

**California Environmental Protection Agency**  
 **Air Resources Board**

**Final Statement of Reasons for Rulemaking,  
Including Summary of Comments and Agency Responses**

**PUBLIC HEARING TO CONSIDER ADOPTION OF AMENDMENTS  
TO THE CALIFORNIA CONSUMER PRODUCTS REGULATION --  
MID-TERM MEASURES II**

**Scheduled for Consideration: October 28, 1999  
Agenda Item No: 99-8-1**

**State of California  
AIR RESOURCES BOARD**

**Final Statement of Reasons for Rulemaking,  
Including Summary of Comments and Agency Responses**

**PUBLIC HEARING TO CONSIDER ADOPTION OF AMENDMENTS TO THE  
CALIFORNIA CONSUMER PRODUCTS REGULATION --  
MID-TERM MEASURES II**

**Scheduled for Consideration: October 28, 1999  
Agenda Item No: 99-8-1**

## TABLE OF CONTENTS

<u>Contents</u>	<u>Page</u>
<b>I. INTRODUCTION</b>	1
<b>II. MODIFICATIONS MADE TO THE ORIGINAL PROPOSAL</b>	3
A. Section 94508. Definitions	3
B. Section 94509. Standards for Consumer Products	3
Section 94509(a)	3
Section 94509(b) and (l)	3
<b>III. SUMMARY OF COMMENTS AND AGENCY RESPONSES</b>	4
A. General Comments	8
B. Comments on Specific Categories:	10
Automotive Brake Cleaner Category	10
Automotive Windshield Washer Fluid Category	10
Carburetor or Fuel-injection Air Intake Cleaner Category	26
Construction, Panel, and Floor Covering Adhesive Category	27
Crawling Bug Insecticide Category	27
Double Phase Aerosol Air Freshener Category	29
Engine Degreaser Category	31
Flying Bug Insecticide Category	31
Furniture Polish Category	32
General Purpose Cleaner Category	32
General Purpose Degreaser Category	35
Glass Cleaner Category	35
Hair Mousse Category	36
Nail Polish Remover Category	37
Sealants and Caulking Compounds	38
Tire Sealants and Inflators	38
C. Other Comments:	39
Cost-Effectiveness	39
Technical and Commercial Feasibility	42
Environmental Impacts	43
Emissions	44
State Implementation Plan	45
Miscellaneous Comments	47

# I.

## INTRODUCTION

On October 28, 1999, the Air Resources Board (the “Board” or “ARB”) conducted a public hearing to consider amendments to the Regulation for Reducing Volatile Organic Compound (VOC) emissions from consumer products (the “consumer products” regulation; title 17, California Code of Regulations (CCR), sections 94507-94517). An Initial Statement of Reasons for Proposed Rulemaking (ISOR) was prepared and made available to the public on September 10, 1999. The ISOR is incorporated by reference herein. This Final Statement of Reasons for Rulemaking (FSOR) updates the ISOR by identifying and explaining the modifications that were made to the original proposal. The FSOR also summarizes the written and oral comments received during the rulemaking process, and contains the ARB’s responses to those comments.

At the hearing, the Board adopted Resolution 99-34, in which the Board approved the proposed amendments to the consumer products regulation. The approved amendments include new VOC limits for 17 consumer product categories. Fifteen of the new VOC limits apply to consumer product categories that are already subject to the consumer products regulation, while two of the VOC limits apply to consumer product categories that were previously unregulated. The approved amendments also consolidate and expand the reporting requirements for products containing perchloroethylene and methylene chloride, delete outdated reporting requirements for hairsprays, modify several definitions in the regulation, and reorganize the Table of Standards to improve its clarity.

The approved amendments included modifications to the originally proposed language. All of the modifications to the original proposal are described in Section II of this FSOR entitled “Modifications Made to the Original Proposal.” In accordance with Government Code section 11346.8(c), Resolution 99-34 directed the Executive Officer to adopt the modified regulation after making the modified regulatory language available for public comment, and to make such additional modifications as may be appropriate in light of the comments received.

A “Notice of Public Availability of Modified Text,” together with a copy of the full text of the modified regulation, with the modifications clearly indicated, was mailed on March 27, 2000, to each of the individuals described in subsections (a)(1) through (a)(4) of section 44, title 1, CCR. By this action the modified regulation was made available to the public for a 15-day comment period from March 27, 2000 to April 11, 2000, pursuant to Government Code section 11346.8. The Executive Officer then determined that no additional changes should be made to the regulation, and subsequently issued Executive Order G-00-055, by which the modified regulation was adopted.

As defined in Government Code section 11345.5(a)(6), the Board has determined that this regulatory action will neither create costs or savings to any State agency, nor affect federal funding to the State. The Board has also determined that these amendments will not create costs or impose a mandate upon any local agency or school district, whether or not it is reimbursable

by the State pursuant to Part 7 (commencing with section 17500), Division 4, title 2 of the Government Code; or affect other non-discretionary savings to local agencies. In preparing the regulatory proposal, the ARB staff considered the potential economic impacts on California business enterprises and individuals. A detailed discussion of these impacts is included in the ISOR. The adopted regulation is a “major regulation” within the meaning of Health and Safety Code section 57005 (enacted by Senate Bill 1082: Stats. 1993, ch. 418), because the regulation will have an economic impact on the State’s business enterprises in an amount exceeding ten million dollars. During the 45 and 15-day comment periods, no alternatives or combination of alternatives were submitted to the ARB which would be equally as effective as the proposed regulation (i.e., no alternatives, or combination of alternatives, were submitted which would achieve at least the equivalent level of environmental protection within the same time frame as the proposed regulation.)

The Board has also determined, pursuant to Government Code section 11346.5(a)(3)(B), that the regulations may affect small business. The Board has further determined that no alternative was presented or considered which would be more effective in carrying out the purpose for which the regulatory action was proposed, or which would be as effective and less burdensome to affected private persons, than the adopted regulations.

#### **NOTE TO BARCLAYS AND THE OFFICE OF ADMINISTRATIVE LAW**

As part of this rulemaking package, the ARB also requests that the following nonsubstantive formatting changes be made. The Final Regulation Order that is included in this rulemaking package (consisting of the complete ARB Consumer Products Regulation: sections 94507-94517, title 17, CCR) contains some text that is shown in *italics*. The ARB requests that all text shown in *italics* be displayed in *italics* in Barclay’s Official California Code of Regulations.

In the format of the Consumer Products Regulation, the ARB uses *italics* for the headings of numerous sections and subsections. This was done for clarify; it is helpful to the public to be able to scan through the regulation and quickly identify the relevant sections or subsections. In Barclay’s Official California Code of Regulations, however, we noticed that while a few of these section and subsection headings are displayed in *italics* format, most of them are displayed in regular, nonitalics format. This makes the regulation difficult to read; the regular text headings appear to be confusing incomplete sentences instead of explanatory headings. Therefore, we request that Barclay’s go through the complete text of the Consumer Products Regulation (not just the three sections that are being amended in this rulemaking action) and change these headings to *italics* wherever they appear that way in the Final Regulation Order. To make this process as easy as possible, the Final Regulation Order contains all the sections of the Consumer Products Regulation—not just the three sections that are being amended in this rulemaking action.

## II.

### **MODIFICATION MADE TO THE ORIGINAL PROPOSAL**

Various modifications to the original proposal were made in order to address comments received during the 45-day public comment period, and to clarify the regulatory language. These modifications are described below.

- A. **Section 94508. Definitions:** Under sections 94508(18) and (19), the definitions of dilutable and pre-mixed “Automotive Windshield Washer Fluid” were modified. The modifications provide that dilutable automotive windshield washer fluids may be sold in containers with a capacity of 55 gallons or more, as well as products sold in containers with a capacity of one quart or less, reflecting current industry practice.
- B. **Section 94509. Standards for Consumer Products:** The following modifications were made to section 94509:

**Section 94509(a):** The VOC limits were increased for “Air Fresheners (double phase aerosols),” “General Purpose Cleaners (non-aerosols),” “General Purpose Degreasers (non-aerosols);” and “Glass Cleaners (non-aerosols).” Specifically, the VOC limit for double phase aerosol air fresheners was raised from 20 percent to 25 percent by weight. The VOC limit for non-aerosol glass cleaners was raised from one percent for dilutable products and four percent for ready-to-use products, to four percent for all non-aerosol products. Finally, the VOC limits for non-aerosol general purpose cleaners and general purpose degreasers were raised from one percent for dilutable products and three percent for ready-to-use products, to four percent for all non-aerosol products. Minor modifications were also made in the Table of Standards to clarify the provisions of the one percent VOC limit for automotive windshield washer fluids, and refer the reader to other regulatory provisions that apply to this category.

**Section 94509(b) and (l):** For clarity, language stating that the provision for dilutable products contained in section 94509(b)(1) shall not apply to “pre-mixed automotive windshield washer fluids” was moved from section 94509(b)(1) to a new section, 94509(l).

### III.

#### SUMMARY OF COMMENTS AND AGENCY RESPONSES

The Board received numerous written and oral comments during the 45-day and 15-day comment periods for this regulatory action. A list of commenters is set forth below with the date and form of all comments that were timely filed. Following the list is a summary of each objection or recommendation made regarding the proposal with an explanation of how the proposed action has been changed to accommodate the objection or recommendation, or the reasons for making no change.

#### Comments Received During the 45-day and 15-day Public Comment Periods

<u>Abbreviation</u>	<u>Commenter</u>
220 Labs	Yoram Fishman President 220 Laboratories, Inc. written testimony: September 22, 1999
AAIA	Aaron Lowe Vice President, Government Affairs Automotive Aftermarket Industry Association written testimony: October 27, 1999
ACMC-1	Automotive Chemical Manufacturers Council written testimony: October 26, 1999
ACMC-2	John Carney Group Executive Automotive Chemical Manufacturers Council oral testimony: October 28, 1999
Allied Signal/Prestone	William C. Mercer, Ph. D. Allied Signal Consumer Products Group written testimony: October 27, 1999
Amway-1	Robert Hamilton Senior Research Scientist Amway Corporation written testimony: October 27, 1999

Amway-2	Robert Hamilton Senior Research Scientist Amway Corporation oral testimony: October 28, 1999
Beveridge	Laurence Chaset Beveridge & Diamond LLP written testimony: October 27, 1999
Clorox-1	Jim McCabe Senior Environmental Scientist The Clorox Company written testimony: September 13, 1999
Clorox-2	Robin Gentz Government Relations Issues Manager The Clorox Company written testimony: October 5, 1999
CSDLAC	Paul C. Martyn Head, Industrial Waste Section County Sanitation Districts of Los Angeles County written testimony: September 20, 1999
CSMA-1	D. Douglas Fratz Vice President, Scientific and Technical Affairs Michael Thompson Vice President, State Affairs Chemical Specialties Manufacturers Association written testimony: October 27, 1999
CSMA-2	Michael Thompson Vice President, State Affairs Chemical Specialties Manufacturers Association oral testimony: October 28, 1999
CSMA-3	D. Douglas Fratz Vice President, Scientific and Technical Affairs Chemical Specialties Manufacturers Association written testimony: April 11, 2000
CTFA-1	Thomas J. Donegan, Jr. Vice-President - Legal and General Counsel Cosmetic, Toiletry, and Fragrance Association written testimony: September 28, 1999



CTFA-2	Catherine Beckley Associate General Counsel Cosmetic, Toiletry and Fragrance Association oral testimony: October 28, 1999
Ecolab	Rob Harrington, Ph.D. Director, EH&S Compliance Ecolab, Inc. written testimony: April 10, 2000
Honeywell	William C. Mercer, Ph.D. Director of Research and Development Consumer Products Group, Honeywell written testimony: April 10, 2000
MGK	William L. Chase, II Director, Registration and Regulatory Affairs McLaughlin Gormley King Company written testimony: September 13, 1999
Pennzoil-1	Richard Ratcliff Pennzoil/Quaker State oral testimony: October 28, 1999
Pennzoil-2	S. Eric Vredenberg Pennzoil-Quaker State Company written testimony: October 28, 1999
Prestone	William C. Mercer, Ph.D. Director of Research and Development Prestone/Allied Signal Corporation oral testimony: October 28, 1999
Reckitt-1	Eileen Moyer Director of Regulatory Relations Reckitt and Colman, Inc. written testimony: October 28, 1999
Reckitt-2	Eileen Moyer Director of Regulatory Relations Reckitt and Colman, Inc. oral testimony: October 28, 1999

RFCI	Douglas Wiegand Managing Director Resilient Floor Covering Institute written testimony: October 18, 1999
Sch&DEP	Karen Hohenstein Director, Hair Care Research and Development Schwarzkopf & DEP written testimony: September 16, 1999
SCJ	Chip Brewer Director of Worldwide Government Relations S. C. Johnson and Son, Inc. oral testimony: October 28, 1999
Sherwin-1	Doug Raymond Director of Regulatory Affairs Sherwin-Williams written testimony: October 26, 1999
Sherwin-2	Bob Graham Technical Director, Specialty Group of Consumer Division Sherwin-Williams oral testimony: October 28, 1999
USEPA	Andrew Steckel, Chief Rulemaking Office United States Environmental Protection Agency written comments: October 26, 1999

## A. GENERAL COMMENTS

1. **Comment:** The standards represent a severe challenge for the consumer products industry, and there are many technical and economic barriers faced by manufacturers who must meet the proposed standards. It will be difficult to reformulate products in many categories to obtain a product which will meet the demand of consumers. The existence of some complying products within a category is not a guarantee that all products can be reformulated to meet the proposed limit. Technical and economic difficulties may lead to the elimination of product forms. (MGK, Sch&DEP, Prestone, CSMA-3)

**Agency Response:** Staff recognizes that the standards are challenging. Many products will require reformulation to achieve compliance, and some companies needing to reformulate to produce complying products are smaller businesses that may face greater technical and/or economic barriers than larger businesses. However, the cost analysis in the ISOR (Volume II, Chapter VIII) demonstrates that the standards are cost-effective. We appreciate the time and effort that various companies and associations put forth in order to present technical and financial information specific to these product categories. All information presented was taken into consideration when determining the appropriate standards.

