California Environmental Protection Agency

AIR RESOURCES BOARD

INITIAL STATEMENT OF REASONS FOR PROPOSED AMENDMENTS TO THE CALIFORNIA REGULATIONS FOR REDUCING VOLATILE ORGANIC COMPOUND EMISSIONS FROM ANTIPERSPIRANTS AND DEODORANTS, CONSUMER PRODUCTS AND AEROSOL COATINGS

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State of California
AIR RESOURCES BOARD

PROPOSED AMENDMENTS TO THE CALIFORNIA REGULATIONS FOR REDUCING VOLATILE ORGANIC COMPOUND EMISSIONS FROM ANTIPERSPIRANTS AND DEODORANTS, CONSUMER PRODUCTS AND AEROSOL COATINGS

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State of California
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INITIAL STATEMENT OF REASONS FOR PROPOSED RULEMAKING

Public Hearing to Consider
PROPOSED AMENDMENTS TO THE CALIFORNIA REGULATIONS FOR REDUCING VOLATILE ORGANIC COMPOUND EMISSIONS FROM ANTIPERSPIRANTS AND DEODORANTS, CONSUMER PRODUCTS AND AEROSOL COATINGS

To be considered by the Air Resources Board on September 28-29, 1995 at

Air Resources Board
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Initial Statement of Reasons
for
Proposed Amendments to the California Regulations for Reducing Volatile Organic Compound Emissions from Antiperspirants and Deodorants, Consumer Products and Aerosol Coatings

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I.

INTRODUCTION

This report presents the Air Resources Board (ARB) staff's proposed amendments to the Regulation for Reducing Volatile Organic Compound Emissions from Antiperspirants and Deodorants (the "antiperspirant and deodorant regulation"). These amendments are proposed in response to certain issues which we believe warrant attention in this regulation. Additionally, to reflect the United States Environmental Protection Agency's (U.S. EPA) decision to exempt certain negligibly photochemically reactive compounds from their volatile organic compound (VOC) definition, we have also proposed amendments to the VOC definition in the Regulation for Reducing Volatile Organic Compound Emissions from Consumer Products (the "consumer products regulation") and the Regulation for Reducing Volatile Organic Compound Emissions from Aerosol Coating Products (the "aerosol coatings regulation"), as well as in the antiperspirant and deodorant regulation.

This report comprises the Initial Statement of Reasons for Proposed Rulemaking as required by the Administrative Procedure Act, and is composed of two volumes. This volume, Volume I "Introduction and Executive Summary," provides an overview of the purpose of the amendments to the regulations, a summary of our recommendations, and the environmental and economic impacts from our proposal. The summary is presented in question-and-answer format using commonly asked questions about our efforts to amend these regulations. Volume II, the Technical Support Document (TSD), is a more detailed presentation of the technical basis for the proposed amendments to the regulations.

A. BACKGROUND

California Clean Air Act

In 1988, the Legislature enacted the California Clean Air Act (CCAA or "the Act"), which declared that attainment of the California state ambient air quality standards is necessary to promote and protect public health, particularly the health of children, older people, and those with respiratory diseases. The legislature also directed that these standards be attained by the earliest practicable date.

The CCAA added section 41712 to the California Health and Safety Code (HSC) which, along with subsequent amendments, requires the ARB to adopt regulations to achieve the maximum feasible reduction in reactive organic compounds (ROCs) emitted by consumer products (note: ROC is equivalent to VOC). In enacting section 41712, the legislature gave the ARB new authority to control emissions from consumer products, an area that had previously been subject to very few air pollution control regulations.

To date, the Board has adopted four regulations to fulfill the requirements of the Act as it pertains to consumer products. On November 8, 1989, the ARB approved a regulation for reducing VOC emissions from antiperspirants and deodorants (the "antiperspirant and deodorant regulation;" sections 94500-94506.5, Title 17, California Code of Regulations (CCR)). The ARB then approved a more comprehensive regulation for reducing VOC emissions from 26 other categories of consumer products (the "consumer products regulation;" sections 94507-94517, Title 17, CCR), which was adopted by the Board in two phases. Phase I was approved on October 11, 1990, and Phase II was approved on January 9, 1992.

The third regulation, the "Alternative Control Plan Regulation for Consumer Products" (the "ACP") was adopted by the Board on September 22, 1994. This voluntary, market-based regulation employs the well-established concept of an aggregate emissions cap or "bubble." This program supplements existing regulations by providing consumer products manufacturers additional flexibility when formulating consumer products. When approved by the Office of Administrative Law (OAL), this regulation will be contained in Title 17, California Code of Regulations, sections 94540-94555.

The fourth regulation adopted to fulfill the requirements of the Act, the "Regulation to Reduce Volatile Organic Compound Emissions from Aerosol Coating Products and Amendments to the Alternative Control Plan for Consumer Products" (the"aerosol coatings regulation") was adopted by the Board on March 23, 1995. This regulation limits the VOC content for 35 categories of aerosol paints, and also incorporates the ACP mentioned above for the "bubbling" of aerosol coatings emissions. When approved by the OAL, this regulation will be contained in Title 17, California Code of Regulations, sections 94520-94528.

The State Implementation Plan

On November 15, 1994, the ARB adopted the State Implementation Plan (SIP). The SIP serves as California's overall long-term plan for the attainment of the federal ambient air quality standards. Achieving significant VOC reductions from consumer products, including antiperspirants and deodorants, is a key element of the SIP. Together with significant reductions from stationary facilities, mobile sources (e.g., cars, trains, boats), and other area sources (e.g., architectural coatings), the reductions to be obtained under the consumer products element of the SIP will help achieve attainment of the air quality standards for ozone. The VOC reductions from consumer products will also help several districts meet rate-of-progress requirements in the federal Clean Air Act (CAA).

