealers		
- Concrete/Masonry	400	1/1/2003
- Wood	250**	1/1/2003
Wood Preservatives	350	1/1/2003

* VOC limits expressed in grams VOC per liter of coating, less water and exempt compounds, except for low solids coatings (which are expressed in grams VOC per liter of coating, *including* water and exempt compounds).

** VOC limit lower than typical limits currently in effect in California.

How does the proposed SCM compare to the National Rule and South Coast Air Quality Management District’s Rule 1113?

Comparison to National Rule:

There are many differences between the proposed SCM and the U.S. Environmental Protection Agency’s (U.S. EPA) National Rule, which became effective on September 13, 1999. The National Rule applies only to manufacturers and importers of architectural coatings while the proposed SCM applies to manufacturers, distributors, retailers, and users of architectural coatings. The National Rule also has generally higher (less restrictive) VOC limits than current district rules and the proposed SCM. For example, the proposed VOC limits in the National Rule for the three largest coating categories (flat, non-flat, and industrial maintenance coatings) are 250, 380, and 450 grams per liter, respectively. This compares with VOC limits of 100, 150 (excluding high gloss non-flat), and 250 grams per liter, respectively, for the same categories in the SCM. The National Rule also includes 16 additional specialty categories that are not

included in the proposed SCM. These “national” categories are covered under one of the existing coating categories in the SCM. As discussed in detail in Chapter VI, ARB staff analyzed these additional national categories and found that it was not necessary to add them to the proposed SCM because: they are subject to other coating categories in existing district rules; are not architectural coatings; or, are not sold in California.

Comparison to South Coast AQMD Rule 1113:

The proposed SCM is very similar to the interim limits in the South Coast AQMD’s Rule 1113 adopted in May, 1999. However, there are some differences in the coating categories and VOC limits. The proposed SCM contains the following eight coating categories not included in Rule 1113: antenna, antifouling, high gloss non-flat, bituminous roof primers, clear brushing lacquer, flow, form release compounds, and temperature-indicator safety coatings. In another five categories (bituminous roof, floor, high-temperature, pre-treatment wash primer, and swimming pool repair and maintenance), the VOC limits differ. The differences between the proposed SCM and Rule 1113 reflect that the SCM is designed to be implemented throughout California, with varied climatic conditions. The differences also reflect the need to simplify enforcement for districts with limited resources. Specifically, the proposed limits will allow closely related coatings categories to be subject to the same VOC limit.

What is the difference between the proposed SCM and a district rule?

Control of emissions from architectural coatings is primarily the role of the local air pollution control districts and air quality management districts (“air pollution control agencies”) in California. As such, the local air pollution control agencies adopt and enforce their own architectural coatings rules. Suggested control measures (SCMs) are developed by the ARB in conjunction with the districts, and serve as model rules for use by the districts when they adopt or amend their architectural coatings rules. Widespread regulation of architectural coatings began in 1977, when the Air Resources Board approved the first SCM for architectural coatings. Many districts adopted architectural coatings rules based on this SCM and on revisions to the SCM in 1989. Currently, 17 of California’s 35 districts have adopted architectural coatings rules.

Does the SCM include an averaging provision?

No. Although the proposed SCM does not currently include an averaging provision, we are currently working with interested parties to develop such a provision. An averaging provision would provide manufacturers with some additional flexibility to meet the regulation. Under such an approach, a coating manufacturer would be able to meet the regulation by averaging emissions of overcomplying products with emissions of noncomplying products. The South Coast AQMD Rule 1113 contains such a provision, and we are considering the use of the Rule 1113 averaging approach for the SCM, but with the inclusion of a sunset date. We are proposing to include a sunset date to ensure that districts meet their SIP commitments. The sunset date is not necessary for the South Coast AQMD averaging provision because their architectural coatings rule contains future effective limits more stringent than those proposed in

the SCM. We plan to propose an averaging provision for the SCM when it is presented to the Board at the June 22, 2000, Board meeting.

Does the SCM include any other provisions to provide flexibility to industry?

Yes. The proposed SCM contains a special provision for certain industrial maintenance coatings sold and used in the San Francisco Bay Area, North Central Coast, and North Coast Air Basins. This provision would allow limited use of industrial maintenance coatings with VOC contents up to 340 g/l. This provision is designed to address the need that public services and industrial facilities have for higher VOC coatings in areas with persistent fog and cold temperatures. Under this provision, the maximum loss in emission reductions from industrial maintenance coatings in these areas would be five percent. We are proposing a quantifiable cap on the loss in emission reductions from this provision to maximize the emission reductions achieved from the industrial maintenance category. We worked closely with the affected agencies in determining the total annual volume at 340 g/l needed to meet their demand under these adverse climatic conditions.