The technological and commercial feasibility of the standards is demonstrated, among other things, by the products currently available at or below the standards. As explained in detail in the ISOR (Volume II, Chapter VI), the standards were set to ensure that viable, commercially and technologically feasible products will be available to consumers within the time frames specified. For each product category, there are one or more products currently being sold that are at or below the standard. The presence of complying products in the marketplace indicates that the basic market demand can be met under the proposed standards. For more challenging standards, manufacturers are given a longer time in which to comply (i.e., a later effective date), and the ARB staff will be assessing manufacturers' progress in meeting the standards before they become effective. For these reasons, we are convinced that the standards will not lead to the elimination of any product forms.

2. **Comment:** Automotive product categories have been regulated in the Phase I, Phase II and Mid-term Measures I consumer products regulations. Manufacturers of these products have shouldered a major burden in achieving VOC emission reductions from consumer products. The financial burden placed upon these manufacturers to reformulate their products takes three years to recoup. The VOC levels currently achieved by these products leave little emission reductions to be gained by further regulation. Hence, following the current Mid-term Measures II regulatory effort, a moratorium should be placed on any further regulation of automotive products. (AAIA)

**Agency Response:** ARB staff, in developing standards for consumer products, considers both the economic and commercial feasibility of proposed standards. The automotive categories were further regulated because reformulation options to achieve lower VOC levels are both technologically and commercially feasible. Although most sources of criteria pollutants have been subject to multiple rounds of regulations, many urban areas of California are still not in attainment for the State and federal ozone standards. Hence, as new technologies emerge which

allow consumer products to emit less, ARB must reconsider emission standards and we cannot agree to a moratorium on any product category.

**3. Comment:** We support the proposed amendments to the Consumer Products Regulation with the exception of the automotive windshield washer fluids category. (CSMA-2, CSMA-3, ACMC-1, ACMC-2)

**Agency Response:** Comment noted.

**4. Comment:** The consumer products regulatory development process is efficient and promotes cooperation between ARB and industry in developing technologically and commercially feasible regulations to meet California's clean air goals. Staff is to be commended for their effort in developing a responsible regulation in a limited time. (ACMC-1, CSMA-2, CTFA-1, CTFA-2, SCJ, Reckitt-1, Sherwin-1, Sherwin-2)

**Agency Response:** Comment noted.

**5. Comment:** The proposed standards are technically challenging but possible by the effective dates (Amway-2, SCJ, Sherwin-2)

**Agency Response:** Comment noted.

**6. Comment:** While we believe that the proposed standards are commercially feasible, this may not prove to be true for all categories. Hence, we request that CARB be open to revisiting specific standards if they prove to be infeasible. (CSMA-3)

**Agency Response:** Prior to the effective date for each consumer products standards, staff will conduct a technology assessment to monitor manufacturers' progress in developing complying products by the effective date. If a technology assessment demonstrates that manufacturers are unable to comply by the effective date, the staff will propose the appropriate modifications to the regulation. In addition, an individual manufacturer requiring more time to comply may seek an extended compliance date through the variance provision.

**7. Comment:** We recognize the authority of the ARB to regulate consumer products. We will continue to cooperate with staff on future regulations in the hope that judicial intervention will not be necessary in the future. (ACMC-1)

**Agency Response:** Comment noted.

**8. Comment:** Manufacturers and suppliers which are not "responsible parties" must be included early on in the regulatory development process. Although we do not actually sell

finished products, we formulate these products for retailers and hence are directly affected by the regulation. (MGK)

**Agency Response:** ARB staff met with the commenter to discuss the concerns raised about the proposed VOC limits. In addition, ARB maintains a mailing list of over 3,000 manufacturers, retailers, associations, individuals and others impacted by consumer products regulations. The list is updated on an ongoing basis. All material which is relevant to the regulatory development process is mailed to the entire mailing list. All interested parties are encouraged to attend and participate in the development process.

We also maintain a website with information on workshops and regulation development documents. Thus, staff made an extensive effort to contact all parties affected by the proposed regulation and solicit their involvement in the process.

## **B. COMMENTS ON SPECIFIC CATEGORIES**

### **Automotive Brake Cleaners**

9. **Comment:** We support the proposed limit and effective date. (Sherwin-1)

**Agency Response:** Comment noted.

### **Automotive Windshield Washer Fluid Category**

#### *Safety Concerns*

10a. **Comment:** AAIA believes that the one percent standard established in this proposal for windshield washer fluid is too low based on serious safety concerns. Specifically, car owners that will have filled their reservoirs with windshield washer fluid meeting the Type B (i.e., the “All other areas” standard) standard likely will also travel to areas where they will need fluid meeting the Type A VOC standard. The contention of the Board staff that car owners will, by reducing the dilution factor, be able to strengthen the protection from freezing assumes a knowledge level on the part of the consumer that at best is untested. It is more likely that most consumers will not realize that their fluid is going to be ineffective until it is too late and the fluid has frozen, either in the reservoir or on the windshield. Because of this safety concern, the Board should reexamine the windshield washer fluid issue before issuing this regulation. (AAIA)

10b. **Comment:** The proposed 1 percent limit on VOCs in automotive windshield wiper fluid sold in Non-A areas essentially bans effective products, while encouraging the marketing of products that have little or no efficacy beyond plain water. This proposed VOC reduction also

denies consumers the safety benefits of improved visibility obtained from more effective products. (Pennzoil-2)

**Agency Response:** We disagree. In essence, concerns regarding freeze protection and windshield visibility boil down to whether the safe operation of motor vehicles will likely be impaired by the use of 1 percent VOC-compliant washer fluids. As discussed below and in the ISOR, the best data available to staff clearly show that no such impairment is likely.

First, products that provide adequate freeze protection will still be available in those areas where freezing regularly occurs (i.e., in “Type A” regions where the limit will remain at 35% VOC). This means that motorists in a non-Type A area (i.e., most urban areas) who are planning to travel to the mountains can still expect to find freeze-protected fluids available at their destination. However, the availability of freeze-protected fluids does not relieve motorists of their responsibility to use the products appropriately. As noted in the ISOR, consumers are ultimately responsible for ensuring that their vehicles are properly prepared for the weather conditions they expect to encounter when they travel. (*Id.*, at 77) For example, when freezing conditions are anticipated, consumers must ensure that their vehicles have oil with the proper viscosity and weight (e.g., 5W-30) and their antifreeze content is adequate (e.g., 50% by weight). Consumers must also bring or purchase snow chains for their tires if necessary. The same considerations apply to other functional fluids such as the windshield washer fluid. There is no empirical basis for the commenter’s contention that most consumers will unwittingly leave their windshield washer fluid with inadequate freeze protection for the expected conditions at their planned destination. But, even if motorists start out with inadequate freeze protection, the amended regulation still permits 35 percent VOC fluids to be available in those areas where such levels are needed for freeze protection.

Second, there are simply no empirical, real-world data to support the commenter’s suggestion that zero or near-zero VOC washer fluids have or will likely cause safety hazards, either through impaired windshield visibility or frozen windshields/washer systems. As discussed in the ISOR (*Id.*, at 70-71), staff’s extensive research of various government agency, public safety and automobile insurance databases found no evidence of safety problems attributed in any way to zero or near-zero VOC washer fluids. We found no credible data supporting the commenter’s safety concerns, despite the fact that over half of the market is comprised of zero and near-zero VOC fluids, and these products have been marketed in California for nearly a decade. Thus, it is reasonable to conclude that products that currently comply or will comply with the 1 percent limit will not impair the safe operation of motor vehicles.

#### *Adequacy of Emissions Inventory*

**11a. Comment:** We believe that despite the best efforts of the staff, the inventory for this product category is extremely weak and is based on assumptions that are unproven. While we agree with the staff’s statements regarding the difficulty in obtaining information for this category, absent better evidence, it is difficult to accept the emissions reductions claimed from the proposed standard. Therefore, based on the safety factors and lack of credible evidence supporting the estimated VOC emissions reductions, the Board should reexamine the windshield washer fluid issue before issuing this regulation. (AAIA)

**11b. Comment:** The emission inventory for this category is inadequate to support the proposed standard of one percent VOC for windshield washer fluids. The sales data used to develop the inventory, average VOC content and complying marketshare are based on unreliable sources. Staff acknowledged that the Survey itself did not reach the majority of the manufacturers, so they augmented the Survey by gathering data from product brochures and shelf surveys. In so doing, staff assumed that if a product did not make a claim for freeze protection, then it must not contain any VOCs. This assumption is false. Since staff used these label claims to determine which products complied with the proposed standard, their claimed complying market share of 50 percent is also false. (Prestone)

**11c. Comment:** ARB staff indicates in the ISOR that it obtained incomplete survey results for the windshield washer fluid category in both the 1990 and 1997 surveys conducted by the ARB. ARB staff has been unable to remedy this defect to date. ARB staff have sought to resolve this lack of adequate data by resorting to a trade marketing sell sheet prepared by a Consumer Products Group (CPG) for its commercial customers. By definition, this marketing material is provided to commercial customers in the mass merchant and auto supply store channels and is intended solely as an approximation of these channels' market-size and therefore simply cannot serve as the basis of a "legally and scientifically defensible analysis" of the windshield washer category's emissions and potential emission reductions.

CPG shared this sell sheet with ARB staff in order to demonstrate the distinctiveness of our product and its packaging. In the ISOR section marked "Commercially Feasible," ARB staff presents a Table of Limits, Complying Products, and Complying Marketshare," Table III-1. This Table continues to list "unknown" in the sales weighted average VOC content column for the windshield washer category. In addition, the VOC emission reduction and percent reduction values given in that table overstate the reductions achievable based solely upon the numbers of complying products and complying marketshare given in the Table. (Allied Signal)

**11d. Comment:** In the ISOR, ARB staff indicate that they estimate 5 percent average VOC in the windshield washer products based upon their observation that certain windshield washer product labels did not claim freeze protection. In the event no freeze protection was claimed, ARB staff assumed no VOCs in the product. This assumption is clearly invalid as there are products on the market that do not claim freeze protection but which nonetheless contain VOCs to provide efficacious cleaning performance. For example, CPG's Prestone Bug Wash Windshield Cleaner as currently formulated contains 8 percent by weight VOCs, but specifically directs that the product NOT be used for freeze protection and makes no freeze protection claim. [emphasis in the original] CPG analyzed several competitors' products that contained VOCs but also made no freeze protection claims. As a result of this use of this 5 percent average, not only are the data used to estimate the product sales insufficient to support a scientifically defensible analysis of the windshield washer category, but the method of determining average VOC content

and complying marketshare in the category also lacks a scientifically defensible analysis of the category. (Allied Signal)

**Agency Response:** We disagree. The emissions inventory for this category incorporates valid assumptions and the best scientific data available. While the manufacturers' survey had a relatively low response rate when compared to other product categories, this does not mean the inventory for this category is inadequate. As discussed in the ISOR (Pages 70-71 and 76), the process we used to develop the washer fluid inventory included conducting manufacturer and retail shelf surveys, consulting industry representatives, researching the literature, and analyzing formulation trends. These additional sources of information were appropriately used to augment the survey results.

Moreover, it is important to note that staff arrived at essentially the same estimate of the category emissions using two different methodologies (the 1994 SIP and the methodology used in this rulemaking) and three independent data sources: the manufacturers' survey, the store shelf survey, and marketing data obtained from a major washer fluid manufacturer. The fact that staff's emissions estimate for this category was internally consistent through two different methodologies and three sets of independent data lead us to conclude that sufficient data exist to adequately characterize the emissions inventory from windshield washer fluids.

Contrary to the commenters' assertion, ARB staff did not merely assume that the lack of freeze protection claims means the product contains no VOCs. It is true that the lack of freeze protection strongly suggests that the product has zero or near-zero VOC content. This is because freeze protection is a selling point for most washer fluids; thus, manufacturers would likely want to advertise freeze protection if at all possible when VOCs are present. To illustrate, one product we found advertised freeze protection "to 30 degrees Fahrenheit," which is simply two degrees below normal freezing (indicating the presence of a very small amount of VOCs).

However, the lack of freeze protection claims was not the only characteristic staff evaluated. In concluding that at least half the products on store shelves had zero or near-zero VOC, staff looked at the density of the products (i.e., VOCs would change the density of the fluid relative to the density of pure water) and the ingredients list on the product labels. In addition, staff found when reviewing product literature and material safety data sheets that many manufacturers emphasized the lack of VOCs in their products by touting their products as "environmentally friendly," "safe for children," and "non-hazardous" (as compared to methanol-based fluids). When none of these additional factors suggested the presence of VOCs in a product, staff concluded that the product contained zero or near-zero VOCs. Using this approach, staff found this scenario applicable to at least half the products currently on store shelves.

In contrast to ARB staff's reasonable basis for concluding that half the market meets the 1 percent VOC limit, the commenters provided no data to contradict staff's findings. One commenter merely asserts that "at least for our product and others that we have surveyed" the assumption is not true. (Prestone, at 59) It is certainly true that the commenter's Prestone Bug Wash product makes no freeze protection claims but still contains some VOCs; ARB staff has never suggested otherwise. However, the commenter concedes that the "others" his company



evaluated were comprised only of competing products, which in this case are similarly-high VOC washer fluids. (*Id.*, at 66) Thus, the commenter has provided no data on the market presence of zero or near-zero VOC fluids. Staff identified neither the Prestone product nor its high-VOC competing products as zero-VOC products in the 50 percent complying marketshare estimate. In essence, the commenters have provided no data supporting their contention that ARB staff's estimate of 50 percent of the market containing 1 percent or less VOCs is invalid.

Because our analysis was based on the best available data and the commenter's contention was supported by no credible data, we conclude that the analysis provided in the ISOR is reasonably accurate.