The consumer products component of the SIP is a multifaceted program composed of "near-term," "mid-term," and "long-term" control measures. The near-term SIP measures are comprised of our existing consumer product regulations (including the antiperspirant and deodorant regulation), the alternative control plan regulation, and the aerosol paint regulation. The mid-term measures consist of regulations to cover additional product categories not currently subject to the existing program. The long-term measures rely on new technologies with components of market incentives and consumer education.

In the SIP, the ARB has committed to an overall 85 percent reduction in consumer product emissions by the year 2010. This reduction is necessary to help the South Coast Air

Basin, among others, attain the federal ozone standard and meet the rate of progress requirements under the federal Clean Air Act. For consumer products, the near term measures (phases I and II of the consumer products regulation, the antiperspirant and deodorant regulation, the aerosol coatings regulation, and ACP regulations) will contribute about 30 percent of the needed emission reductions by the year 2000, while the additional reductions will come from the mid-term and long-term measures and will occur after the year 2000. In regard to the antiperspirant and deodorant regulation, emission reductions to be realized from full implementation of the antiperspirant and deodorant regulation were claimed. Approximately 5.9 tons per day (T/D) emission reductions were claimed in the year 2000. This is an 80 percent reduction from the uncontrolled projected baseline of 7.4 T/D in the year 2000, consistent with the Board's direction when the regulation was adopted and with HSC section 41712.

On November 15, 1994, the ARB submitted the consumer products regulations (including the antiperspirant and deodorant regulation) to U.S. EPA as a SIP revision. On January 13, 1995, the U.S. EPA determined the submittal to be complete and on February 14, 1995, the regulations were approved. Publication in the Federal Register is pending at this time.

B. ANTIPERSPIRANT AND DEODORANT REGULATION

Regulatory History and Structure

The antiperspirant and deodorant regulation was adopted by the Board on November 8, 1989. Notably, this was a landmark action by the Board as it represented the first regulation considered and adopted under the ARB's authority to control consumer product emissions.

The antiperspirant and deodorant regulation adopted by the Board establishes VOC standards for both aerosol and non-aerosol antiperspirants and deodorants. These VOC standards are based on the vapor pressure of VOCs. As such, high volatility organic compounds (HVOCs, or compounds with a vapor pressure of greater than 80 mm Hg at 20°C) are regulated in these products separately from medium volatility organic compounds (MVOCs, or compounds with vapor pressures of greater than 2 mm Hg and less than or equal to 80 mm Hg when measured at 20°C). HVOCs are the propellants used in aerosol products, whereas the MVOC used in both aerosols and non-aerosols is generally ethanol. VOCs with vapor pressures less than 2 mm Hg when measured at 20°C are exempt from the regulation and are compounds typically found in the non-aerosol forms or as the active ingredients in aerosol antiperspirants.

The regulation is designed to achieve an overall 80 percent reduction in the VOC emissions of antiperspirants and deodorants, which will occur in three phases. The first phase, which essentially places a cap on the VOC contents of existing antiperspirants and deodorants, was implemented effective upon approval of the regulation by OAL (February 28, 1991). Effective on December 31, 1992, standards went into effect limiting the HVOC and MVOC concentrations in aerosol antiperspirants to 60 percent HVOC and 20 percent MVOC, and for aerosol deodorants to 20 percent HVOC and 20 percent MVOC.

HVOC and MVOC standards were set at zero for non-aerosol products. The final phase, which is designed to achieve the overall 80 percent reduction in emissions, became effective January 1, 1995, and requires the HVOC content of aerosol deodorants and antiperspirants to be zero percent and the MVOC content not to exceed 10 percent by weight. However, ethanol will remain in a number of formulations as there is a provision exempting ethanol contained in "existing products," from the MVOC standards. Existing products are defined as formulations which were sold, supplied, offered for sale, or manufactured in California prior to January 1, 1990. Existing ethanol-containing products may be reformulated without losing their ethanol exemption, as long as the reformulation reduces the product's total ethanol content or total VOC content. The 1995 zero HVOC standard for aerosol antiperspirants and deodorants essentially requires manufacturers to use non-VOC propellants in their aerosol formulas. However, the Board allowed manufacturers additional time beyond 1995 to meet the zero percent HVOC standard, if necessary, provided they submit a "compliance plan" showing that, while they were making a good faith effort to produce a zero HVOC product, they would not be able to meet the January 1, 1995 standard.

The provision referred to above, allowing extra time for producers of aerosol antiperspirants and deodorants, is entitled "Special Requirements for Aerosol Manufacturers." As described briefly above, this provision allows aerosol antiperspirant and deodorant manufacturers to be temporarily exempted from the 1995 (zero percent HVOC) standards under certain specific conditions. Aerosol antiperspirant and deodorant manufacturers can, if they cannot meet the January 1, 1995 standards, request additional time for reformulation, by submitting a compliance plan detailing how they will achieve compliance with the standards on or before January 1, 1999. If the compliance plan is determined to be acceptable by the Executive Officer, the January 1, 1995 standards may then be extended to January 1, 1999, at the latest. This effectively extends the deadline for the zero HVOC aerosols from about 5 years to about 9 years from the Board hearing date, for those manufacturers choosing to participate in the compliance plan and actively involved in developing alternatives to the standard aerosol product. This compliance was to be submitted to the ARB by January 1, 1994.