What other requirements are included in the proposed SCM?

The proposed SCM includes several other requirements, which are similar to those found in existing district architectural coatings rules in California. These requirements include the following:

- (1) container labeling requirements regarding the date of manufacture, VOC content, thinning recommendations, and labeling specific to selected coating categories;
- (2) reporting requirements specific to clear brushing lacquers, rust preventative coatings, bituminous roof coatings; bituminous roof primers; specialty primers, sealers, and undercoaters; coatings containing methylene chloride or perchloroethylene; and recycled coatings;
- (3) a “painting practices” provision designed to limit VOC emissions from open paint containers;
- (4) a thinning provision specifying allowable thinning practices;
- (5) a “sell-through” provision allowing three years to sell products manufactured prior to the effective date of a VOC limit; and
- (6) provisions specific to industrial maintenance and rust preventative coatings.

Are any products exempt from the SCM?

Yes. Architectural coatings sold in containers with a volume of one liter or less are exempt from the SCM. This is consistent with district architectural coatings rules in California and the U.S. EPA’s national architectural coatings rule. Aerosol coating products are also exempt. However, they are subject to the ARB’s statewide aerosol coatings regulation. Finally, products manufactured for use outside of the applicable district, or for shipment to other manufacturers for reformulation or repackaging are also exempt.

Who would be affected by the proposed SCM amendments?

If adopted by the districts, the proposed SCM would apply to anyone who sells, supplies, offers for sale, or manufactures any architectural coating for use within the applicable district, as well as any person who applies or solicits the application of any architectural coating within the district. The primary impact would be on manufacturers and marketers of architectural coatings, which will have to reformulate some of their products. Manufacturers will need to devote research and development resources to develop lower VOC products, and may also need to use more expensive resins, exempt solvents, or other ingredients in their lower VOC formulations. There may also be a slight impact on distributors and retailers, who must ensure that they are selling or supplying products that comply with the new VOC limits. Suppliers of resins, solvents, and other ingredients may be impacted, depending on whether there is an increased or decreased demand for their products. Some industrial, institutional, or governmental users may need to test the new products and adjust manuals and specifications to account for the new lower VOC formulations. Finally, consumers, contractors, and other paint users may have to pay more for some architectural coatings, or may have to make some adjustments in their use of the reformulated products.

What are the district SIP commitments for architectural coatings?

Five local air districts in four federal ozone nonattainment areas included control measure commitments in the 1994 Ozone SIP to achieve additional VOC emission reductions from architectural coatings. These districts are the South Coast AQMD, Ventura County APCD, Yolo-Solano AQMD, Placer County APCD, and San Joaquin Valley Unified APCD. Yolo-Solano AQMD and Placer County APCD are part of the same federal ozone nonattainment area referred to as the Sacramento Metropolitan nonattainment area. The staff report, Chapter I, provides information on the emission reduction commitments for architectural coatings in the 1994 Ozone SIP by district and by attainment year.

Which districts are expected to adopt the proposed SCM?

At a minimum, we expect the 17 districts with current architectural coatings rules in California to amend their rules based on the SCM (with the exception of the South Coast AQMD, since the SCM was based on the interim limits in their rule). These districts are listed in Table 2 below. We also note that there are five districts that are nonattainment for the State ozone standard that do not have an architectural coatings rule: Glenn, San Luis Obispo, Shasta, and Tehama County Districts, and the Yolo-Solano AQMD. The SCM will be available for adoption by these districts in order to reduce VOC emissions and attain or maintain the State ozone standard.

We have worked closely with the districts in developing the SCM. As a result, the California Air Pollution Control Officers Association issued a position paper urging districts to adopt the SCM within 12 to 18 months of ARB approval. Architectural coatings used in districts without architectural coatings rules will be subject to the VOC limits in the U.S. EPA's National Rule.