*Technical Basis & Feasibility of the 1 Percent VOC Limit, Ban of "Premium" Products*

**12a. Comment:** The proposed 1 percent VOC limit for this category effectively bans the sale of premium windshield washer fluids and requires consumers, including those that require the performance afforded by premium products, to settle for products that are essentially dyed water. There is a current market in California for products formulated to provide improved driver safety and visibility by reason of their improved cleaning ability. The continued market demand for these products demonstrates that consumers need products that can remove soil from the windshield while they are driving, when they most need to see as clearly as possible. It is technically infeasible to formulate products containing 1 percent VOC or less that will effectively remove all of the various types of soil, including road grime, bug remains, sap, tar, etc., potentially deposited on windshields while consumers drive.

Windshield washer fluids that are essentially dyed blue water, those that are one percent VOC or less, are not adequate to remove all those materials. Premium windshield washer fluids utilize the VOC level allowed in the current regulation to remove that debris from the windshield in fairly difficult conditions. The residence time of the cleaner on the windshield is very short, while one is driving. The mechanical action afforded by the windshield wipers is actually much less than you would get, say, using a regular glass cleaner and a cloth or a piece of paper. So under very difficult conditions the windshield washer fluid is being asked to remove debris and provide effective visibility to drivers at the time when they need it the most, when they're driving.

We feel that the premium products marketed by us and others afford that performance. The proposed limits will not allow us to deliver that performance in our products. It's technologically a very difficult area to work in and technologically a very difficult goal to get to.

The ISOR reports that VOCs are added to windshield washer fluids to provide freeze protection. It is true that high levels of VOC do provide effective freeze protection in windshield deicer/washer fluids such as those sold in Type A areas under the 35 percent VOC limit in those areas. However, premium washer fluids like Prestone Bug Wash Windshield Cleaner are not designed for use in areas where sub-freezing temperatures are anticipated. As discussed above, our product label specifically warns consumers against use in subfreezing temperatures because the product VOC level does not provide adequate freeze protection. In contrast to the use of VOC in windshield/deicer washer fluids for freeze protection and cleaning, the VOC levels in

premium washer fluids are selected to give efficacious cleaning performance. CPG has carried out extensive fleet testing in conjunction with our product development efforts to optimize fluid composition and demonstrate efficacy. We did not formulate to the VOC limit. Rather, CPG formulated to provide efficacy while remaining within the prescribed limits. As described above, our current product contains less VOC than allowed under current regulations. (Allied Signal)

**12b. Comment:** The best demonstration of the technological unfeasibility of this proposal is contained within the ISOR. On Page 76 of the ISOR, ARB staff present two windshield washer formulations alleged to contain no VOCs. These formulations were taken from the DOW Chemical Glycol Ethers Handbook. Our formulation experience would suggest that these fluids would indeed provide superior cleaning performance due to the level of glycol ethers in the formulations. However, contrary to staff's assertion, these fluids are not zero VOC fluids. A review of product information contained in the Dow Chemical website and the material safety data sheets for these glycol ethers shows that the manufacturer considers these glycol ethers to be VOCs. Thus, these proposed formulations contain 22 percent and 10 percent VOC respectively and thus DO NOT meet the proposed 1 percent VOC limit. (Allied Signal)

**12c. Comment:** The two formulations given on Page 76 for "water-based summer use windshield washer solution" that are presented by ARB as "zero VOC" both contain significant amounts (16% and 5% respectively) of the ingredient "Dowanol PM Glycol Ether," a trade name for the glycol ether solvent propylene glycol methyl ether (methoxypropanol). Propylene glycol methyl ether has a reported vapor pressure of 12.5 mm Hg at 25 °C, and clearly meets the regulatory definition as a VOC. These suggested formulations therefore have VOC contents of 16 percent and 6 percent respectively, clearly above the 1 percent limit being proposed for this category. (CSMA-1)

**Agency Response:** We disagree. The ISOR provides ample support for the technological and commercial feasibility of the 1 percent VOC limit. We also disagree with the commenters' implication that the typographical errors in the suggested formularies show that the 1 percent VOC limit is not feasible.

The commenters are correct in that the glycol ether-based formulations noted on Page 76 of the ISOR (Volume II, Chapter VI) use glycol ether compounds that would be classified as VOCs under the regulation (see "LVP-VOC" definition, section 94508(79)(A), title 17, CCR). However, this fact does not invalidate the feasibility of the 1 percent VOC limit for several reasons.

First, the cited formulations were merely suggested formularies intended to show how manufacturers could use compounds such as glycol ethers to meet the limit while maintaining high glass cleaning performance. Thus, even though those particular glycol ether compounds shown in the formularies were erroneously listed as exempt VOCs, this does not mean that similar low VOC formulations using other glycol ethers that are exempt are impossible to make. Indeed, the commenters do not dispute the use of some glycol ethers for producing high performance products for cleaning glass and windshields. One commenter concedes that "these

fluids would indeed provide superior cleaning performance *due to the level of glycol ethers* in the formulations.” [emphasis added] (Prestone-1)

In fact, it is widely accepted that the class of compounds known as glycol ethers comprises a wide variety of organic materials, a number of which would be exempt from regulation because of their low vapor pressure (i.e., they qualify as “LVP-VOC” under section 94508(79)(A); *Id.* at 73). Examples of these glycol ethers include DOWANOL™ TPM (tripropylene glycol methyl ether), DPnP (dipropylene glycol n-propyl ether), DPnB (dipropylene glycol n-butyl ether), TPnB (tripropylene glycol n-butyl ether), PPh (propylene glycol phenyl ether), DB (diethylene glycol n-butyl ether), and EPh (ethylene glycol phenyl ether). Such LVP-VOC glycol ethers have a wide variety of potential applications for complying with the VOC limits and were discussed in the technical assessments for glass cleaners (*Id.* at 144), flying bug insecticides (*Id.* at 122), and general purpose cleaners (*Id.* at 133). Thus, it is clear that the suggested formularies for complying with the 1% VOC limit would still support the technical feasibility of the 1 percent VOC limit with a simple substitution of any of the LVP-VOC glycol ethers listed above.

Even if the suggested formularies cited in the report (*Id.* at 76) cannot be used to support the 1 percent VOC limit, that fact alone does not invalidate the technical and commercial feasibility of the standard. As clearly shown in the ISOR, we estimate the current marketshare of products that comply with the limit to be at least 50 percent. Thus, the current market itself demonstrates the feasibility of the limit. If the currently complying products were not satisfactorily meeting consumer demands for windshield glass cleaning performance, it is highly unlikely that such products would continue to enjoy such a high marketshare. If the commenters were right and the 1 percent VOC-compliant products were not meeting consumer demands, common sense would dictate that the majority of products in the market would have significantly higher VOC contents (i.e., the majority of the market would be comprised of so-called “premium products”). Because this is clearly not the case, it is simply not credible to contend that the majority of the market is not meeting consumer demands.

Regarding one commenter’s contention that high VOC levels are needed for efficacious removal of soils such as bugs, the ISOR shows that this is not true for various reasons. First, we noted in the ISOR that every pre-mixed product we found on store shelves, including all the zero VOC products claimed to be effective at removing bugs and other road contaminants. (*Id.* at 77). Second, there is no consistency in the VOC levels of “premium products,” which, according to the commenters, would all seem to require high levels of VOCs in order to meet the demanding requirements of their target consumers. To illustrate, even the manufacturer of Prestone Bug Wash, with 8 percent VOC, identified its chief competitor as Rain-X Plus Windshield Washer fluid, which contains no more than 2.4 percent VOC. Third, we identified one product that does not even use VOCs and is claimed to be effective against difficult-to-remove Florida “love bugs,” road film, dirt and grime from the windshield. (see 303 Products’ “Instant Windshield Washer Tablets,” *Id.*) Finally, we note that Prestone’s own product label for their Bug Wash product instructs the user to apply the product as soon as possible after encountering the bug splatter or road soil. The label goes on to state that if the bug or stain is baked on or dried, the product may not remove the stain and other manual cleaning procedures may be required (e.g., car wash, use of a glass cleaner, etc.) This suggests that the key to successful removal of

difficult stains is not the VOC content of the washer fluid, but rather the timely application of any fluid to keep the stain in suspension long enough for mechanical removal by the windshield wipers. (*Id.*) This provides a reasonable explanation for why consumer demands for cleaning performance are being met by current low VOC products.

**13a. Comment:** There are insufficient facts contained in the rulemaking record to demonstrate the necessity for the proposed revisions in the regulatory requirements for windshield washer fluids at this time. Our member companies are willing to seek to meet a reduced VOC limit in this category, but not a limit that compromises our ability to make effective products while meeting our other environmental and safety goals. We therefore urge CARB to establish no new limit below 3 percent, while removing the proposed restrictions on container size for concentrated products. (CSMA-1)

**13b. Comment:** We'd like to see the VOC limit at 3 percent rather than 1 percent. (Pennzoil-2)

**Agency Response:** For the reasons explained in the ISOR and in the responses to Comments No. 10-12, the suggested 3 percent limit would not achieve the maximum feasible reduction of VOC emissions from this category. This is because the 1 percent VOC limit permits consumers access to products that meet their windshield cleaning demands while still achieving the maximum feasible reduction in VOC emissions. Issues related to the provisions on container size are discussed in the response to Comment No. 16.

**14a. Comment:** As we noted at the Hearing, CSMA has serious concerns regarding the 1 percent VOC limit for automotive windshield washer fluids for use in non-Type A areas. Manufacturers of these products have not yet identified a technology for formulating an effective automotive windshield washer fluid product at that VOC limit. CSMA member companies are in the process of determining whether an effective product can be developed that meets the requirements for an Innovative Products exemption under section 94511 of the California Code of Regulations. Effective automotive windshield washer fluids provide important safety benefits to drivers in improved windshield visibility. Therefore, CSMA requests that CARB staff remain open to working with our members in this matter to assure that these important products be kept available to all California motorists. If manufacturers are not able to develop the appropriate technology and test data to support an Innovative Products exemption by the effective date of December 31, 2002, CSMA requests that CARB provide variances under section 94514 of the California Code of Regulations while research and development is continued. (CSMA-3)

**14b. Comment:** As we noted in CPG's comments at the October 28, 1999, Board hearing, and in our written comments dated October 28, 1999, we have serious concerns regarding the 1 percent VOC limit for automotive windshield washer fluids for use in non-Type A areas. Effective automotive windshield washer fluids provide important safety benefits to drivers in improved windshield visibility. While CPG is actively researching new windshield washer technology, we have not yet identified a technology for formulating an effective automotive windshield washer fluid product at the 1 percent VOC limit. The existence of some products that currently meet the proposed limit does not guarantee that these products are effective. It also

does not guarantee that products in the category, which may serve very different consumer needs, can be reformulated to meet the new limit.

As part of our research effort, CPG is in the process of determining whether an effective product can be developed that meets the requirements for an Innovative Products exemption under section 94511 of the California Code. CPG requests that CARB staff remain open to working with us in this matter to assure that effective windshield washer fluid products remain available to California motorists. (Honeywell)

**Agency Response:** As explained in the responses to the previous comments, the ARB believes that effective products can be formulated at the 1 percent VOC level, and these complying products will not cause safety or performance problems. We remain open to working with manufacturers to determine if their products qualify for an Innovative Product exemption (IP). However, all applications for an IP exemption must go through a rigorous process in which actual consumer usage and emissions data are generated and verified. Only products that meet the criteria specified in section 94511, title 17, CCR, will be approved as “innovative products.” We look forward to working with this manufacturer and others to help evaluate truly innovative products that meet our emission reduction goals as well as the needs of their target consumers.

With regard to the commenter’s request for an “up-front” variance, the Board cannot grant variances in response to a rulemaking comment. Variances are granted by the ARB Executive Officer after formal proceedings, when justified by documentation provided by the applicant that shows timely compliance with a standard would cause extraordinary economic hardship and is caused by factors beyond the reasonable control of the applicant (see section 94514, title 17, CCR). If a manufacturer has taken appropriate steps to comply with a standard and finds that it cannot comply, then pursuing a variance application at that point remains open as a possibility.

#### *Product Dilution, Container Size Restriction, and Potential Environmental Impacts*

**15. Comment:** ACMC strongly objects to the proposed regulation’s amended provisions that apply to the Automotive Windshield Washer Fluid category. ACMC is both confused and troubled by staff’s decision to insert themselves in marketing decisions previously left to individual companies.

While “dilutable concentrates are predominately found in small containers” as the ISOR states (p.74), that is a manufacturer/marketer decision. We fail to see how a product contained in a one quart container can be acceptable while the same product in a one gallon container is not. We must take issue with staff’s assertion that label directions regarding dilution ratios are unacceptable. ACMC questions the basis for staff’s assertions that “it is highly likely that typical consumers who purchase these dilutable products in large containers would not dilute them as directed.” Product formulators rely on these dilution ratios not only in setting VOC levels, but also in testing product efficacy and computing costs. For staff to arbitrarily toss the ratios aside strikes ACMC as unfair and possibly, in conflict with established regulatory procedures nationwide. (ACMC-1)

**Agency Response:** We disagree. The container size requirement is based on the logical and reasonable expectation that ready-to-use and dilutable products packaged in essentially the same containers (1 or ½ gallon) and sold side-by-side will be virtually indistinguishable to the typical consumer, who will then most likely pour both types of products directly into the vehicle reservoir without regard to dilution. This is particularly likely during the summer season, when proper dilution is not critical to freeze protection or the safe operation of a vehicle. As explained elsewhere in this section and in the ISOR, windshield washer fluids have been identified as one of the simplest automotive care products to use, which is probably due to the fact that the average consumer expects products sold in one-gallon containers to be used directly as-is. Because of our real concern that packaging a high VOC, dilutable concentrate in a 1 gallon container would cause excessive VOC emissions, it is reasonable to reflect what is already the predominant industry practice by uniformly treating all of these larger size containers in the same way (i.e., as ready-to-use products). Without such a container size requirement, it would be highly unlikely that we would achieve the emission reductions projected for this category. Unlike other product categories that have been regulated, a container size requirement is therefore critical for achieving the emission reduction goals for windshield washer fluids, especially given the large size of the category (8.3 tons per day of VOC emissions).