Currently, there are nine manufacturers that have received extensions until January 1, 1999. All nine manufacturers voluntarily committed to an interim lower HVOC limit by January 1, 1997 of 40 percent HVOC for antiperspirant aerosols and 14 percent HVOC for aerosol deodorants. In addition they provided technical development plans as to how they would develop products to meet the zero percent HVOC required in the regulation by January 1, 1999. These manufacturers have submitted sufficient technical detail to indicate that they are making a good faith effort to comply with the zero percent HVOC standard. After reviewing these compliance plans we are optimistic about the potential for major technological breakthroughs in this area.

On October 11, 1990, the antiperspirant and deodorant regulation was amended. At that time the ARB approved the inclusion of the innovative products provision in the regulation consistent with the Phase I consumer products regulation. The innovative product provision allows manufacturers to market a product that may exceed the HVOC/MVOC content limit provided that a demonstration is made to the Executive Officer that through the

use of the product, less total VOC emissions are released. To date, one manufacturer, Gillette Company, has received an innovative product exemption for a deodorant gel product.

The antiperspirant and deodorant regulation was amended again in January 1992. These amendments included addition of an 18-month sell-through provision, and minor modifications to the innovative products provision and the VOC definition to provide consistency between the antiperspirant and deodorant regulation and the consumer products regulations.

A workshop to discuss proposed amendments to the antiperspirant and deodorant was held on April 12, 1995. Subsequent to the workshop, the ARB Compliance Division recommended several modifications to the regulation to aid in enforcement and to improve consistency with the other consumer product regulations. These changes are reflected in the proposed amendments to the antiperspirant and deodorant regulation in Appendix A of Volume II.

Helene Curtis Petition

Recently, Helene Curtis, Inc. ("Helene Curtis") submitted a petition to the Board requesting that we revisit the antiperspirant and deodorant regulation. The appeal, dated January 27, 1995, is entitled "Petition for Repeal Pursuant to Government Code Section 11347." We have included this petition as Appendix B of Volume II. The primary issue in regard to this petition is the ethanol exemption. Helene Curtis argues that the ethanol exemption is unfair, as they believe that it gives those manufacturers with ethanol-containing existing products a competitive advantage.

On February 4, 1995 the ARB issued a response to the petition, as specified in the Administrative Procedures Act. This response is included with the petition in Appendix B of Volume II. The ARB response, entitled "Decision Granting Petition and Taking Other Specified Actions," granted the Helene Curtis petition. As part of granting the Helene Curtis petition, ARB agreed to schedule a public hearing by September, 1995, to consider the adoption of amendments to the antiperspirant and deodorant regulation. The ARB staff also committed to work with the affected parties prior to the hearing to develop specific regulatory language for the modifications to this regulation. The meetings, workshop, and public documents developed as a part of the process of modifying this regulation, along with the scheduled Board hearing, will fulfill our commitments as described above.

C. THE VOC DEFINITION

The VOC definition is contained in California's currently effective statewide regulations for reducing VOCs from consumer products (Title 17, California Code of Regulations (CCR), sections 94501 and 94508). A definition of VOC is also contained in ARB's aerosol coatings regulation which has not yet been submitted to OAL (Proposed Title 17, CCR section 94521). Until recently, the VOC definition in California's consumer product regulations was consistent with U.S. EPA's VOC definition, with the exception of ethane. However, U.S. EPA recently modified their VOC definition to exempt volatile cyclic and linear methyl siloxanes (VMS), parachlorobenzotrifluoride (PCBTF), and acetone. We

are proposing to modify the VOC definitions in the consumer products regulations to improve consistency with the U.S. EPA's VOC definition and reflect technical findings that demonstrate that the VMS compounds and PCBTF are not photochemically reactive. As will be discussed later, we are not including a recommendation for acetone with this ISOR because we have not yet completed our analysis of the impacts from exempting acetone. However, once we complete this analysis, we will provide a recommendation to the Board at the September hearing.

II.

EXECUTIVE SUMMARY

A. PROPOSED AMENDMENTS TO THE ANTIPERSPIRANT AND DEODORANT REGULATION

What amendments are proposed for the antiperspirant and deodorant regulation?

We are proposing several amendments to the antiperspirant and deodorant regulation. These amendments, which are discussed more fully later in this chapter are to:

- extend the exemption for ethanol to all antiperspirant and deodorant products;
- modify the provision entitled "Special Requirements for Aerosol Manufacturers" to allow additional manufacturers the opportunity to submit a compliance plan and commit to interim 1997 standards, thereby providing them with additional time to reformulate aerosol antiperspirants and deodorants to meet the zero percent HVOC standards;
- modify the definitions for "manufacturer," "fragrance," and "VOC;"
- modify the administrative requirements and test methods sections to clarify that the regulation prohibits removing date-code information from products, and prohibits falsifying or modifying production records to contain inaccurate information;
- modify the variance section to allow for variance periods of greater than one year duration, to be consistent with similar provisions in the other consumer products regulations; and,
- modify the standards section to commit the Board to conducting a public hearing by July 1, 1997, to review and consider any appropriate modifications to the January 1, 1999 zero HVOC limits for aerosol antiperspirant and deodorant products.

Why are we proposing to amend the antiperspirant and deodorant regulation?

We are proposing to amend the antiperspirant and deodorant regulation to address competitiveness concerns identified by manufacturers and to improve the consistency of California's consumer products regulations. We believe the proposed modifications will address these concerns while preserving the emission reductions from antiperspirants and deodorants claimed in the SIP.

What are the goals of the modifications to the antiperspirant and deodorant regulation?

Our primary goals in developing the proposed amendments are to:

- address fairness concerns;
- preserve projected emission reductions required by the SIP;
- ensure that manufacturers will continue their efforts to develop zero percent HVOC products and provide a vehicle for ARB staff to monitor manufacturers' progress; and
- make the VOC definition more consistent with U.S. EPA's VOC definition.