Antelope Valley APCD	Monterey Bay Unified APCD
Bay Area AQMD	Placer County APCD
Butte County APCD	Sacramento Metropolitan AQMD
Colusa County APCD	San Diego County APCD
El Dorado County APCD	San Joaquin Valley Unified APCD
Feather River AQMD	Santa Barbara County APCD
Imperial County APCD	South Coast AQMD
Kern County APCD	Ventura County APCD
Mojave Desert AQMD	

C. SCM DEVELOPMENT PROCESS AND EVALUATION OF ALTERNATIVES

How did ARB staff develop the proposed architectural coatings SCM?

The architectural coatings SCM was developed in cooperation with local air pollution control agencies, the architectural coatings industry, the U.S. EPA, and other interested parties. The development process included the following activities: (1) a comprehensive survey of architectural coatings; (2) regular meetings with district and U.S. EPA Region IX, and industry representatives; (3) an evaluation of durability and performance testing in several coating categories; (4) an evaluation of the U.S. EPA's national architectural coatings rule; (5) technical analyses of all the coating categories proposed in the SCM; (6) an evaluation of alternatives to the SCM in a draft program environmental impact report; and (7) an analysis of the cost impacts. ARB staff also conducted eight public workshops and meetings with individual manufacturers and other interested parties from May 1998 through March 2000. A chronology of the public meetings held is shown in the table below.

Date	Meeting	Location
May 27, 1998	1 st Public Workshop	Sacramento, CA
August 20, 1998	2 nd Public Workshop	Sacramento, CA
March 30, 1999	3 rd Public Workshop	Diamond Bar, CA
June 3, 1999	4 th Public Workshop	Sacramento, CA
July 1, 1999	5 th Public Workshop	Sacramento, CA
September 8, 1999	6 th Public Workshop	Diamond Bar, CA
December 14, 1999	7 th Public Workshop	Diamond Bar, CA
March 16, 2000	8 th Public Workshop	Sacramento, CA

To solicit additional information and comments, staff also held numerous individual meetings and teleconferences with the districts, industry representatives, and the U.S. EPA.

Who has been most active in the process?

The local air pollution control agencies, architectural coatings manufacturers and marketers, trade associations, and representatives of essential public services agencies have been active in the development of the proposed SCM. The air pollution control agencies most involved in the process are members of the Architectural Coatings Working Group of the California Air Pollution Control Officers Association. The Working Group is composed of the following air pollution control agencies:

- Bay Area Air Quality Management District
- Monterey Bay Unified Air Pollution Control District
- Sacramento Metropolitan Air Quality Management District
- San Diego County Air Pollution Control District
- San Joaquin Valley Unified Air Pollution Control District
- South Coast Air Quality Management District
- Ventura County Air Pollution Control District
- Yolo-Solano Air Pollution Control District

The manufacturers, marketers and users of architectural coatings that have been involved in the process are too numerous to list, and include a broad cross-section of the industry. The essential public services agencies and the trade associations representing architectural coatings manufacturers or users include the following:

- California Department of Transportation
- California Department of Water Resources
- National Paints and Coatings Association (NPCA)
- Paint and Decorating Contractors of America (PDCA)
- Roof Coatings Manufacturers Association (RCMA)
- Society for Protective Coatings (SSPC)

What information was gathered in the ARB's 1998 Architectural Coatings Survey?

The ARB's 1998 Architectural Coatings Survey collected detailed sales and formulation information from over 150 manufacturers of architectural coatings for coatings sold in California in 1996. This information was collected for 58 different coating categories and was collected either on a product specific basis, or collectively from product groups that met certain criteria (e.g. the products must be within a 50 gram VOC per liter content range). Specifically, for each product or group of products, the survey requested the following information:

- Coating category code
- Number of products grouped
- Interior or exterior use, or dual use
- Carrier technology
- Percent by weight volume solids
- Density

- VOC actual
- VOC regulatory
- Thinning information
- California sales (in gallons)

The survey also requested for each product, or group of products, either: (1) the complete formulation; or (2) the speciation of the VOC ingredients (and exempt VOCs). Manufacturers were given either option to complete the survey.

ARB used the data collected in the survey to develop an updated emissions inventory for 1996. The technical information gathered in the survey was also used, along with other information, to develop the proposed SCM.

Did ARB staff evaluate alternatives to the proposed SCM?

Yes. Under the California Environmental Quality Act (CEQA), project alternatives should be identified in the Draft Program Environmental Impact Report (EIR). Alternatives include measures for attaining the objectives of the proposed project, and provide a means for evaluating the comparative merits of each alternative. An alternative evaluating the merits of not having the project must also be included. The alternatives considered feasible are then evaluated for potential environmental impacts that may result from their implementation.