As explained in the staff presentation at the October 28, 1999, Board hearing, staff also proposed classifying products sold in containers with a capacity of 55 gallons or more as dilutable products. While this provision was supported by industry representatives, a brief explanation of the basis for that amendment is in order. During the rule development, ARB staff became aware through Internet research and discussions with manufacturers that some dilutable washer fluid products are sold only to commercial customers. (Board Transcript at 15-16) These products are distinguishable from consumer-oriented products in that they typically are packaged in 55 gallon drums or larger and are used by businesses such as Jiffy-Lube®, automotive dealers, and other automotive repair shops for filling their customers' reservoirs during tune-ups and similar procedures. Products in these large containers are not available to the general public. Because of this, ARB staff's concerns regarding the potential confusion that could be caused by placing similarly-packaged (i.e., in 1 gallon containers) concentrated and pre-mixed products together on store shelves do not apply to these large container sizes (see discussion elsewhere in this section on this issue). Consequently, ARB staff proposed at the Hearing an amendment to the original staff proposal that would not apply the requirements for pre-mixed products to products sold in 55 gallons or larger containers. In other words, products sold in these large containers would be considered, for the purposes of the regulation, the same as products sold in 1 quart or smaller containers. After considering industry's support for the amended proposal and staff's rationale for it, the Board approved the amendment.

**16a. Comment:** The ARB staff proposal for calculating the VOCs in a dilutable concentrate arbitrarily provides for a more restrictive standard for windshield washer fluid than that required for other dilutable consumer products. Current section 94509(b) allows the VOC limit to be calculated on diluted products after giving effect to dilution, if "...the label, packaging, or accompanying literature specifically states that the product should be diluted with water or non-VOC solvent prior to use ..." This is a reasonable method of VOC calculation. Subsequent to the September 10, 1999, issuance by ARB of the ISOR and Proposed Regulation Order, on October 20, 1999, ARB staff proposed a further amendment to the originally proposed

amendments, which, if adopted, would effectively prohibit marketers of windshield washer products from manufacturing dilutable products in any container greater than a quart size and less than 55 gallons.

The sole basis offered by ARB staff for this exception is the ARB staff assumption that, with respect to windshield washer products, consumers DO NOT follow dilution instructions. [emphasis in the original] This assumption is baseless and amounts to mere speculation.

The ARB staff assumes that the consumer will unwittingly use a windshield washer concentrate without diluting, but that the consumer would not make such a mistake with any other dilutable consumer product. This assumption is made even given ARB staff's concession that dilutable products come in all shapes and sizes, including one-gallon size containers. Indeed, marketers of antifreeze products currently market premixed and concentrated antifreeze products in one-gallon size containers in the State. California provides for consumer protection with respect to these products by requiring the premixed products to be conspicuously marked as such on the principal display panel. There is recognition by both consumers and the State of California that premixed and concentrated products may be distinguished by appropriate and conspicuous labeling. As the number one marketer of antifreeze products in the United States, CPG maintains a hotline to respond to consumer inquiries. Not only has CPG received no complaints relating to confusion over premixed and concentrated products, but by virtue of the regular contact with the consumers over this hotline, it is apparent that consumers read labels. (Allied Signal)

**16b. Comment:** In the course of CPG's cooperative efforts with ARB staff in the development of Mid-term Measures II, CPG requested ARB staff to consider the dilution provision with respect to this category. Acceptance of this proposal by ARB staff would have resulted in a product that was fully compliant with ARB regulations and treated consistently with other consumer product categories. This compromise would have preserved the product category while realizing the ARB emission reduction goals. ARB staff also argues that unless uniquely amended for the windshield washer category, the dilution provision may be used by windshield washer marketers to circumvent the emissions reduction goals. Again, this argument is baseless and stigmatizes windshield washer manufacturers by implying that they will purposefully induce consumers to ignore label directions.

In response to this proposal, industry and CSMA have urged ARB staff to consider a principal display panel labeling requirement. This provision, although more stringent than existing regulation, would clearly satisfy ARB staff's concerns regarding consumer confusion. We urge the Board to eliminate the proposals related to section 94509(b) so that all consumer products are treated in the same manner with respect to VOC calculation requirements. (Allied Signal)

**16c. Comment:** The proposed restriction on a manufacturer's ability to calculate VOCs based on minimum recommended dilution is a major concern. CARB allows manufacturers of numerous other consumer products to calculate VOCs based on recommended dilution. However, CARB has specifically prohibited this practice for windshield wiper fluid sold in containers less than one quart and greater than 55 gallons in capacity. The restrictions on

container size for dilutable products under section 94509(b)(1) of the CCAA has the added effect of driving dilutable product into containers with a capacity of one quart or less. Since our customers' desire and we sell dilutable windshield washer fluid in one-gallon containers, this proposed change would force large volumes of fluid into containers 75 percent smaller than those in current use.

The impact of this change would be to increase the use of plastic packaging. If dilutable products move to the smaller container size, more plastic will be needed to sell the same volume of product. If manufacturers move away from dilutables to pre-mixed product sold in containers larger than one quart, then more packaging will also be required. In either event, CARB is forcing manufacturers to use additional plastic packaging for reasons that have no measurable impact on human health or the environment. (Pennzoil-2)

**16d. Comment:** We would like to see something done with regard to the container [size] requirement. Being in this business, we have dealt with many efforts by the State of California and others to try and reduce the waste stream problem. One of the things that has given some access to success in that area is the use of dilutables, and if you in effect set up a barrier to dilutables, which we feel is done by this proposal, then what you end up doing is promoting more products into the waste stream. And we feel that this and the related impacts are such that there is an adverse effect. (Pennzoil-1)

**Agency Response:** The proposed amendments do not set up a barrier to dilutable concentrates. Dilutable concentrates could still be sold in containers of one quart or less, which reflects predominant marketing practices at the current time. The basic issue is whether consumer needs for a dilutable concentrate can be met with products in 1 quart or smaller containers, or whether products packaged in larger containers should also be allowed to qualify as dilutable concentrates under the regulation. For the reasons discussed below, the ARB believes that the proposed amendments will meet consumer needs for dilutable concentrates, while insuring that emission reductions from this product category will actually be achieved.

The commenters believe that it is unfair to treat dilutable concentrates for windshield washer fluid differently than dilutable concentrates for other consumer products. We do not agree. Staff believes that different provisions for dilutable windshield washer fluids are warranted because of the particular manufacturing and marketing practices for this product category. As discussed in the ISOR, staff designed the container size provisions to reflect what is already the predominant industry practice – the packaging of most dilutable concentrates in 1 quart containers (*Id.* at 74-75), and the packaging of ready-to-use products in containers of larger than one quart. In general, other types of consumer products do not tend to have such a clear bifurcation in the way that dilutables and ready-to-use products are marketed.

Because windshield washer fluids are considered to be user friendly products (i.e., very easy to use by simply pouring into the vehicle reservoir), it is reasonable to expect that many consumers will pour dilutable concentrates packaged just like their ready-to-use counterparts (i.e., in 1 or ½ gallon containers) directly into the reservoir, without proper dilution, in the same manner as the ready-to-use products. (*Id.* at 72, 74-75) This is likely to be true particularly for dilutable products used during the summer ozone season, where freeze protection



is not a concern to consumers, and strict adherence to dilution instructions is not critical for maintaining a safe vehicle. The current practice of pouring dilutable concentrates directly into the vehicle reservoir without proper dilution not only results in more emissions than is required to clean the windshield, but also results in more plastic packaging being used than necessary.

The proposed use of dilution instructions on dilutable concentrates packaged in 1 gallon containers illustrates the serious concerns ARB staff has with preventing consumer misuse of such products. For example, to avoid having to reformulate their washer fluid to meet the 1 percent limit for premixed products, Prestone proposes placing dilution instructions on their existing 1 gallon, 8 percent VOC Bug Wash fluids as an alternative to the staff's container size requirement for dilutable concentrates. In essence, they are proposing to change a previously ready-to-use product into a dilutable concentrate with a simple change in the product's label text. However, that would be the only change to the product; the fluid color, container size and shape, and product label (with added dilution language) would all remain the same as the existing product. Thus, under Prestone's proposal, consumers who purchased the ready-to-use Bug Wash product in the past would now see the same exact product (with some text changes on the label) packaged as a dilutable concentrate. Such consumers would then be expected to take note of the change in instructions and follow them exactly, despite the fact that consumers who purchase products in 1 gallon containers are likely to be expecting a ready-to-use product, not a dilutable concentrate. Because most consumers expect washer fluid concentrates to be in small containers and premixed products to be in 1 gallon containers, any packaging of dilutable concentrates in 1 gallon containers is likely to cause under-dilution of the product and excess VOC emissions.

With regard to one commenter's suggestion that their hotline indicates there is no consumer confusion related to premixed and concentrated products, it is worth pointing out that hotline comments are not a particularly accurate way to determine actual consumer behavior. A concentrated product will work just fine if it is poured directly into the fluid reservoir, and this is not the kind of thing a consumer is likely to complain about on a consumer hotline. Also, dilutable concentrates in 1 gallon containers have only recently appeared in the general consumer market. Because typical consumers have not been heavily exposed to this type of packaging before, it is not surprising that there has been little activity on this hotline related to washer fluids. Furthermore, the commenter's main product lines (and presumably the focus of the hotline) are engine antifreeze products, with which consumers have had decades of experience in properly diluting the product for safety and engine maintenance reasons. The same cannot be said for dilutable concentrated washer fluids in 1 gallon containers. Consumers who call a hotline may indicate that they read label directions for a product that is critical to engine performance (i.e., engine antifreeze), but this is not necessarily a good indication that the general public will consistently read label directions on windshield washer fluid.

Finally, the commenters also speculate that the proposed amendments would cause an increase in plastic packaging, which would cause deleterious solid waste impacts in California. This speculation is not supported by the facts. As described in the ISOR, ARB staff thoroughly investigated current marketing practices for automotive windshield washer fluids, and learned that approximately 95 percent of the products currently sold to consumers (by weight) are premixed ready-to-use products. Dilutable concentrates are only five percent of the market, and most of these products are currently marketed in containers with a capacity of one quart or less.

Relatively speaking, there is simply not very much dilutable concentrate being sold today in containers that are larger than one quart. These facts demonstrate that the commenters' speculation about adverse environmental impacts is completely unrealistic. Even if some currently marketed one gallon containers of dilutable concentrate are repackaged into one quart containers, the market share of such larger-size products is so small that any increase in plastic waste could hardly be large enough to have any significant solid waste impacts in California. This is particularly true when one considers that many product containers are made from recyclable plastic, and any containers that are not recycled would likely be divided among numerous landfills located throughout the state. For all of these reasons, common sense indicates that there is virtually no possibility of a significant environmental impact from any increased disposal of product containers.

Furthermore, ARB staff believes that, if anything, the amendments may result in less solid waste, not more. This is because, as explained above and in the ISOR, ARB staff believes that many dilutable concentrates marketed in larger-size containers are simply being treated by consumers as ready-to-use products, and poured directly into automotive fluid reservoirs. If such larger-size products are repackaged into smaller quart sizes (i.e., container sizes which are typically perceived by consumers as dilutable concentrates), then consumers are more likely to actually dilute such products with water, and the end result may be that less plastic waste will result when these smaller, one-quart containers are ultimately discarded. We conclude, therefore, that plastic use and solid waste impacts should either decrease or, at worst, remain approximately the same under the amendments.

**17a. Comment:** In addition to packaging concerns, this rule will require the consumer to use significantly greater volumes of the diluted product to yield the same cleaning effect. The consumer will rapidly use up their original purchase of this less effective product, and as a result, purchase more of the same. This will create consumer complaints about the effectiveness of our products. In addition, CARB-desired VOC reductions will not be achieved since more product will be used. Finally, both VOCs and NO<sub>x</sub> emissions will be increased from the increased effort to manufacture and transport the additional bottles of products that are required to satisfy customer demand. A complete analysis of the effects of the revisions to this standard might show that only a small or even negative ozone benefits are gained, while being more than offset by increases in solid waste, and transportation emissions. (Pennzoil-2)

**17b. Comment:** The restrictions on container size for dilutable products under section 94509(b)(1) has the added effect of inhibiting the sale of concentrated products, while also forcing them into smaller containers. This restriction not only adds to the increased emissions of both VOCs and NO<sub>x</sub> from the increased transportation of products as mentioned above but would increase the use of plastic packaging through both discouraging the use of concentrates and requiring that smaller containers be used for concentrates. (CSMA-1)

**17c. Comment:** Nowhere in the ISOR does ARB even attempt to analyze these adverse effects on the environment or consumer safety. A complete analysis of the effects of the revisions to this standard might show that only small or even negative ozone benefits are gained, while being more than offset by increases in solid waste and losses in driver safety. (CSMA-1)

**Agency Response:** We disagree. The response to the previous comment explains in detail why staff does not believe that any solid waste impacts will result from the proposed amendments. The ISOR and previous responses also explain why staff does not believe that any safety problems will result.

The commenters also suggest that increased VOC and NO<sub>x</sub> emissions (i.e., from trucks, locomotives, etc.) may result from transporting additional containers of product. This contention amounts to mere speculation. It is also not a realistic scenario, for the following reasons. The commenters seem to be suggesting that increased transportation may occur from two causes: (1) consumers will use significantly greater volumes of product to achieve the same cleaning effect, thereby requiring more product to be shipped, and (2) more containers will also have to be shipped because dilutable concentrates will be repackaged into smaller containers. Regarding the commenters' first point, the ARB does not believe that more product will be used because, as explained at length in the ISOR and in previous responses, the ARB has concluded that a one percent VOC product provides effective windshield cleaning. Even if the commenter is correct and some additional product may be used for certain limited situations where a windshield might be very difficult to clean, it is very unlikely that the additional product use would be enough to generate any significant transportation impacts. After all, 50 percent of the market is already composed of zero or near-zero VOC products, and the proposed amendments will not have any impact at all on this segment of the market. For the remaining 50 percent of the market, the increase in product use would have to be truly enormous for any discernable transportation impacts to occur--and such a large increase is extremely unlikely.