How did the staff develop the amendments to the antiperspirant and deodorant regulation?

In developing these proposed amendments we consulted with individual antiperspirant and deodorant manufacturers and the Cosmetics, Toiletry, and Fragrance Association (CTFA) through meetings and telephone conversations. A workshop was held on April 12, 1995 with notices sent to antiperspirant and deodorant manufacturers, California air pollution control districts and air quality management districts, environmental groups, and trade organizations. In addition to the workshop, antiperspirant and deodorant manufacturers were required by section 94504 of the antiperspirant and deodorant regulation to provide information on their products sold in California. Detailed information was submitted on the product formulations and sales of antiperspirant and deodorant products sold in California in 1993. These data provided valuable information on the antiperspirant and deodorant market and emissions. A summary of the results is included Chapter II of the Technical Support Document, "Antiperspirant and Deodorant Emissions."

What are the proposed amendments to the regulation?

1. Modification of the "ethanol exemption" to allow it for all products rather than just "existing" products.

One of the more significant amendments being proposed to the antiperspirant and deodorant regulation is to extend the ethanol exemption to all antiperspirant and deodorant products. As currently written, the regulation does not require manufacturers to count ethanol as a MVOC when determining compliance for "existing" products. Existing products are defined in the regulation, as products that were sold in California prior to January 1, 1990. It has been argued in a petition by Helene Curtis (see Appendix B of Volume II) that by allowing ethanol to be exempt in "existing" products only, the regulation gives an unfair competitive advantage to companies that were selling ethanol-containing products prior to January 1, 1990. Our proposal to exempt ethanol in all products, not just existing, will address the competitiveness concerns raised by Helene Curtis in their petition and provide the same formulation flexibility to all manufacturers, not just those that had ethanol-containing products in the marketplace prior to January 1, 1990.

We believe that this proposed amendment to the regulation will "level the playing field" and achieve more equitable treatment for all manufacturers while minimizing any adverse emissions consequences. We do not believe that ethanol emissions will increase under this proposed modification because of certain characteristics of the antiperspirant and deodorant market. For example, ethanol-containing products have particular qualities that leave them undesirable for segments of the U.S. population. Additionally, the overall antiperspirant and deodorant market is highly penetrated–over 97 percent of all consumers already use an antiperspirant or deodorant every day–and the only growth occurring in this market is from population growth. Ethanol-containing products are only a small part of the entire market, about 15 percent by weight based on our 1993 survey. New ethanol-containing products would have to compete with well-established products to increase their market share. However, to insure that we have data to substantiate our belief that ethanol emissions will not increase as a result of this proposed modification, we propose to amend the reporting requirements in the regulation to provide yearly reporting of emissions. In this manner, we will be able to track both HVOC and MVOC emissions on a yearly basis and determine if there is any increase in either HVOC or MVOC emissions as a result of this modification. We can then take action to mitigate this emission increase if appropriate.

2. Modifications to the Special Provision for Aerosol Manufacturers.

We are proposing several modifications to the provision. First, we are proposing to remove the final date by which manufacturers must have submitted a compliance plan. As the regulation is presently written, a compliance plan must have been submitted by January 1, 1994, if the plan was to be considered for approval. However, under the proposed amendments, manufacturers may submit a compliance plan at any time. After the plan is determined to be acceptable by the Executive Officer, the manufacturer may be issued an Executive Order extending the time to meet the January 1, 1995 limits to January 1, 1999. This amendment will remove a competitiveness concern, as under the original version of the regulation, a new manufacturer in the aerosol antiperspirant and deodorant market would not have the same opportunities as those manufacturers that were in the marketplace prior to January 1, 1994.

To ensure that the requirements for all manufacturers operating under approved compliance plans are equitable, we are proposing to modify the table of standards to reflect the uniform commitment to produce aerosols with interim lower HVOC limits made by the manufacturers currently having approved compliance plans. Currently, the nine manufacturers that have approved compliance plans and have been provided extensions to January 1, 1999, to produce zero percent HVOC aerosol antiperspirants and deodorants have voluntarily committed to producing, by January 1, 1997, aerosol antiperspirants with HVOC contents not exceeding 40 percent HVOC and deodorant aerosols not exceeding 14 percent HVOC. This interim limit is technologically and commercially feasible and will achieve interim emission reductions from the aerosol category.

We are also proposing to modify the special provision for aerosol manufacturers to more clearly define the key components that must be included in a compliance plan to be approvable. We believe that these amendments will assist manufacturers in their efforts to develop compliance plans as well as helping ARB staff to monitor the progress of industry in

meeting HVOC and MVOC standards established in the antiperspirant and deodorant regulation. Also, these amendments will help to ensure that all the compliance plans are reviewed in a consistent, fair, and equitable manner.

3. Modify the definitions.

We are proposing to modify the definitions for "manufacturer" and "fragrance" in the antiperspirant and deodorant regulation to be consistent with the definitions in the consumer products regulation. We are also proposing to amend the "applicability" section and the applicability portion of the table of standards to be consistent with the consumer products regulation. These are minor changes and will help to minimize the differences between all of the consumer product regulations. We are also proposing to modify the VOC definition in these three regulations to make our definition more consistent with the U.S. EPA definition. This modification is discussed in more detail later in this chapter.

4. Modify the variance section.

We are proposing to remove the one year restriction on maximum variance length to make the antiperspirant and deodorant regulation consistent with the consumer products regulation and the aerosol coating regulation. This change will allow variances of periods longer than one year to be granted when appropriate.