The alternatives rejected as being infeasible in the Program EIR include:

- (1) Performance-based standards, i.e., emission standards based on coating performance;
- (2) Seasonal regulation, i.e., VOC limits for “high ozone season” only;
- (3) Regional regulation, i.e., exemption from VOC limits for regions that may not have an ozone problem;
- (4) Exceedance fees, i.e., allowing manufacturers to “pay to pollute;”
- (5) Low vapor pressure exemption, i.e., exempting VOCs with low vapor pressures in determining the overall VOC content of a coating; and
- (6) Reactivity-based VOC limits, i.e., VOC limits based on the ozone impacts of the VOCs in a coating.

The following alternatives were considered feasible in the Program EIR, but were rejected in favor of the proposed SCM:

- (1) No project, i.e., assuming that the SCM will not be adopted;
- (2) Extended compliance deadlines, i.e., extending all of the effective dates of the VOC limits to January 1, 2004;
- (3) Further reduction of VOC content limits, i.e., adopting the “final” limits of the May, 1999, SCAQMD Rule 1113 amendments (those with effective dates of 2005-2008); and

- (4) Product line averaging, i.e., allowing manufacturers to make products that have VOC contents higher than the proposed VOC limits in the SCM, if they compensate with other products that are below the proposed VOC limits.

After further evaluation of the feasible alternatives, we are developing an averaging provision that we plan to include in the proposed SCM presented to the Board at the June 22, 2000, Board meeting. These alternatives are discussed in detail in Chapter V of the Draft Program EIR.

How were the proposed VOC limits in the SCM established?

Although the VOC limits in the proposed SCM are similar to those in the South Coast AQMD's Rule 1113, ARB staff performed an independent analysis of each of the proposed limits. These analyses are included in Chapter VI of the staff report. In proposing each of the VOC limits, ARB staff considered: (1) the results of the ARB's 1998 Architectural Coatings Survey; (2) the number of complying products currently on the market; (3) trade journals and other literature related to the product category; and (4) discussions with paint and resin manufacturers. As mentioned previously, the proposed VOC limits are the product of extensive interaction with the affected coatings industry, including discussions during eight public workshops and numerous meetings and conference calls. Although each of the proposed limits is based on factors unique to each individual coating category, the following guiding principles were applied:

- Technological and commercial feasibility - assuring that reformulation technologies will be available by the effective date for each proposed limit, and that the overall performance of complying products will be similar to that of noncomplying products.
- Emission reductions achieved - assuring that our overall proposal will achieve the maximum feasible reduction in emissions.
- Minimize the potential for the use of Toxic Air Contaminants (TAC) - assuring that the proposal can be met without an increased used of TACs.

D. COMPLIANCE WITH THE SCM PROPOSAL

How will manufacturers reformulate their products to comply with the VOC limits?

Manufacturers of coatings above the proposed VOC limits will need to reformulate their products to meet the applicable VOC limits. Manufacturers have the flexibility to choose any formulation that meets the applicable VOC limits, and the reformulation options vary with each coating category (see Chapter VI of the staff report). In general, VOC solvents will need to be reduced, by increasing the amount of water, exempt solvents, or coating solids. In water-based products, VOC solvents may be partially replaced with water. This may require the use of different resin systems that require less VOC solvents. In solvent-based products, VOC solvents

may be partially replaced with paint solids or exempt solvents such as acetone. These changes may also require the use of different resin systems. For example, a higher solids formulation may need to use a less viscous resin system to improve flow and leveling. Solvent-based products may also be reformulated to a water-based system. As mentioned previously, ARB staff has proposed VOC limits that can be met without an increase in the use of Toxic Air Contaminants.

Are the VOC limits proposed in the SCM technologically and commercially feasible?

Yes. As explained in detail in Chapters IV and VI of the staff report, staff believes all of the VOC limits proposed in the SCM are technologically and commercially feasible by the effective dates in the SCM. The proposed VOC limits are targeted towards the lowest VOC content technology within a coating category that will adequately perform the intended function. Although we believe that all of the proposed VOC limits are technologically and commercially feasible, ARB staff will conduct technology reviews of the proposed VOC limits in the SCM that are lower than current limits, prior to their implementation. This is a standard practice for consumer products regulations and is intended to identify any unanticipated problems prior to implementation of the proposed VOC limits.