The commenters' second contention is even more speculative and more tenuous than the first contention. If larger sizes of dilutable concentrate are repackaged into smaller bottles, it is difficult to see how this could have any transportation impacts. As pointed out in the previous comment, dilutable concentrates are only 5 percent of the market by weight, and most of this 5 percent market share is currently sold in containers of one quart or less. So only a relatively small quantity of product would need to be repackaged into smaller containers. Moreover, four quart bottles of windshield washer fluid take up only a little more space than a one gallon bottle of the same material. So for those products that are repackaged, there would only be a small increase in the space occupied by the repackaged products in trucks, trains, etc. And there would be virtually no increase in weight, since plastic, cardboard, and other packaging materials weigh very little, and most of the weight of windshield washer fluid consists of the fluid in the containers (i.e., 4 individual quart containers of dilutable concentrate weigh just about the same as a one gallon container of the same material). When you add the possibility that consumers may actually use less overall of dilutable concentrates packaged in smaller containers (as explained in the response to the previous comment) to the minimal space and weight impacts, it is hard to imagine any scenario in which increased transportation emissions would result from the proposed amendments.

*Suggested Changes to Regulatory Language*

**18. Comment:** We have sought to meet a reduced VOC limit in this category, but not a limit that compromises our ability to make effective products. Based on the reasons described

previously, we urge CARB to increase the VOC limit in this category to 3 percent while removing the proposed restrictions on container size for dilutable products.

To this end, we propose the following language for applicable provisions in sections 94508 and 94509:

Amend section 94508(a)(18) and (19), title 17, CCR, to read as follows:

- (18) “Automotive Windshield Washer Fluid” means any liquid sold in a pre-mixed or dilutable form which cleans, washes, removes bugs and/or wets the windshield through the operation of a motor vehicle windshield washer fluid delivery system. The term does not apply to any fluid that is placed in a new motor vehicle at the time the vehicle is manufactured.

Amend section 94509(a), title 17, CCR, to read as follows:

- (a) The proposed VOC limit of three percent shown in the Table of Standards would be effective December 31, 2002 for dilutable and premixed forms. This proposal effects only product sold in non-Type A areas.

Amend section 94509(b) and (l), title 17, CCR, to read as follows:

- (b) *Products that are diluted prior to use*
- (1) For consumer products for which the label, packaging, or accompanying literature specifically states that the product should be diluted with water or non-VOC solvent prior to use, the limits specified in subsection (a) shall apply to the product only after the minimum recommended dilution has taken place. For purposes of this section (b), “minimum recommended dilution” shall not include recommendations for incidental use of a concentrated product to deal with limited special applications such as hard-to-remove soils or stains. If dilution is required to meet the VOC limits of this section, the principal display panel on the automotive windshield washer fluid shall contain the dilution requirements that satisfies the VOC limits of this rule. (Pennzoil-1)

**Agency Response:** For the reasons explained at length in the ISOR and the responses to Comment Nos. 10-17, we believe these proposed language changes are not necessary, and do not achieve the maximum feasible reduction of VOC emissions.

*Miscellaneous*

**19. Comment:** The 1 percent limit proposed for this category is below the VOC detection level that CARB Method 310 is able to measure. The precision of the current Method, as adopted by the Board, is stated to be plus or minus 3 percent. CARB therefore would have no enforcement tool capable of assuring compliance, and ensuring a fair and equitable marketplace for companies with products that comply with the limit. (CSMA-1)

**Agency Response:** We disagree. For the following reasons, ARB Method 310 is an adequate mechanism to enforce the 1 percent limit. First, the commenter misinterprets the accuracy of ARB Method 310. The overall error rate of Method 310 is plus or minus 3 percent, but this applies to products that have multiple VOCs at different content levels. However, windshield washer fluids predominately are comprised of water, surfactant, dye, and methanol or some other single VOC. For products like washer fluids where the chemistry is relatively simple to characterize, Method 310 can measure down to plus or minus 0.5 percent (i.e., because there is only a single VOC in most cases, Method 310 is very accurate in quantifying the amount of that single VOC). Thus, it would be relatively simple for ARB's enforcement staff to request formulation data on these fluids and for ARB lab personnel to verify the presence and quantity of the VOCs in these products.

Even for products containing multiple VOCs at non-de minimus levels, Method 310 allows the use of alternative measurement procedures that are shown to be equally effective. One such alternative, among others, would be to measure the freezing point depression of the product in question. As stated in the ISOR, VOCs in a washer fluid impart measurable freezing point depressions, which are well established in generally-available scientific literature (e.g., *Handbook of Chemistry and Physics*). Measuring a product's freezing point depression is relatively simple, cheap, and easy to use as an enforcement tool, since freezing point depression is well tabulated for a wide variety of common solutes (e.g., methanol, ethanol, isopropanol, and other VOCs likely to be used in washer fluids) at wide ranges of content (e.g., to levels below 1%). Thus, Method 310 already allows other means of quantifying the amount of VOCs in a washer fluid that are independent of the gravimetric (weight loss) procedure that serves as the main analysis in Method 310. (See also the response to Comment No. 75.)

**Carburetor or Fuel-Injection Air Intake Cleaners**

**20. Comment:** We support the proposed limit and effective date. (Sherwin-1)

**Agency Response:** Comment noted.

**21. Comment:** The definition change to include fuel injection air intake cleaners will subject these products to a limit they cannot meet. Fuel injection air intake cleaners cannot use acetone because it will remove the no-stick coating from the back of the throttle plate. The definition

should be changed to state, “Products marketed exclusively for use as fuel-injection air intake cleaners are not included in this category.” (CSMA-1)

**Agency Response:** This issue was discussed on Page 85 of Volume II, Chapter VI, of the ISOR. Based on discussions with automobile manufacturers and others, we disagree that acetone cannot be used in these products. In addition, other reformulation options are available without using acetone (see Volume II, Chapter VI, Page 84-85, of the ISOR). Therefore, it is not appropriate to make the change suggested by the commenter.

**Construction, Panel and Floor Covering Adhesive Category**

**22. Comment:** We support the exclusion of floor seam sealers from the definition of construction, panel and floor covering adhesives. This is consistent with the U.S. EPA’s consumer products regulation, and is appropriate due to the lack of feasible alternatives and the low potential for emission reductions. (RFCI)

**Agency Response:** Comment noted.

**23. Comment:** We support the proposed limit and effective date. (Sherwin-1)

**Agency Response:** Comment noted.

**Crawling Bug Insecticide Category**

**24. Comment:** The current crawling bug insecticide standard of 20 percent VOC has only been in effect since January, 1999. Manufacturers have expended considerable effort in developing products to meet this limit, some of which are still in the process of being brought to market. Because certain insecticide formulation changes must be registered with the U.S. EPA, a very time consuming process, manufacturers may not have adequate time to reformulate their products before the new standards come into effect. (MGK)

**Agency Response:** We understand that manufacturers are currently formulating new products to meet the 20 percent VOC limit. We also realize that registration with the U.S. EPA is a time consuming process. In consideration of these issues, we have set an effective date of December 31, 2004, for the crawling bug insecticide standard. In addition, products (such as insecticides) that are registered with the U.S. EPA under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) are provided an additional year in the consumer products regulation to allow time for U.S. EPA and Department of Pesticide Regulation (DPR) registration (see section 94509(d), title 17, CCR). Hence, manufacturers have until December 31, 2005, to comply with the 15 percent VOC standard. Staff believes that six years is adequate time for manufacturers to develop complying formulations and recoup costs of recent reformulations.

**25. Comment:** We are concerned that the proposed limit for crawling bug insecticides is too low to produce effective and efficient products. (Sherwin-1)

**Agency Response:** We do not agree. The commenter does not discuss specific issues which are of concern. The technical and commercial feasibility of the standard is demonstrated by currently complying products, and is discussed on Pages 98-99 of Volume II, Chapter VI, of the ISOR. To provide sufficient time for reformulation, the VOC limit is not effective until December 31, 2005, for FIFRA-registered products. Also, see the response to Comment No. 26.

**26. Comment:** We disagree with the specific language in the ISOR stating that manufacturers may be able to substitute 5 percent of VOC solvent for either an exempt solvent such as acetone or a low vapor pressure (LVP) distillate. Acetone in a crawling bug killer may damage many of the surfaces on which these products are commonly applied. LVP distillate may create a slip-and-fall hazard when the product is applied to floors. Also, we disagree with staff's suggestion that a non-VOC propellant such as HFC-152a may be substituted for a portion of the hydrocarbon propellant. This technology is untested and hence the feasibility of such a swap is speculative. Finally, we disagree with the suggestion in the ISOR that small changes in VOC content on the order of one or two percent would be a simple matter. Changes in formulation potentially invoke expensive and time-consuming research to fulfill FIFRA and DPR requirements. (CSMA-1)

**Agency Response:** The ISOR states that manufacturers may comply with the VOC limit by replacing a VOC solvent with an LVP distillate or acetone because manufacturers are currently marketing complying products that contain these ingredients. There is no evidence to suggest that a slip-and-fall hazard has occurred from the use of LVP distillates in crawling bug insecticides. In addition, because the acetone in crawling bug formulations is highly diluted with other ingredients, there is no evidence that its use has resulted in substrate damage as suggested by the commenter. Since blends of HFC-152a and hydrocarbon propellant are used successfully in many other consumer products, it is reasonable to suggest this approach as a possible reformulation option. ARB staff recognizes that time is needed to reformulate products and perform efficacy and safety testing. The potential difficulty of reformulating these products is reflected in the cost analysis (Volume II, Chapter VIII, of the ISOR) and in the effective date of the standard, which allows until December 31, 2005, for FIFRA-registered products to comply. Staff discussed product registration time frames for FIFRA products with DPR and the U.S. EPA. Both agencies indicated that alterations to product formulations that do not involve changes to the type or amount of active ingredients do not invoke the full registration process. Since the VOC limit does not necessarily require changes to the type or amount of active ingredients used in these products, FIFRA registrations for reformulated products may be conducted more economically and expeditiously than new product registrations.

**27. Comment:** The crawling bug killer category covers products which are "active killers" and products which are "residual killers." Active killers require fine atomization in order to flush out and contact insects from cracks and crevices, whereas residual killers do not require a fine degree of atomization. Including residual killers in the complying market share is not appropriate since these products do not require the higher VOC content necessary to achieve fine atomization. In addition, most of the residual killers which currently comply are likely to

disappear from the indoor market because these products use organophosphates and carbamates as active ingredients, both of which are under scrutiny by the U.S. EPA. Hence, we would like to see the proposed limit raised a few percentage points to allow enough VOC for proper atomization. The proposed limit of 15 percent is too low to make quality, efficacious products. (MGK)

**Agency Response:** The 15 percent VOC limit only affects aerosol products which are “active killers.” The residual killers reported in the Survey are not affected by this rulemaking, since they are all solids or wettable powders, with the exception of a few aerosol products which are used by licensed pest control operators (PCO) only. These PCO products are not subject to the regulation, and are not included in the complying market share calculation. Therefore, residual killers are not increasing the complying market share estimate.

In addition, nearly all of the aerosol products utilize pyrethrin or pyrethroids as their active ingredient, and hence are not affected by possible actions of the U.S. EPA on organophosphates or carbamates. Finally, we disagree with the assertion that manufacturers will not be able to formulate efficacious, compliant products. Volume II, Chapter VI, Page 98-99 of the ISOR contains a discussion on the technical feasibility of the 15 percent VOC limit. Manufacturers have a number of reformulation options which will allow them to formulate efficacious complying products.

#### **Double-Phase Aerosol Air Freshener Category**

**28. Comment:** The proposed standard of 25 percent VOC for double-phase aerosol air fresheners is challenging but doable by the effective date of December 31, 2004. The previous proposed limit of 20 percent VOC would have resulted in elimination of a product form. (Reckitt-1, Reckitt-2)

**Agency Response:** Staff changed the proposed limit to 25 percent in response to the technical issues raised by air freshener manufacturers.

**29. Comment:** We support the modification of the double-phase aerosol air fresheners limit from 20 to 25 percent VOC. (CSMA-1)

**Agency Response:** Comment noted.

**30. Comment:** There are no complying products on the market that will meet the proposed 20 percent limit. We disagree with a number of suggestions for reformulation provided by staff in the ISOR, as discussed below.

Double-phase aerosol air fresheners are oil water emulsions, and changes to these systems required to meet the proposed limit would affect product stability and particle size. Specifically, the hydrocarbon propellant in these products functions as a solvent as well as a propellant, so any replacement propellant would need to serve both purposes. Non-VOC propellants have not been tested in these systems so their use as a compliance alternative is speculative.



Reduction of the propellant and its replacement with water will cause a wet spray with larger particle size, which cannot be counter-balanced by modification of valve mechanisms. Also, the additional water will cause corrosion.

Increased surfactant levels would lead to a sticky spray with “fatty odors,” and the surfactant fallout may damage household surfaces. Acetone is not a suitable non-VOC solvent due to its flammability, inhalation issues and a vapor pressure too low to act as a propellant.

In addition, we strongly disagree with the statement that “because double-phase aerosol products can allow mild instability of the emulsion and thereby, phase separation, double-phase aerosol products are comparatively easier to reformulate than single-phase products.” Instability is a great concern with these products, and the phases must be balanced to achieve the proper emulsion. We feel that CARB misinterpreted a recent journal article referenced in the ISOR regarding the commercial and technical feasibility of 20 percent VOC aerosol air fresheners. The author reported that the 20 percent VOC formulations were speculative when subsequently contacted by CSMA. (CSMA-3)

**Agency Response:** In investigating the technical feasibility of the proposed 20 percent VOC content limit for double-phase aerosol air fresheners, ARB staff evaluated products reported in the 1997 Consumer Products Survey, held numerous discussions with company and industry representatives, reviewed the technical literature and searched through the U.S. Patent and Trademark Office’s Patent Database. This collection of information was evaluated, documented, and used to determine an appropriate VOC limit for double-phase aerosol air fresheners. The data contained in the Staff Report support the feasibility of the staff’s original proposal of a 20 percent VOC limit for double-phase aerosol air fresheners. The statement made in the Staff Report: “because double-phase aerosol products can allow mild instability of the emulsion and thereby, phase separation, double-phase aerosol products are comparatively easier to reformulate than single-phase products,” was received from an industry source familiar with formulating both single and double-phase aerosol air fresheners.