5. Modify the standards section to commit the Board to conducting a public hearing by July 1, 1997.

In response to industry concerns regarding their ability to successfully formulate and market a zero HVOC aerosol antiperspirant or deodorant by 1999, we have included a requirement in the regulation, as a footnote to the 1999 zero HVOC standards for those manufacturers that have submitted approved compliance plans, for the ARB to hold a public hearing regarding the antiperspirant and deodorant regulation by July 1, 1997. In this public hearing the Board will hear testimony from any concerned parties regarding the appropriateness of the 1999 standards. Based on this testimony and ARB staff assessment the Board will determine how to best obtain the necessary emissions reductions while continuing to meet our SIP commitments in this area.

6. Modify the administrative requirements and test methods sections.

We are proposing to make two modifications to the "Administrative Requirements" section. One requires the date or date-code information to be located in such a way that it can be viewed without disassembly of the container or container packaging. This will aid enforcement as the inspector may view the date or date-code information in the store without distorting or removing the packaging or dismantling the product.

The second prohibits any person from removing date or date-code information from the container. This is in response to retailer and manufacturer concerns that companies known as "diverters" purchase health and beauty aids outside of the normal distribution channels. To disguise the source of these products diverters routinely remove any dates, date-

codes, or batch codes from the container. Many manufacturers (including California manufacturers) manufacture and distribute non-complying products for sale outside of California. Often these diverters will remove the date or date-code information from the non-complying products and then sell them in California, even though the manufacturer originally intended them for sale outside California. These products are sold to unsuspecting distributors and retailers for sale and use in California. This amendment will allow enforcement against unscrupulous diverters rather than putting legitimate retailers and manufacturers at risk for enforcement action when the date or date-codes have been removed through no fault of their own.

We are also proposing an amendment to the test methods section to establish that it is not permissible to modify, change, or fabricate records that may be used to verify product compliance.

Why are staff proposing <u>not</u> to modify the zero percent HVOC standard for aerosol antiperspirants and deodorants?

We believe it is premature at this time to propose any change either to the effective date of the zero percent HVOC standard or to the zero percent HVOC standard itself. During the adoption of the antiperspirant and deodorant regulation in 1989, the Air Resources Board found the regulation to be technologically and commercially feasible. In recognition of the challenges that were to be faced by aerosol antiperspirant and deodorant manufacturers as they worked to develop aerosols based on non-VOC propellants, the Board provided the special provision for aerosol manufacturers which effectively provided for up to 9 years of extra research and development time to develop compliant aerosol products.

As mentioned earlier, nine manufacturers have been granted extensions until January 1, 1999. These manufacturers, which are responsible for over 90 percent of the aerosol antiperspirants and deodorants market in California, are actively pursuing development of aerosols that will meet the zero percent HVOC standard. These companies are aggressively pursuing this goal and have invested money and resources to comply with the standard. Furthermore, sufficient time has not yet passed for the technological innovations to be fully explored. There are over 3 years remaining for the manufacturers to reach the zero percent HVOC standard. This time is needed to complete their research and development work. Furthermore, manufacturers also have 18 months in which they can sell existing non-complying products that were manufactured prior to January 1, 1999.

In addition, modifying the HVOC standard would impact the emission reductions claimed in the SIP. As mentioned earlier, the emission reductions from antiperspirants and deodorants is a key component of the consumer products near term measures in the SIP. These emission reductions are necessary by the year 2000. To extend the zero percent HVOC standard beyond the year 2000 or to increase the standard would result in an emissions shortfall that would have to somehow be made up by additional reductions elsewhere. However, we are committed to working with deodorant and antiperspirant manufacturers to closely monitor their efforts over the next 2 years and a provision has been proposed to

require the Board to reassess the feasibility of the 1999 standards. At that time, if appropriate, we would propose modifications and be prepared to identify how any shortfall would be addressed.

What are the expected environmental impacts from the proposed amendments to the regulation?

We have determined that two of the proposed modifications may potentially have an adverse environmental impact: (1) the proposal to extend the ethanol exemption and (2) the proposed modifications to the "Special Requirements for Aerosol Manufacturers provision." The proposed amendment modifying the exemption for ethanol contained in "existing products" to allow the exemption of ethanol from the MVOC standard for all products, whether new or existing, will allow manufacturers to reformulate any of their current ethanol-containing products to a higher ethanol content and reformulate a product that does not now include ethanol, to include ethanol. The amendment proposing modifications to the "Special Requirements for Aerosol Manufacturers" provision reopens the period in which additional manufacturers may submit a compliance plan until the zero percent HVOC standard goes into effect on January 1, 1999. This will allow additional manufacturers to become eligible to produce aerosol antiperspirants and deodorants through submittal of an acceptable compliance plan, and may therefore result in increased HVOC and MVOC emissions.

Although there is the potential for an increase in HVOC emissions under this amendment, we do not believe this will occur. First, in regard to the amendments in the "Special Requirements for Aerosol Manufacturers" we do not believe that there will be an increase in HVOC emissions for the following reasons: (1) well over 90 percent of the aerosol sales in 1993 (before the January 1, 1995 regulatory standards became effective) were by companies that are now producing aerosols under a compliance plan; therefore, the potential additional companies account for less than 10 percent of the remaining aerosol antiperspirant and deodorant market, and we have not seen any serious interest from new or previously existing companies wishing to enter the compliance plan; (2) manufacturers cannot casually enter the compliance plan and produce an HVOC-containing aerosol, as in order to receive an exemption from the 1995 aerosol HVOC standards manufacturers must show a real commitment to producing a zero percent HVOC aerosol product by January 1, 1999, and also commit to achieving the interim 1997 standards and to supplying yearly compliance plan updates; and (3) the aerosol market in general is declining, and that trend is expected to continue. Even if an additional company were to begin making aerosol products, it is likely that the company would simply take market share away from companies that are currently selling aerosol products, rather than create a new demand for additional aerosol products.