Our survey results demonstrate that for nearly all the coating categories, products are currently available that comply with the proposed limits. For the 11 categories for which we are proposing lower limits than the predominant limits in existing district rules, the complying marketshares range from 13 to 74 percent, with the exception of swimming pool repair and maintenance coatings. For this category, the survey indicated no complying products, but staff identified technologies in Chapter VI of the staff report that can be used by manufacturers to meet the proposed VOC limit. The complying marketshares vary widely with each coating category because the proposed limits were developed after considering a variety of factors unique to each category. These factors include the availability of reformulation options that may not be used in current products, the variety of product types in a given coating category, patents that may restrict some reformulation options, and economic issues.

Will the reformulated products perform similar to existing products?

Yes. ARB staff concludes that the overall performance of the reformulated products will be similar to the performance of their higher VOC counterparts. This conclusion is based on: (1) the current availability of complying products in the marketplace; (2) ARB staff's analyses of each product category, as detailed in Chapter VI; and (3) the results of performance studies conducted by independent laboratories (the "National Technical Systems (NTS) Study" and the "Harlan Associates Study"). The NTS study showed that when compared to conventional coatings, currently compliant, low-VOC coatings available today have similar application and performance characteristics, including blocking resistance, mar resistance, adhesion, abrasion resistance, and corrosion protection. The raw data from the Harlan Associates study was published in 1995. Although somewhat dated, the information generally supports the results of the NTS study. These studies are discussed in detail in Chapter IV of the staff report.

What are the emission reduction benefits from the architectural coatings SCM proposal?

The total emission reductions from full implementation of the proposed VOC limits is estimated to be about 10 tons per day in California, excluding the South Coast AQMD. This equates to about a 20 percent reduction in the total emissions from the coating categories in the SCM. We are not counting any emission reductions in the South Coast AQMD, because the interim limits in their rule, as amended on May 14, 1999, are similar to those in the proposed SCM. The emission reductions are calculated based on the predominant limit in existing district rules. Many of the proposed limits will not achieve significant reductions because the proposed limit is the same as the predominant limit in current district rules.

E. ENVIRONMENTAL IMPACTS

Why did we develop a Program EIR?

Both the California Environmental Quality Act (CEQA) and ARB policy require the ARB to evaluate the potential adverse environmental impacts of proposed projects. As explained in the Draft Program EIR, the ARB is authorized to prepare a plan or other written document (such as an environmental analysis chapter in the staff report) in lieu of an environmental impact report. However, the ARB chose to develop a formal "Program EIR" to assist the districts in the adoption of the SCM. State law allows a lead agency to prepare a Program EIR for a series of actions that can be characterized as one large project (subject to certain requirements as explained in the Program EIR). The ARB intends that each district may rely on the Program EIR by incorporating it by reference in whatever CEQA documents a district chooses to prepare for its own architectural coatings rule.

What are the expected environmental benefits of the architectural coatings SCM?

The primary environmental benefit of the SCM amendments will be a reduction in the formation of tropospheric (ground level) ozone and PM₁₀ (minute particulate matter of 10 microns or less equivalent aerodynamic diameter). It has long been known that exposure to ground level ozone and PM₁₀ have adverse impacts on public health. Research has shown that, when inhaled, ozone and PM₁₀ can cause respiratory problems, aggravate asthma, and impair the immune system.

In the presence of sunlight, the VOCs from architectural coatings and other sources react with oxides of nitrogen (NO_x) to form ozone. In addition, VOCs have been found to be a source of PM₁₀, either through condensation of the VOCs or complex reactions of VOCs with other compounds in the atmosphere. Therefore, districts that adopt the SCM will reduce their VOC emissions and experience a positive impact on air quality and public health. The exact reductions in ozone and PM₁₀ cannot be accurately predicted due to the wide variety of factors that impact the formation of ozone and PM₁₀. These factors include atmospheric conditions, the ratio of VOCs to NO_x in the atmosphere, and the reactivity (ozone formation potential) of the individual

VOCs emitted. However, numerous scientific studies have shown that by reducing VOC emissions, ozone and PM₁₀ concentrations are reduced. Therefore, by reducing ozone and PM₁₀ concentrations, this SCM would reduce the health risks posed by exposure to these pollutants.

Are there any potential negative environmental impacts?

No. In the Draft Program EIR, we examined the potential effect of the proposed SCM on air quality, water demand, water quality, public services (public facility maintenance, fire protection), transportation and circulation, solid waste/hazardous waste, and hazards to the public or the environment. Based on our analysis, we do not expect any significant adverse environmental impacts to result from the implementation of the proposed SCM.