However, in continuing discussions with industry and after receiving additional information from industry regarding the feasibility of a 20 percent VOC limit, at the hearing ARB staff recommended and the Board approved, raising the VOC limit to 25 percent. Industry representatives indicated support for the amended VOC content limit of 25 percent.

**31. Comment:** We are concerned that the proposed limit is too low to produce effective and efficient products. (Sherwin-1)

**Agency Response:** The Board addressed these concerns by raising the proposed VOC limit to 25 percent. Industry representatives indicated support for the VOC content limit of 25 percent.

### Engine Degreasers

**32. Comment:** Engine degreasers containing perchloroethylene are potentially being disposed of in municipal city sewer systems. Perchloroethylene is an exempt VOC, and hence its use in engine degreasers will possibly increase as manufacturers of engine degreasers formulate their products to meet tighter VOC standards. ARB should amend the consumer products regulation to include a no-new-use provision for perchloroethylene in engine degreasers, consider a ban on perchloroethylene usage, and track perchloroethylene usage in engine degreasers to determine if there is an increase in usage. (CSDLAC)

**Agency Response:** The commenter's proposed no new-use provision is unnecessary for several reasons. First, in evaluating VOC standards for the engine degreaser category, the ARB staff performed extensive research of currently marketed formulations, which demonstrated the technical and commercial feasibility of VOC standards of 35 percent for aerosols and 5 percent for non-aerosol degreasers. For both aerosols and non-aerosols, a number of products are currently marketed that comply with these standards and do not contain perchloroethylene. Hence, perchloroethylene is not required to comply with the amended standards.

With regard to the suggestion that perchloroethylene be banned from automotive and other products, we agree. At the April, 2000 Board hearing, the ARB approved an air toxic control measure (ATCM) that bans perchloroethylene from general-purpose degreasers, engine degreasers, brake cleaners and carburetor and choke cleaners, effective June of 2001. Thus, any perchloroethylene loading in municipal sewer systems from current engine degreaser products will be eliminated shortly.

Regarding the suggestion for tracking perchloroethylene usage, the regulation already requires manufacturers to report the amount of perchloroethylene used in their products and requires the ARB to report this information to publically owned treatment works in California, upon request (see section 94513(e)).

### Flying Bug Insecticide Category

**33. Comment:** The U.S. EPA is currently reviewing organophosphate and carbamate classes of active ingredients, and we anticipate that certain of these older, less costly active ingredients will disappear from the indoor use patterns. Hence, the complying market share of 13 percent may shrink. Lowering the VOC limit to 25 percent may result in products of lower quality and efficacy. (MGK)

**Agency Response:** We acknowledge that the U.S. EPA is currently reviewing the use of carbamates and organophosphates in certain products. While use of some of these compounds may be restricted by the U.S. EPA, the majority of the flying insect killers, including those which currently comply, use pyrethrins and pyrethroids as active ingredients. Hence, viable reformulation options exist despite any proposed changes for organophosphates or carbamates by the U.S. EPA.

In addition, technical research during the development of the standard revealed a number of viable reformulation options which will allow manufacturers to make efficacious, quality products that comply with the 25 percent limit. These are discussed on Pages 119 through 122 of the ISOR. Major manufacturers of consumer insecticides have expressed confidence in their ability to meet the limit. Hence, we disagree with the commenter's assertion that the 25 percent limit will result in lower quality and less efficacious products.

#### **Furniture Polish Category**

**34. Comment:** We expect technical difficulties in reformulating furniture polish to meet the prospective limit, but we feel that we will be able to manufacture compliant products by the effective date. (Reckitt-1, Reckitt-2)

**Agency Response:** In response to industry concerns about reformulating furniture polish (i.e. furniture maintenance products), an effective date of December 31, 2004 was proposed for the 17 percent VOC limit. This will provide adequate time for industry to comply.

**35. Comment:** We are concerned that the proposed limit is too low to produce effective and efficient products. (Sherwin-1)

**Agency Response:** The commenter does not discuss specific issues which are of concern. The technological and commercial feasibility of the VOC limit, and specific issues raised by industry are discussed on Pages 125-128 of Volume II, Chapter VI, of the ISOR.

**36. Comment:** Lower VOC formulations will not be as efficacious since the VOC is required to deliver the more durable components of the formulation. Contrary to staff's assertion, the propellant levels play a critical part in the stability of the emulsion. Changes in the propellant level would affect stability and hence increase corrosion potential by exposing the can to the water phase. Also, adequate propellant is required to evacuate the can. (CSMA-3)

**Agency Response:** The commenter has submitted no evidence to substantiate the claim that lower VOC formulations are less efficacious. Also, staff agrees that the propellant is a necessary and integral ingredient in an aerosol formulation. The discussion on Pages 125-127 in Volume II, Chapter VI, of the ISOR illustrates that hydrocarbon (VOC) propellant is not specifically required. The discussion focuses on the possible use of non-VOC propellants such as HFC-152a, which may be used to replace part or all of the currently used hydrocarbon propellant. With regard to corrosion, manufacturers have already demonstrated the ability to control corrosion since they have used water in these products for many years. Manufacturers have also demonstrated the ability to evacuate the can in currently complying products.

#### **General Purpose Cleaner Category**

**37. Comment:** The General Purpose Cleaner category is a "catch-all" category, with both general use products and specialty products included under a single, broad definition. The specialty products have different cleaning performance requirements pertinent to their specific

substrate, and hence, lumping these products together with the general use products does not take these special uses into consideration. (Clorox-1, CSMA-3)

**Agency Response:** The general purpose cleaner category, as defined in the regulation, includes various forms of general cleaning products, such as liquid cleansers, powder cleansers, scouring pads and towellettes. The category covers products which may be used to clean a variety of surfaces and substrates as opposed to specific-use applications. The category may, however, contain specialty products which make incidental multi-use claims. Staff considered both specialty and general use products when developing the VOC limit.

To assure that all product forms would be able to comply with the VOC limit, staff performed extensive research of the various formulation technologies. The research indicated that the aerosol products would require a higher VOC limit to retain efficacy. Therefore, aerosol products were excluded from the new VOC limit. Addressing industry concerns regarding efficacy, staff raised the limit from 2 percent to 4 percent VOC for the non-aerosol products. The commenter expressed their gratitude for the higher limit (see comment No. 41). At this limit, 90 percent of the general purpose cleaning products are currently in compliance.

**38. Comment:** The complying market share is made up of a few industrial and institutional products and the remainder are specialty cleaning or bleach-containing products. Hence, the complying market share does not truly reflect household use of general purpose cleaners. (Clorox-2)

**Agency Response:** Staff considered household general purpose cleaners and specialty products when determining the complying market share. Since the regulation covers both household and institutional products, including institutional-use products in the complying market share is warranted. Bleach-containing products represent one of the lower VOC technologies, so their inclusion in the complying market share is also appropriate. The commenter's assertion that the complying products do not include general purpose cleaners which use the solvent as the "active" ingredient is incorrect. At the 4 percent VOC limit, some of the commenter's household general purpose cleaning products are included in the complying market share.

**39. Comment:** It is unreasonable to set the VOC limit for the General Purpose Cleaner category at a lower level than Bath and Tile Cleaners. Consumers expect to be able to utilize a general purpose cleaner in the bathroom. A lower VOC limit for general purpose cleaners will place them at a competitive disadvantage to bath and tile cleaners. (Clorox-1)

**Agency Response:** We believe that it is appropriate to have different limits for these two categories. These two categories have historically been regulated separately since it was recognized in the Phase I rulemaking that the formulation requirements for the categories are potentially different. The bath and tile cleaners represent a specific-use application of a cleaner, and it is unlikely that these products will be purchased by consumers to perform general cleaning duties. General cleaning within the bathroom is still likely to be performed by general purpose cleaners. Thus, we do not believe that an unfair competitive advantage is being created.

**40. Comment:** The 2 percent VOC limit will reduce the efficacy of cleaning products. Hence, consumers will need to use more product to complete the task, nullifying the emission reductions claimed by CARB. (Clorox-1)

**Agency Response:** In consideration of product efficacy and other factors, we raised the proposed limit to 4 percent VOC. At this level, 90 percent of the products are currently in compliance. This sizable complying market share demonstrates that products are efficacious at the VOC limit.

**41. Comment:** We are grateful for the revision of the proposed general purpose cleaner standard to 4 percent VOC. This standard will be challenging, but we have decided to not approach the Board to urge for a 5 percent VOC limit. We do hope that this category will not be subject to stricter regulations in the future. (Clorox-2)

**Agency Response:** Comments noted.

**42. Comment:** We support the increase in the proposed VOC limit for non-aerosol general purpose cleaners from 1 percent to 4 percent. (Ecolab, CSMA-1)

**Agency Response:** Comment noted.

**43. Comment:** High inorganic loading will cause visible residue to be left behind on surfaces. The substitution of LVP-VOCs makes it difficult to wipe them dry from a surface, since these solvents do not evaporate quickly. (CSMA-3)

**Agency Response:** By “high inorganic loading”, we presume the commenter is referring to the potential for an increase in the use of solid surfactants in cleaning products. Manufacturers have successfully formulated general purpose cleaners containing surfactants and LVP-VOC solvents for many years. Since 90 percent of the products already comply with the proposed VOC limit of 4 percent, we do not expect the VOC limit to cause problems such as visible residue or excessively wet surfaces.

**44. Comment:** The imposition of a 1 percent VOC standard for dilutable cleaners while ready-to-use products are allowed a 3 percent limit is unfair to those marketers which rely on concentrated products. Both product types compete with each other directly. The concentrated product which is diluted and used in refillable spray containers is a well established market, especially in the institutional and industrial market. Concentrated products require less packaging and have lower transportation costs, which reduce waste. In addition, we urge the limit to be set at 5 percent VOC for all types of non-aerosol general purpose cleaners. Evidence suggests a loss in efficacy with products below 5 percent VOC. (Amway-1, CSMA-3)

**Agency Response:** In consideration of manufacturers’ concerns, the subcategorization was eliminated and a 4 percent VOC limit was established for all non-aerosol general purpose cleaners. Regarding the commenter’s request that a 5 percent limit be set for this category, the fact that 90 percent of the products already comply with the 4 percent limit indicates that products with less than 5 percent VOC are efficacious. Most of the well known brands of

products are included in the 90 percent complying products. In addition, the commenters expressed support for the 4 percent limit in General Comment No. 5 and in Comment No. 42.

**General Purpose Degreaser Category**

**45. Comment:** We support the increase in the proposed VOC limit for non-aerosol general purpose degreasers from 1 percent to 4 percent. (Ecolab, CSMA-1)

**Agency Response:** Comment noted.

**46. Comment:** Most of the products in this category are used in food service cleaning. The imposition of a 1 percent VOC standard for dilutable degreasers will result in a loss in efficacy, which may cause safety problems such as slip-and-fall incidents in kitchens or poor removal of microorganisms. More product will be required to achieve the same cleaning, which will eliminate any benefit from the lower VOC standard. Separating the standards into dilutable and ready-to-use forms, as with the general purpose cleaners, disrupts an established market and increases waste. We urge the limit to be set at 5 percent VOC for all types of non-aerosol general purpose degreasers. (Amway-1, CSMA-3)

**Agency Response:** As requested by the commenters, the subcategorization was eliminated and a 4 percent VOC limit was established for all non-aerosol general purpose degreasers. The commenters expressed their support for the 4 percent VOC limit in General Comment No. 5 and in Comment No. 45.

**47. Comment:** We support the proposed limit and effective date. (Sherwin-1)

**Agency Response:** Comment noted.

**Glass Cleaner Category**

**48. Comment:** We expect technical difficulties in reformulating glass cleaners to meet the proposed limit, but we feel that we will be able to manufacture compliant products by the effective date. However, one of our specialty products, Glass Wax<sup>R</sup>, may not be able to meet the 4 percent limit, and hence we will no longer be able to sell this product in California after the effective date. (Reckitt-1, Reckitt-2)

**Agency Response:** The commenter does not discuss specific issues which are of concern. The technical and commercial feasibility of the limit and specific issues and concerns raised by manufacturers are discussed on Pages 144-145 in Volume II, Chapter VI, of the ISOR.

**49. Comment:** We support the increase in the proposed VOC limit for non-aerosol glass cleaners from 1 percent to 4 percent. (Ecolab, CSMA-1)

**Agency Response:** Comment noted.

**50. Comment:** High inorganic loading will cause streaking of the glass. Lower alcohol levels do not solubilize other actives in the formulation, nor do they allow for quick evaporation or surface wetting. (CSMA-3)

**Agency Response:** By “high inorganic loading”, we presume the commenter is referring to the potential for an increase in the use of solid surfactants in glass cleaners. Manufacturers have successfully formulated glass cleaners containing surfactants and lower alcohol levels for many years. Since 52 percent of the market already complies with the VOC limit, we do not expect the limit to cause excessive streaking or surface wetness. The commenter endorsed the proposed limit of 4 percent VOC, as noted in Comment No. 49 above.

**51. Comment:** The imposition of a 1 percent VOC standard for dilutable glass cleaners while ready-to-use products are allowed a 3 percent limit could eliminate the dilutable glass cleaner product form. Concentrated products require less packaging and have lower transportation costs, which reduce waste. In addition, we urge the limit to be set at 5 percent VOC for all types of non-aerosol glass cleaners. Volatile solvent is even more important in these products than in general purpose cleaners or degreasers because a controlled drying rate is necessary to eliminate streaking. At less than 5 percent VOC, more product is likely to be used to achieve equivalent cleaning, eliminating any emission reductions. (Amway-1, CSMA-3)

**Agency Response:** In consideration of manufacturers’ concerns, the subcategorization was eliminated and a 4 percent VOC standard was established for all non-aerosol glass cleaners. The assertion that products below 5 percent VOC are less efficacious is not supported by the large complying market share. Over half of the market currently complies with the 4 percent VOC limit. The commenters expressed their support for the 4 percent VOC limit in General Comment No. 5 and in Comment No. 49 for this category.