In regard to the potential for an increase in ethanol emissions as a result of the proposed amendments to the "ethanol exemption," again, there is the potential for increased ethanol emissions. However, we do not believe this increase will actually occur for the following reasons: (1) aerosol deodorants are responsible for the majority of the ethanol emissions, and that market is declining; (2) there are aspects to ethanol that tend to limit its use, for example, it can cause irritation and results in a cold, wet sensation that many users dislike, which is reflected in the fact that only 15 percent of all antiperspirants and deodorants

(by weight) contain ethanol; (3) the overall antiperspirant and deodorant market is highly penetrated, with 97 percent of consumers already using antiperspirants and deodorants, so manufacturers will not be able to increase their market size based on these amendments; and (4) technical considerations will limit ethanol use in reformulating to the zero percent HVOC standards, in that ethanol depresses the vapor pressure of HFC-152a, so excessive use would render the aerosol product unusable.

In the previous discussion, we identified one negative impact that could potentially occur as a result of these amendments: that of increased ethanol and/or HVOC emissions. However, as explained fully in Chapter V of Volume II, "Environmental and Economic Impacts," the amendments are designed to "level the playing field" and achieve fairer, more equitable treatment for all manufacturers. We believe that these considerations override any adverse environmental impacts that might possibly occur as a result of these amendments. Additionally, as the above discussion indicates, we do not believe these negative impacts are likely to occur. However, because of the potential negative impact, we have committed to monitoring for this negative impact through increased reporting. In Chapter V of Volume II, "Environmental and Economic Impacts," we also discuss potential mitigation measures should we determine that VOC emissions have increased as a result of these amendments. Other than the measures identified in Chapter V there are no other feasible mitigation measures that would reduce possible environmental impacts while at the same time providing the benefits of increased fairness, flexibility, and competitiveness realized by these amendments.

Finally, the only amendment to the definitions that reasonably requires discussion in regard to potential environmental impacts is the VOC definition in the antiperspirant and deodorant regulation, the consumer products regulation, and the aerosol coatings regulation. The potential environmental impacts from this amendment are discussed further below, in section B, "Proposed Amendments to the VOC Definition in All Consumer Products Regulations," of this Executive Summary. In summary, we expect no negative environmental impacts as a result of these amendments. The remaining modifications to the definitions involve minor amendments to the definition for "manufacturer" and "fragrance" that would not conceivably result in an adverse environmental impact.

What are the economic impacts of the proposed modifications to the regulation, including the impacts of the proposed modifications on employment, business creation and expansion, and competitiveness with businesses outside of California?

Because of the increased flexibility in the reformulation of new products that will result from these modifications, we expect no adverse impact on: manufacturers' profitability; employment in California; the status of California businesses; or competitiveness of California businesses with other states. In fact, because of the overall cost savings that may result from these amendments, manufacturers may experience a positive economic impact. The California consumers may also benefit from the availability of more types of products and, to the extent that the manufacturers' cost savings are passed on to the consumer, less expensive products. Since the proposed amendments affect all manufacturers and marketers in the same way, regardless of their location, California businesses will not be at a competitive disadvantage. Also, the proposed amendments will have no noticeable impact on employment and the status

of business in California, because they impose no additional costs on businesses. However, the proposed amendments may increase competition among manufacturers and marketers. As a result, some individual manufacturers that were benefitting from the structure of the present regulation may experience a negative economic impact, while manufacturers that were restricted by the existing regulation may experience a positive impact. It is not possible to quantify these potential impacts.

How do these proposed modifications fit into the State Implementation Plan (SIP)?

As described in the introduction, the consumer product component of the State Implementation Plan (SIP) is a multifaceted program composed of "near-term," "mid-term," and "long-term" measures. The near-term SIP measures are comprised of our existing consumer product regulations (including the antiperspirant and deodorant regulation), the Alternative Control Plan (ACP), and the aerosol paint regulation. When the deodorant and antiperspirant regulation was submitted as a SIP revision on November 15, 1994, credit was claimed for full implementation of the regulation. This translates into an 80 percent reduction in the VOC emissions from antiperspirants and deodorants by the year 2000, or approximately a 5.9 T/D reduction. The proposed amendments will be submitted to U.S. EPA as a SIP revision; however, because the proposed amendments do not change the overall emission reductions to be realized by the regulation in the SIP, a shortfall is avoided and it is expected that U.S. EPA will approve the amendments as proposed.

What are ARB staff's future plans for antiperspirants and deodorants?

Since adoption of the antiperspirant and deodorant regulation, ARB staff have monitored the progress of antiperspirant and deodorant manufacturers in meeting the future effective standards. This has been accomplished through product surveys, review of required research and development reports, and speaking with industry contacts. We will continue to monitor progress through compliance plans, surveys, meetings with industry representatives, and technical and trade literature. For those aerosol manufacturers that have approved compliance plans, they are required to submit written status reports on the research and development efforts undertaken to achieve the January 1, 1999 limits. These updates are due on January 1, 1996, 1997, and 1998. These status reports, in conjunction with the compliance plans, will allow ARB staff to monitor efforts made toward the zero HVOC standard, and progress made toward solving the technical problems posed by these future effective standards.

This information will be reviewed by ARB staff in order to assist them in making a determination as to the progress being made to achieve the 1999 standards. It will also allow the tracking of ethanol emissions, to confirm that these modifications have not resulted in increased ethanol emissions. Finally, ARB staff will be in contact with manufacturers in order to track their progress toward meeting the 1999 standards, and to follow-up on the review of the research and development reports. ARB staff will also hold consultation meetings with any manufacturers wishing to discuss the results of their research and development.