F. ECONOMIC IMPACTS

How did ARB staff evaluate the potential economic impacts of the proposed SCM?

ARB staff evaluated the economic impacts of the proposed SCM by: (1) conducting a cost survey sent to manufacturers; (2) comparing the ingredient costs of typical low VOC formulations with higher VOC formulations; and (3) comparing the retail prices of complying formulations with higher VOC formulations. The analysis assumes that the SCM is implemented statewide by districts (excluding the South Coast AQMD which has already adopted a rule with similar interim limits). As detailed below, this information was used to perform a business impacts analysis and a cost-effectiveness analysis for the 11 coating categories where the VOC limits in the proposed SCM are different from most current district VOC limits. The analysis does not consider the economic benefit to manufacturers that choose to participate in the averaging program that is under development.

How was the business impacts analysis conducted and what are the results?

In our economic impact analysis, we evaluated the potential impact of the proposed VOC limits on profitability and other aspects of businesses subject to the limits. To conduct our analysis, we relied on the estimated costs of compliance from our industry cost survey, ingredient costs for typical complying and noncomplying formulations, and retail price surveys. We then evaluated the impact of these costs on typical businesses using a combination of publicly available financial databases (*Dun and Bradstreet*, *Ward's Business Directory of U.S. Manufacturing Industries*), the ARB's 1998 Architectural Coatings Survey, industry journals/literature such as the *Chemical Market Reporter*, and discussions with industry representatives.

We utilized the change in "return-on-owners equity" (ROE) as an indicator of the limits' potential impacts on business profitability. The cost to comply with the proposed SCM, through increased research and development, equipment purchases, and increased ingredients costs, is presumed to impact a business' ROE and therefore its profitability. The cost to reformulate noncomplying products for a typical company was used to determine total annual reformulation costs. Our analysis indicates the estimated change in ROE can vary from essentially no change

to 2 percent change. The average change in ROE is about 1 percent, relative to the ROE before the proposed SCM would take effect. This estimated change in ROE is well within the change in ROE estimated for other ARB and district rules.

Our ROE analysis for the proposed limits may overestimate the impact on businesses because it assumes that all of the costs of the proposed limits will be absorbed by manufacturers. In reality, we expect that at least some of the investment costs to comply with the proposed limits will be passed on to consumers. The analysis also does not quantify the extent of cost mitigation due to “technology-transfer” between product lines and from contract manufacturers who make essentially equivalent products for a number of competing businesses.

While we expect that most businesses will be able to absorb the costs of the proposed limits without significant adverse impacts on their profitability, there is the possibility that some individual businesses will be adversely affected when districts adopt the proposed SCM. Therefore, it is possible that the proposed SCM may have a significant adverse impact on some businesses that are not in a market position to invest monies to develop new low VOC products, or to absorb the increased cost resulting from their compliance with the proposed SCM.

Based on our analysis, we do not expect the proposed limits in the SCM to have a significant impact on employment, or business creation, elimination, or expansion. We also do not expect the proposed SCM to have a significant impact on the competitiveness of California businesses compared with those outside of California. This is because all companies that sell these products in California would have to meet the proposed requirements, whether located in California or outside of California.

The VOC limits in the proposed SCM will primarily impact architectural coatings manufacturers, and marketers (companies which contract out the manufacturing of their products). However, we recognize that other industries could also be impacted to a lesser amount, which is difficult to quantify. These industries include distributors, retailers, and “upstream” suppliers who supply solvents and other chemicals used in architectural coatings.

Distributors and retailers could be impacted because they need to ensure that noncomplying products are not sold past the “sell-through period.” However, based on retail sell-through data obtained during the development of ARB’s existing consumer products regulations, we believe the existing three year sell-through period should provide ample time to allow for the sale of noncomplying architectural coatings.

Upstream suppliers could be impacted because manufacturers will be purchasing some different solvents, and other materials for their reformulated products. However, we do not expect these changes to result in a major impact on the affected industries because chemical companies generally supply many different industries, and because many of the upstream suppliers also provide the alternative products which will be used in the reformulated products. In fact, we expect some upstream suppliers will benefit since the proposed limits are likely to create new or increased demand for materials to be used in compliant formulations.

Will the proposed SCM be cost-effective?