#### **Hair Mousse Category**

**52. Comment:** The proposed 6 percent VOC limit for hair mousses will be technically impossible for post-foaming gel aerosol products to meet. These types of products require 10 to 14 percent hydrocarbon propellant. A 6 percent propellant product will not foam well, and if a higher vapor pressure propellant is used, the product will dispense as a foam rather than a gel. Hence, post-foaming hair mousses cannot meet the proposed 6 percent limit. Following the precedent for exempting shaving gels from the shaving cream category, the post-foaming mousses should either be treated as a separate category or eliminated entirely from the proposed amendments. (Sch&DEP, 220 Labs)

**Agency Response:** We believe that it is possible to manufacture a satisfactory post-foaming aerosol hair mousse that meets the 6 percent standard. Based on the 1997 ARB Survey results, there is a post-foaming aerosol hair mousse product that already complies with the 6 percent standard. That manufacturer indicates that 6 percent VOC is adequate to cause the product to emerge as a gel while still foaming to proper volume. Staff purchased both the commenter’s product and the compliant product and found little difference in the foaming characteristics. Because it is feasible to produce a 6 percent product, we do not believe that it is

appropriate to either create a separate subcategory or eliminate these products from the regulation.

The aerosol shaving gels were not included in the shaving cream definition during the Phase I rulemaking because they represented a small fraction of the sales and emissions in 1990. The shaving gel market has grown substantially since the Phase I rulemaking due to the increasing use of bladder or barrier-pack type pressurized products where the propellant is physically separated from the product. Hence, there was not a precedent set when shaving creams were separated from shaving gels. Rather, the pressurized shaving gel market was excluded at the time of the Phase I rulemaking because it had a small emissions impact.

**53. Comment:** We feel that staff developed the proposed limit of 6 percent for hair mousses before they were aware of a specialized type of hair mousse we refer to as a “wet hair foaming hair spray.” Since the product has only recently been found to fall under the hair mousse rather than hair spray definition, we are currently reformulating to meet the 16 percent VOC hair mousse standard. We are uncertain of the technical feasibility of the proposed 6 percent standard for this specialized hair mousse. We request that the hair mousse limit be revisited mid-2002 to determine whether manufacturers of this type of hair mousse have been successful in their attempts to meet the 6 percent limit. If manufacturers are unable to meet the 6 percent limit, we request that a new category be established for these products with a 16 percent VOC limit. (Beveridge)

**Agency Response:** As discussed in General Comment No. 6, a year before each consumer product limit becomes effective, staff conducts a technology assessment to monitor manufacturers’ progress in developing complying products by the effective date. If the technology assessment demonstrates that manufacturers are unable to comply by the effective date, the staff will propose the appropriate modifications to the regulation. As discussed in the response to the previous comment, however, at this time we believe that the 6 percent standard is feasible, since there already exists a product which complies with the standard.

**54. Comment:** Although CTFA finds the standards for the hair mousse and nail polish remover categories to be technically challenging, compliance is possible by the December 31, 2002, and December 31, 2004, effective dates, respectively. (CTFA-1, CTFA-2)

**Agency Response:** Comment noted.

***Nail Polish Remover Category***

**55. Comment:** The proposed standard of zero percent VOC for nail polish removers is technically challenging but doable by the effective date of December 31, 2004. (CTFA-2)

**Agency Response:** Comment noted.



### Sealant and Caulking Compound Category

56. **Comment:** We support the exclusion of floor seam sealers from the definition of sealant and caulking compounds. This is consistent with the U.S. EPA's consumer products regulation, and is appropriate due to a lack of feasible alternatives and the low potential for emission reductions. (RFCI)

**Agency Response:** Comment noted.

57. **Comment:** We support the proposed limit and effective date. (Sherwin-1)

**Agency Response:** Comment noted.

### Tire Sealants and Inflators

58. **Comment:** Manufacturers may not be able to make complying formulations without using patented formulations, which may make compliance economically infeasible. ARB should closely monitor the progress of companies to insure that they are able to find economically feasible compliance options. (AAIA)

**Agency Response:** While we agree that monitoring of this category and other regulated categories is warranted, we should emphasize that the 20 percent VOC standard for this category is commercially and technologically feasible for several reasons. First, 20 percent by weight is the minimum amount of VOC which representatives from both the Chemical Specialties Manufacturers Association (CSMA) and the Automotive Chemical Manufacturers Council (ACMC) have identified as technically feasible for this category (ISOR, Volume II, Chapter VI, Page 168). Second, the three distinctly different patented formulations cited in support of the 20 percent VOC standard represent at least half of the current market, strongly indicating that these three formulations provide effective performance for consumers. The fact that there are at least three distinctly different ways to make an effective 20 percent VOC product suggests that there are probably other ways to make effective, compliant products without infringing on the three existing patents.

Finally, marketers wishing to maintain a brand presence on retail shelves can opt to either develop non-infringing formulations or enter into licensing agreements with the patent holders. Because each of the patented complying products uses a different technology to provide effective performance, there would be little incentive for the patent holders to require unreasonable licensing agreements from licensing applicants. For example, if licensing one patent proves too costly or disadvantageous, the licensing applicant could seek more favorable agreements with the other patent holders. Thus, competitive market forces will likely allow manufacturers who choose not to develop their own formulations to enter into reasonably priced marketing agreements with patent holders.

In any case, ARB staff agrees with the commenter's suggestion for monitoring manufacturers' progress in meeting these standards and has committed to conducting such a technology assessment. (See the response to General Comment No. 6.)

**59. Comment:** We support the proposed limit and effective date. (Sherwin-1)

**Agency Response:** Comment noted.

## C. OTHER COMMENTS

### Cost-Effectiveness Comments

**60. Comment:** Of the 18 categories proposed for regulation, 16 of them have been previously regulated. Additional reformulation places a significant financial burden on manufacturers. Part of this financial burden will be transmitted to the consumers in the form of higher prices. (CSMA-2)

**Agency Response:** The cost analysis conducted by ARB staff covers both new categories, and categories already subject to VOC limits. We do not believe that previously regulated categories are under any extra financial burden that is not reflected in the cost analysis. Most of these categories were last reformulated prior to 1995, and the categories reformulated more recently were generally provided with a later December 31, 2004, effective date. As stated in the ISOR (see Chapter VIII, Pages 198-220), the cost analysis evaluated the proposed VOC limits for potential impacts on manufacturers' profitability, the cost-effectiveness of the limits, and the estimated cost impacts to consumers. Based on our analysis, we expect most manufacturers to be able to absorb the added costs of the proposed regulation without an adverse impact on their profitability. In addition, we found that the proposed amendments are cost-effective relative to similar ARB regulations. Regarding the impact to consumers, the per unit cost increase is estimated to range from \$0.00 to \$0.30 per unit, with a sales-weighted average cost increase of only \$0.02, assuming all of the costs of the regulation are passed on to consumers. In reality, we believe it is probable that the costs of the regulation will be partially absorbed by companies and partially passed on to consumers.

**61. Comment:** The cost analysis for the regulation assumes that reformulated products will be sold nationwide. This approach underestimates the cost of reformulation because it spreads the cost over much larger product sales, thus reducing the incremental cost per item. Costs should only be spread over the California sales. No other CARB regulation credits national emission reductions in their cost analysis. Hence, the cost-effectiveness is not directly comparable to other CARB regulations. (CSMA-2, CSMA-3)

**Agency Response:** The approach used to estimate the cost-effectiveness of the proposed amendments is appropriate, and has been used consistently during previous amendments of the consumer products regulation. The cost-effectiveness estimates are also directly comparable to those of other ARB regulations. The argument raised by the commenter has been raised during each of the previous consumer products rulemakings. In essence, the

contention is that manufacturers will be forced to reformulate national product lines in order to comply with California regulations, and therefore, the increased cost for reformulating nationally should be compared against the emission reductions achieved in California only. We believe this approach is inappropriate and will considerably overestimate the cost of the regulation.

California laws do not prohibit the sale of noncomplying products in other states. In fact, many products are sold regionally and hence are not reformulated to meet California regulations. Because we do not force manufacturers to reformulate nationally, the cost analysis could legitimately spread the reformulation cost for the products sold in California to the emission reductions achieved in California. However, this approach yields the same result as the national cost versus national reductions analysis. Recognizing that most manufacturers will choose to market their lower VOC complying products nationally, ARB has used national comparisons in consumer products regulation cost analyses, since the emission reductions will be realized not only in California but throughout the United States. Additional discussion on this issue is provided in the response to Comment No. 62.

**62. Comment:** ARB failed to reflect the cost-effectiveness assessment performed by CSMA, which used cost information gathered from manufacturers, in the cost-effectiveness calculations. The CSMA cost-effectiveness assessment differs from CARB's in two aspects, both of which results in much higher cost impacts than those calculated by CARB. Calculations use national costs vs California reductions, and cost data gathered from manufacturers are generally significantly higher than those estimated by CARB. These data include many costs not included by CARB in the cost analysis. These items are individually small but collectively add up to significant costs. Included are items such as the cost of attending CARB workshops and participating in the regulatory development process, regulatory compliance audits to insure that products comply with standards, code dating, and maintenance of production records for three years. In addition, CARB's analysis assumed that each and every limit is found to be technologically and commercially feasible. If the limit is found to be too challenging, additional costs will be incurred applying for an innovative products provision or a variance petition. The costs will also be felt by suppliers of raw materials as they tool up to sell new ingredients. We realize that it would be difficult for CARB to quantify all the myriad of small costs and impacts of the regulation, but we urge CARB to use the more realistic estimates supplied by CSMA in the Final Statement of Reasons. We cannot concur with the numerous statements in the analysis that the costs are overestimated. (CSMA-3)

**Agency Response:** As the commenter correctly noted, it would be difficult, if not impossible, for CARB to quantify all of the cost impacts of the regulation. Each company will face different impacts based on the products they sell, their current staffing, suppliers, ingredients, production capacity, current tooling and other aspects of their existing operations. Because of this, CARB quantifies the major non-recurring (one-time) and recurring (ongoing) costs for an average company operating in a given market sector. Contrary to the commenter's assertions, CARB generally used more conservative estimates than the CSMA analysis for the non-recurring costs, which include costs for new equipment, additional staffing during the reformulation phase, labeling and new marketing/distribution strategies. This commenter and other industry members have raised the same issues regarding the cost analysis with each consumer products regulation, yet CARB's assumptions have proven to be conservative (i.e., to overstate the actual cost impacts) for past consumer products regulations. As discussed in

Volume II, Chapter VIII, Page 211 of the ISOR, CARB's cost analyses have overestimated the impacts due to consumer products regulations. For example, the hair spray cost analysis overestimated the cost impacts of the regulation by a factor of 10, due to the many conservative assumptions outlined in Chapter VIII of the ISOR.

The CSMA's cost analysis also compares California emission reductions with national sales, as discussed in the response to Comment No. 61. In so doing, they inflate the impact of the regulation. For example, using CSMA's estimated cost of 4.7 million per year for brake cleaners, that the cost to manufacture brake cleaners would roughly double. This defies logic when considering that complying products are marketed today which compete pricewise with noncomplying products.

**63. Comment:** The cost-effectiveness of ARB regulations must be addressed in terms of the ozone or PM10 reductions the regulations achieve, rather than VOC reductions. In this format, consumer products regulations will be shown to be cost-ineffective compared to regulations of other emissions sources. (Amway-1, Amway-2)

**Agency Response:** The suggested approach is simply not practicable. The cost-effectiveness would be difficult to express in terms of the ozone or PM10 reductions because the amount of the reductions is dependent on many variables, including geography, weather conditions, the reactivity of the individual VOCs, and VOC to NO<sub>x</sub> ratios. For many years the ARB (as well as other governmental agencies that regulate air quality) has used a cost-effectiveness scale that compares the cost of the regulation with the reduction in emissions achieved by the regulation. In this format, the cost-effectiveness of different regulations can be compared. As mentioned in the ISOR, the Mid-term Measures II amendments are cost-effective compared with other ARB regulations. We also note that because California is faced with severe air pollution problems, all sources of VOC emissions that are amenable to control are under scrutiny for possible regulation or tightening of existing regulations as new technologies emerge.

**64. Comment:** The cost-effectiveness of the regulation is quite high, due to the fact that many of these categories are being re-regulated for a second or third time. Further regulation of these categories would not be commercially feasible. (SCJ)

**Agency Response:** The commenter is correct in noting that many of these categories have been previously regulated. However, ARB staff considered the economic impacts on these categories, as explained in the response to Comment 60. As stated in the cost analysis, the cost-effectiveness of the proposed amendments is within the range of other ARB regulations. This is true even for the previously regulated categories. In addition, staff extended the effective date to December 31, 2004, for most categories that were reformulated recently. This will allow adequate time for companies to sell recently developed products and thus recoup development costs. We also note that most other sources of criteria pollutants have also been subject to multiple rounds of increasingly stringent regulations.

**65. Comment:** We are concerned with future rulemaking activities, since in most categories the limits of efficacy and cost-effectiveness have already been reached. (Sherwin-1, Sherwin-2)

**Agency Response:** As with all of ARB's consumer products rulemaking efforts, staff will evaluate the technological and commercial feasibility of any proposed new VOC limits, including the cost-effectiveness of the proposal. If a category is not amenable to regulation due to high reformulation costs or the potential for little VOC reductions, the category will be dropped from consideration.