Health and Safety Code section 41712 requires that all consumer product regulations adopted by the Board must be technologically and commercially feasible. During consideration of the antiperspirant and deodorant standards the Board, in 1989, made the determination that the standards (including the zero HVOC standards) were technologically and commercially feasible, by virtue of the fact that there were many alternatives to the aerosol form in the marketplace. However, the Board consented to extending the zero HVOC standard for a number of years, to allow manufacturers the opportunity to come up with an alternative product of the same form. While the future-effective standards are necessary for emission reductions, significant research and development may be necessary to meet those standards with an aerosol product. The proposed amendments to the regulation therefore commit the Board to a reconsideration of the 1999 future effective limits during the same time-frame as consideration of the mid-term measures. By July of 1997, we will report to the Board our findings in regard to progress made toward the 1999 future effective standards for antiperspirants and deodorants. In addition, as a component of our mid-term measures, we will investigate how relative reactivity may impact the zero HVOC standards and the ethanol exemption. If we determine that there is a more effective structure for reducing ozone formation, or that it is appropriate to set standards for ethanol content in specific categories, we will present this to the Board at that time. In the interim, we will also work closely with industry representatives to help foster the necessary innovations and to monitor their progress in developing the new products of the future that will meet these lower VOC limits.

B. PROPOSED AMENDMENTS TO THE VOC DEFINITION IN ALL CONSUMER PRODUCT REGULATIONS

The following section briefly discusses our proposed modifications to the VOC definition and the reasoning for the proposal. For a more detailed and comprehensive discussion of this proposed modification, the reader is referred to Volume II, Section VI of this report.

How are we proposing to amend the VOC definition in the consumer products regulations and the aerosol coatings regulation?

We are proposing to modify the VOC definition to exempt linear, branched, or cyclic fully methylated siloxanes ("volatile methyl siloxanes" or "VMS") and parachlorobenzotrifluoride (PCBTF). At this time, however, we are not proposing any action regarding the exemption of acetone from the VOC definition, for reasons discussed more fully in Volume II, Section VI of this report. To briefly summarize, while the U.S. EPA has exempted acetone, we believe additional detailed technical analyses, specific to California conditions, are needed to ensure that an exemption for acetone will not adversely impact air quality or any other aspects of the environment in California. These analyses will be conducted through summer 1995 and we hope to propose appropriate action on an exemption for acetone at the September 1995 Board hearing.

Why are we proposing amendments to these regulations?

We are proposing to modify the VOC definition to make it more consistent with the U.S. EPA's definition for VOC. In a recently finalized action, the U.S. EPA determined that

VMS and PCBTF are "negligibly photochemically reactive" and could provide beneficial alternative formulations for manufacturers seeking to meet VOC controls in states subject to ozone attainment. We agree with their findings and are proposing to exempt VMS and PCBTF in recognition of their negligible contribution to ozone formation in California.

Will amendments to the VOC definition impact the anticipated emission reductions?

We expect no adverse impacts to anticipated emission reductions due to the proposed exemptions for VMS and PCBTF. Since these compounds have been determined to have a negligible contribution to ozone levels in California, their exempted uses should have no impact to ozone standard attainment efforts. Moreover, the use of these compounds will help attainment or pollution prevention efforts since they can be used in substitutions for more reactive or toxic compounds in consumer products.

Will the proposed amendment to the VOC definition have any other adverse environmental impacts?

We believe the proposed modification will not have any significant adverse environmental impacts. We based this conclusion on our analysis of the proposed exemptions' potential impacts on water quality, landfill loading, stratospheric ozone depletion, and global warming. The primary impact from the proposed modification will be a positive reduction in ground-level ozone as VMS and PCBTF are substituted for more reactive organic compounds.

Will amendments to the VOC definition have any potential adverse economic impacts?

We do not expect the proposed modification to result in any potential adverse economic impacts. Because VMS and PCBTF will be exempt from the VOC definition, we expect manufacturers to use these compounds to help comply with the VOC standards. The availability of these and other exempt compounds will provide manufacturers with additional flexibility. Since the use of these compounds is voluntary, it is reasonable to assume that manufacturers will only use these compounds if it is economically beneficial to them and consumers. Moreover, the proposed modification will allow manufacturers to provide in the market a wider variety of complying products with different performance characteristics, thereby potentially benefitting consumers.

Will the amendments to the VOC definition have any adverse economic or competitiveness impacts on California businesses?

We do not expect any adverse economic or competitiveness impacts on California businesses from the proposed modification to the VOC definition. The proposed modification is designed to make the VOC definition in California more consistent with the U.S. EPA's VOC definition. Since the U.S. EPA's VOC definition applies elsewhere in the nation, our proposed modification will ensure that California consumer product manufacturers will effectively have available the same exempt compounds to formulate their products with as

their competitors outside of California (the only difference is that the U.S. EPA exempts ethane, which is not used in any consumer product subject to the regulations). Because the proposed modification will "level the playing field" for available exempt compounds, we do not expect the interstate competitiveness of California businesses to be adversely impacted.

III.

RECOMMENDATION

We recommend that the Board approve the proposed amendments to the antiperspirant and deodorant regulation, and to the VOC definition in all the consumer products regulations.

VOLUME II: TECHNICAL SUPPORT DOCUMENT

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I.