Yes. Cost-effectiveness is one measure of the SCM's efficiency in reducing a given amount of pollutant (often reported in "dollars (to be) spent per pound of VOC reduced"). The methodology used to determine cost-effectiveness is well established and often used to compare a proposed regulation's cost-efficiency with those of other regulations. To calculate the cost effectiveness of the SCM, we divided the estimated total annual cost to reformulate all noncomplying products in a given category by the total emission reduction for the category. We estimated the cost-effectiveness of each of the categories in the SCM where reductions will occur. To conduct our analysis, we relied on specific formulation data from the "1998 ARB Architectural Coatings Survey," industry journals/literature such as the Chemical Market Reporter for ingredient unit prices, and discussions with industry representatives. Based on our analyses, we estimate that the cost-effectiveness of the individual VOC limits ranges from essentially no cost to about \$7.70 per pound of VOC reduced. We estimate the average cost-effectiveness weighted by emissions reductions across all the proposed limits to be about \$3.20 per pound of VOC reduced. These estimated cost-effectiveness values are within the typical range of costs of existing ARB control measures and district rules.

Will consumers have to pay more for architectural coating products subject to the proposed SCM?

Maybe. Consumers will have to pay more for some products subject to the architectural coatings SCM, depending on the extent to which manufacturers are able to pass along their costs to consumers. As explained in Chapter VIII of the staff report, assuming that all the costs of the proposed SCM are passed along to consumers, the change in cost per unit would range from no cost to a cost increase of \$7.90 per gallon, depending on the coating category. The average cost increase per unit, is estimated to be about \$1.40 per gallon.

G. FUTURE PLANS

Are there any plans for further emissions reductions from architectural coatings?

Yes. If the Board approves the proposed SCM, staff will begin investigating the final (2005-2008) VOC limits in the South Coast AQMD's Rule 1113. These limits are lower than the limits proposed in the SCM, and affect the following categories in the SCM: floor coatings; high-temperature coatings; industrial maintenance coatings; flats; non-flats; lacquers; primers, sealers, and undercoaters; quick-dry enamels; quick-dry primers, sealers, and undercoaters; recycled coatings; rust preventative coatings; and specialty primers, sealers, and undercoaters. We will also consider developing mandatory "reactivity-based" limits which account for differences in individual VOC's potential to form ozone. However, this approach would first require a detailed survey with VOC speciation information on a product specific basis. It is staff's intent to continue our working relationships with the districts, U.S. EPA, and industry as we investigate these potential future limits.

Will ARB staff track industry's progress toward the proposed VOC limits?

Yes. Staff plans to conduct technology assessments for each coatings category with lower proposed future limits at least one year prior to their effective date. We are convinced that the proposed limits are feasible, based on all the evidence available to us. However, it is standard practice for the ARB to conduct these reviews to ensure that unanticipated problems do not arise. We will also track essential public services test programs and the National Technical Systems (NTS) test program. Industry has also expressed interest in initiating a new test program.

Will there be additional architectural coatings surveys?

Yes. Staff currently anticipates beginning another architectural coatings survey in 2001 to 2002. It is expected that the survey would collect speciated VOC information on a product specific basis. This information is needed to determine the feasibility of reactivity-based control strategies, as described in the response to the next question.

How will the “reactivity” of individual VOC’s be considered in future architectural coating rules?

Every VOC reacts differently under ambient conditions to form ozone. This tendency is called the VOC’s “reactivity.” Individual VOCs vary both in their rate of ozone formation and in the quantity of ozone formed. A relative reactivity scale (the maximum incremental reactivity scale) was developed by Dr. William Carter to rank VOCs based on their tendency to form ozone. Each VOC in this scale is assigned an “ozone formation potential” value based on smog chamber studies or by comparison with similar VOCs. Such a relative reactivity scale is used in the ARB’s existing Low Emissions Vehicle (LEV) program. This regulation first used the MIR scale to determine the ozone forming potential of vehicle exhaust by utilizing reactivity adjustment factors. By making a reactivity adjustment to the emissions, an alternatively fueled vehicle is able to emit more mass emissions, as long as they are less reactive than those from a gasoline fueled vehicle.

Traditional mass-based VOC limits have treated all VOCs equally, with no consideration for the reactivity of individual compounds (other than exempting negligibly-reactive compounds). However, the ARB staff recently proposed mandatory reactivity-based limits for aerosol coatings, and intends to investigate the feasibility of incorporating mandatory reactivity-based limits into the architectural coatings SCM.