### **Technical and Commercial Feasibility**

**66. Comment:** The demonstration of technical feasibility as having at least one complying product currently being marketed is overly simplistic and does not account for the many different types of products which fall within a given category. The phrase "the limit can be reasonably expected to be met in the time frame provided through additional development efforts" makes technological feasibility a speculative concept whereby almost anything could be considered feasible. Hence, we disagree with staff's interpretation of technical feasibility. (CSMA-3)

**Agency Response:** The legal basis for staff's interpretation of technological and commercial feasibility is discussed in Volume II, Chapter III, Pages 34-36 of the ISOR. This is the same legal interpretation that staff has used for all of the other consumer product regulations adopted over the last decade by the ARB. Considering the availability of complying products, and establishing limits that can reasonably be met within the time frame provided, have proven to be effective means of regulating consumer products for many years. A detailed discussion of the technical basis for each VOC limit is contained in Volume II, Chapter VI of the ISOR. In determining the feasibility of meeting a VOC limit within a specified time frame, staff considers: the variety of complying and non-complying products within the category; the uses of the products; the reformulation options available for compliance; and the information received from the affected industry. Staff also conducts a technology assessment prior to the effective date of each VOC limit to monitor industry's progress in complying with the VOC limit. The VOC limits in this regulation were all supported by the commenter at the Board hearing with the exception of the automotive windshield washer fluids category (see automotive windshield washer fluids comments). Hence, staff disagrees with the commenter's assertion that an overly simplistic interpretation of "technical feasibility" is used to establish VOC limits.

**67. Comment:** The primary defect in the ARB's interpretation of "basic market demand" is that it fails to consider the two primary quantitative factors that affect the commercial viability of a product, performance and price, the ratio of which constitutes the product's value. Commercial feasibility is based on a product's value, which was ignored by ARB. Marketers in the consumer products industry would consider commercial feasibility to be whether the regulation results in little or no change in sales volume for that category. If a change resulted in a significant drop in sales volume, it should be considered infeasible. (CSMA-3)

**Agency Response:** Performance and price are considered when determining the commercial feasibility of a VOC limit. Staff reviews available performance data when determining the commercial feasibility of VOC limits. Staff also estimates the increase in cost

per unit of product for each VOC limit when conducting the economic impacts analysis (see Volume II, Chapter VIII of the ISOR). The commenter suggested that commercial feasibility should be determined based on whether a regulatory change “resulted in a significant drop in sales volume.” This approach is unworkable. First of all, it is obvious that this approach could never be used to assess the feasibility of a limit that is simply being proposed in a regulatory action (such as the limits proposed in this rulemaking). In addition, shifts in sales volumes occur for many reasons, such as changing consumer preferences and other factors that may be completely unrelated to governmental regulation. For these reasons, there is simply no practical way to implement the commenter’s suggestion.

### **Environmental Impacts**

**68. Comment:** The ISOR claims that VOC emissions from consumer products are a source of PM<sub>10</sub>. We know of no such study that supports this contention. In fact, a major study, “The Atmospheric Aerosol-Forming Potential of Whole Gasoline Vapor” published in the April 4, 1997 edition of *Science* concluded that the only fraction of gasoline vapor contributing to aerosol formation was the aromatic fraction. Consumer products contain little aromatic hydrocarbon, and hence, contribute negligibly to PM<sub>10</sub> formation. (CSMA-3)

**Agency Response:** The basis for the statement that VOC emissions from consumer products contribute to PM<sub>10</sub> formation is discussed in Volume II, Chapter IV of the ISOR. It is inappropriate to use the referenced study to predict the aerosol formation potential for most of the VOCs in consumer products. The 1997 ARB Survey shows that most of the VOCs in consumer products are alcohols, glycol ethers, and ketones. These VOCs behave differently than gasoline hydrocarbons in the atmosphere due to their more polar nature. Hence, the commenter’s use of the referenced study as a basis for asserting that consumer products contribute negligibly to PM<sub>10</sub> formation is not credible. In fact, it is widely recognized in the scientific community that VOCs which reach the atmosphere can become involved in either condensation mechanisms or reactions with other species present in the atmosphere to form particulate matter. The rulemaking record contains several references to existing scientific literature which discuss the causes and formation of particulate matter.

**69. Comment:** We disagree with the statement in the ISOR that the exact reductions in atmospheric ozone and PM<sub>10</sub> achieved by the rulemaking cannot be predicted. The reductions in PM<sub>10</sub> are negligible, based on the study referenced in the previous comment. The reductions in ozone can be predicted based on relative reactivities of the VOCs in the inventory and using computer models. Both methodologies would show that the ozone reductions are disproportionately small. (CSMA-3)

**Agency Response:** The study which the commenter refers to has little relevance to consumer products, as discussed in the previous response. It is difficult to exactly quantify the effect of VOC reductions on PM<sub>10</sub> and ozone formation because their formation depends on many variables, such as atmospheric temperature, pressure, wind, sunlight, moisture content, and other species present in the air. The modeling and relative reactivity scales attempt to standardize these variables in order to predict ozone formation under specific conditions. However, it is not possible to predict the exact ozone or PM<sub>10</sub> formation under the constantly

changing conditions of the real world. In ozone attainment demonstrations, modelers choose specific conditions which tend to maximize ozone formation. Such models approximate the ozone levels actually measured by monitoring stations.

The commenter also infers that ozone formation due to consumer products is disproportionately small compared to other sources. It is true that the VOCs used in consumer products tend to be less reactive than VOCs from sources such as motor vehicles. However, attainment in the South Coast Air Basin cannot be achieved by controlling only the sources of the most reactive VOCs. Less reactive VOCs released in large quantities contribute substantially to ozone formation, and cannot be ignored if ozone attainment is to be reached.

### **Emissions Comments**

**70. Comment:** The data from the Survey needs additional work prior to being incorporated into an emissions inventory. The following are needed:

- Development and utilization of appropriate emissions factors to remove VOC content that is never emitted to ambient air;
- Removal of all non-consumer products whose emissions have been duplicated in other emissions categories by CARB or the Districts;
- Development of market coverage adjustments which better reflect the actual market coverage of the Survey. The methodology of counting products on a shelf to determine market share is too inaccurate; and
- Review of the 20 percent of the inventory that is composed of small categories included in the U.S. EPA survey but which were not covered by the 1997 Survey to determine what portion of these products are still marketed. (CSMA-3)

**Agency Response:** Staff, in consultation with industry, performed all of the work described above when developing the emissions estimates for consumer products. A complete description of the methods used to estimate the VOC emissions from consumer products is contained in Volume II, Chapter IV of the ISOR.

The commenter's implication that shelf surveys were the only source of information used to develop market coverage adjustment factors is incorrect. Staff also used previous survey data, bar code data, and estimates from industry experts to develop the market coverage adjustment factors.

The incorporation of the consumer products inventory into the updated State Implementation Plan (SIP) is an ongoing public process with the affected industry. Thus, the ARB will provide additional opportunities for industry to review and comment on the emissions estimates.

**71. Comment:** The “Adjustments for Lawsuit Commitments” section of the ISOR uses the uncorrected Survey data to estimate a VOC inventory of 280 tons per day. The corrections mentioned in Comment No. 70 need to be performed prior to making these adjustments. If this were done, the inventory for 1997 would be less than the SIP estimate of 200 tons per day. Such a study was performed by Sierra Research under contract with CSMA in July, 1997. The study found that the 1990 VOC emissions inventory for consumer products was actually 215 tons per day, well below the 265 tons per day estimate in the SIP or the revised estimate of 326 tons per day presented in the ISOR. The discrepancies between the Sierra Research estimate and the ISOR estimate are due to inclusion of emissions that were either not VOCs or not from consumer products. These types of errors indicate the need for cooperation between CARB and the consumer products industry during the inventory development and SIP update. (CSMA-3)

**Agency Response:** As discussed in the response to Comment No. 70, ARB staff did make the corrections to the 1997 Survey data suggested by the commenter prior to making the adjustments for the lawsuit commitments. The study conducted by Sierra Research under contract with CSMA was inaccurate because it relied solely on 1990 data from a U.S. EPA survey that did not include information on the sales or VOC content of individual products. In contrast, the ARB’s emissions estimate is based on the 1997 ARB Survey results which include information on the sales and VOC content of individual products in 100 consumer product categories. The 1997 Survey results were corrected to exclude non-consumer products prior to making the emissions inventory estimate. In fact, data summaries from the 1997 Survey, which included lists of products, were sent to the commenter and other industry members to solicit feedback on incorrectly categorized products. All comments from industry were noted and the Survey results were corrected. The 1997 inventory estimate of 280 tons per day and the 326 tons per day estimate for 1990 do not include VOC emissions from products where they are recognized to have other biological fates (see SIP Comment No. 73).

While we do not agree with most of the commenter’s statements, we do agree that the consumer product inventory development and SIP update process are a cooperative effort between the ARB and members of the consumer products industry. We will continue to work with industry to insure that the most accurate data are utilized.

#### **State Implementation Plan (SIP) Comments**

**72. Comment:** The 1994 SIP indicates that reductions from consumer products in the Mid-term Measures are to come from previously unregulated categories. Due to the difficulty of obtaining reductions from these categories, the current proposal is targeting primarily regulated categories. Hence, the 1994 SIP must be reviewed as it may contain commitments that are not technically or commercially feasible. (Amway-1, Amway-2, CSMA-3)

**Agency Response:** The SIP acts as a guide or road map for achieving compliance with the federal ozone standard, but does not preclude the ARB from adopting other measures or different measures as needed. Although the 1994 ozone SIP indicates that the Mid-term Measures would target previously unregulated categories, it does not preclude the ARB from adopting stricter standards that are technically and commercially feasible for previously regulated categories.



The ARB plans to update the ozone SIP in 2001. During the SIP update process, the ARB will reassess the feasibility of the 1994 SIP commitment for consumer products. The SIP update process is an open public process, and will include a series of workshops with the consumer products industry. Thus, the consumer products industry will have ample opportunity to provide input on the future SIP emission reduction goals proposed for consumer products.

**73. Comment:** The SIP emissions inventory must be revised to reflect the availability of VOCs to react in the atmosphere and form ozone. Many VOCs find fate in the sewage systems rather than in the air. (Amway-1, Amway-2, CSMA-3)

**Agency Response:** The 1997 emissions estimate for consumer products reflects the fact that most of the ethanol in laundry soaps and hand dishwashing soaps are biodegraded in the sewage system. This was done because the Soap and Detergent Association sponsored a comprehensive study which demonstrated the environmental fate of ethanol from these soap categories. ARB staff has requested that the commenters provide scientifically valid data to substantiate their claim that VOCs in other consumer products are biodegraded in the sewer system. The data provided to date by the commenters have not been scientifically valid, and the ARB is not aware of any other data that would validate this claim.

ARB has expressed a willingness to work with the commenters to design scientifically valid studies on the environmental fate of VOCs in consumer products. If such studies demonstrate that certain VOCs are not emitted into the air, the ARB will revise the emissions estimate for consumer products.

**74. Comment:** Although the SIP contains a commitment for an 85 percent VOC reduction from consumer products, no studies exist which show that such a reduction is necessary in order to achieve ozone attainment in the South Coast Air Basin. In fact, CSMA sponsored a study conducted by Sierra Research in 1997 which was shared with staff which found that no additional reductions beyond the 30 percent achieved from the near-term measures were necessary to achieve ozone attainment. The study utilized the inventories and Urban Airshed Model on which the 1994 SIP attainment demonstration was based. Therefore, the SIP goal cannot be used to prove the necessity of the reductions from Mid-term Measures II within the meaning of section 41712 of the Health Safety Code. (CSMA-3)

**Agency Response:** We disagree with the commenter's assertion that further reductions in VOC emissions from consumer products are not necessary to achieve ozone attainment in the South Coast Air Basin. The Urban Airshed Model is not designed for the type of study conducted by Sierra Research. In addition, the 1994 SIP only addresses attainment of the federal ozone standard, which is less stringent than the State ozone standard. Additional VOC reductions beyond those committed to in the 1994 SIP are necessary to achieve the State ozone standard. The best information available to ARB staff shows that it is imperative that the ARB adopt all measures that are technologically and commercially feasible in order to achieve attainment of both the federal and State ozone standards in the South Coast Air Basin.

### Miscellaneous Comments

75. **Comment:** No VOC limits should be less than 3 percent VOC by weight. This is the limit of accuracy of Method 310, so below this level ARB is unable to determine whether a product complies or not. (CSMA-2)

**Agency Response:** We disagree. ARB Method 310 is sufficient for enforcing VOC limits less than 3 percent. The overall error rate of Method 310 is plus or minus 3 percent, but this applies to products that have multiple VOCs at different content levels. Although windshield washer fluids and nail polish removers have VOC limits less than 3 percent, these products typically contain a single VOC. For products such as these, Method 310 can measure down to plus or minus 0.5 percent (i.e., because there is only a single VOC in most cases, Method 310 is very accurate in quantifying the amount of that single VOC). In addition, Method 310 is not the only way to determine compliance. Section 94515(b) allows VOC content to be calculated using a manufacturer's formulation records. Thus, it would be relatively simple for ARB's enforcement staff to request formulation data on these products and use this information to determine compliance. (The response to Comment No. 19 provides additional discussion which addresses these issues.)

76. **Comment:** The Alternative Control Plan needs to be streamlined to make this compliance option more attractive to manufacturers. The current process, although conceptually good, is extremely cumbersome and therefore has been underutilized. (SCJ, Sherwin-2)

**Agency Response:** ARB is currently planning to consider amendments to "streamline" the ACP. This effort will be done cooperatively with members of the consumer products industry. Workshops will be held during 2000 and 2001 to discuss modifying the ACP.

77. **Comment:** We encourage the development of relative reactivity control strategies. (Sherwin-2)

**Agency Response:** The ARB has developed a reactivity regulation for aerosol coatings which was approved by the Board in June, 2000. This regulation sets standards for aerosol coatings based on the ozone formation potential of the product rather than the VOC content of the product. This regulation represents the first use of relative reactivity in the consumer products arena, and will serve as a model for considering the regulation of other categories following its successful implementation.

78. **Comment:** We support the deletion of the hairspray reporting requirements. (CTFA-2)

**Agency Response:** Comment noted.