INTRODUCTION

A. OVERVIEW

This volume, Volume II of the Initial Statement of Reasons (ISOR) for Proposed Rulemaking - Technical Support Document, presents our technical justification and analysis of the proposed amendments to the antiperspirant and deodorant regulation and to the VOC definition in all of California's consumer product regulations. As Volume I provided an overview of the enabling legislation for the regulations and a summary of the Board's activities to date, this information will not be repeated. In Chapters I-V of this volume we provide the reader with a more detailed background on the deodorant and antiperspirant regulation, a description of the emissions from antiperspirants and deodorants, a summary of the proposed modifications to the regulation, the technical justification for the proposed amendments, and our analysis of the potential environmental and economic impacts of the proposed amendments to the antiperspirant and deodorant regulation. In Chapter VI we provide a summary of the changes to the VOC definition in the antiperspirant and deodorant regulation, the aerosol coatings regulation, and the consumer products regulation, along with our technical justification and analysis of the potential environmental and economic impacts of the proposed amendments.

B. A SHORT HISTORY AND DESCRIPTION OF THE ANTIPERSPIRANT AND DEODORANT REGULATION

As mentioned previously, the approval by the ARB of the antiperspirant and deodorant regulation was a landmark action by the Board and was the first regulation adopted under its authority under the California Clean Air Act to control consumer product emissions. The antiperspirant and deodorant regulation was first adopted on November 8, 1989. Subsequent to that adoption, amendments to the regulation were adopted on October 11, 1990 and January 9, 1992.

The antiperspirant and deodorant regulation was developed over a period of four years. The regulation that was adopted by the ARB in 1989 establishes standards for both aerosol and non-aerosol antiperspirants and deodorants. As mentioned in Volume I, the regulation is unique in that is establishes standards for VOCs based on the their vapor pressure. As such, it regulates high volatility organic compounds (HVOCs or compounds with a vapor pressure of greater than 80 mm Hg at 20°C) in these products separately from medium volatility organic compounds (MVOCs, or compounds with vapor pressures of greater than 2 mm Hg and less than or equal to 80 mm Hg when measured at 20°C). HVOCs are the propellants used in aerosol products, whereas the MVOC used in both aerosols and non-aerosols is generally ethanol. VOCs with vapor pressures of less than 2 mm Hg when measured at 20°C (LVOCs) are exempt from the regulation.

The regulation is designed to achieve an overall 80 percent reduction in the VOC emissions of antiperspirants and deodorants, which will occur in three phases. The first phase, which was described as placing a "cap" on the VOC contents of existing antiperspirants and deodorants, was implemented effective upon approval of the regulation by the Office of Administrative Law (February 28, 1991). Effective December 31, 1992, the second phase was instituted. This phase limited the HVOC and MVOC contents of aerosol antiperspirant and deodorants and also all non-aerosol products. The final phase, which is designed to achieve the 80 percent reduction in VOC emissions, became effective January 1, 1995 and requires more stringent limits on the HVOC and MVOC content of aerosol antiperspirants and deodorants.

Exemptions in the Regulation

The antiperspirant and deodorant regulation also contains certain notable exemptions, the first being an exemption for ethanol in existing products. The MVOC content standards do not apply to ethanol in existing products, which are products that were sold in California prior to January 1, 1990 or any subsequently identical product sold after January 1, 1990. As mentioned above, LVOCs are also exempt from the regulation. Fragrances and colorants up to a combined level of 2 percent by weight are also exempt in all antiperspirant and deodorants.

Reporting and Record-Keeping Requirements

In regard to reporting and record-keeping requirements, the regulation also requires the date of manufacturer on each product and, additionally, manufacturers must periodically report to the ARB selected information on product formulations being sold in California. These requirements were included to aid in enforcement of the regulation and to help ARB staff monitor progress in fulfilling the emission reduction goals.

Special Requirements for Aerosol Manufacturers - Compliance Plans

In recognition of the challenges faced by manufacturers of aerosol antiperspirants and deodorants in meeting the 1995 HVOC/MVOC standards, the regulation includes a special provision for aerosol manufacturers. This provision, entitled "Special Requirements for Aerosol Manufacturers" (section 94502 (c)) allows manufacturers additional time to formulate complying aerosol products, provided that they have submitted a compliance plan to the Executive Officer by January 1, 1994 describing how the manufacturer will achieve compliance with the standards. Upon approval of the compliance plan by the Executive Officer of the ARB, the manufacturer can be granted a specified period of time (but no later than January 1, 1999) in which to produce an aerosol antiperspirant or deodorant which exceeds the 1995 standards (but not the interim standards) so long as they continue their efforts to develop aerosol products that will comply with the standards.

Phase I Amendment - Innovative Products Provision

On October 11, 1990, the Phase I consumer products regulation was approved by the Board and the antiperspirant and deodorant regulation was amended to include an innovative

products provision in this regulation, consistent with the consumer products regulation. The innovative product provision allows manufacturers to market a product that may exceed the HVOC/MVOC content limits, provided that a demonstration is made to the Executive Officer that, through some unique characteristic of formulation or delivery (or a combination of the two), less VOC emissions result from its use than from a comparable, complying product.

Phase II Amendments

The antiperspirant and deodorant regulation was also amended during consideration of the Phase II consumer products regulation in January, 1992. At that time, amendments were adopted by the Board that made the innovative product language in the deodorant and antiperspirant regulation consistent with amendments to the innovative product provision in the consumer product regulation. The amendments also provided an eighteen month sell-through period for non-compliant antiperspirants and deodorants that were manufactured prior to the standard effective date and were properly date-coded.

Regulation Implementation

Implementation of the antiperspirant and deodorant regulation has proceeded well. To date, no requests for variances have been received by the ARB from antiperspirant and deodorant manufacturers. Manufacturers have made efforts to comply with the reporting requirements. The majority of antiperspirant and deodorant manufacturers have provided information to the ARB on date codes, 42 manufacturers reported the data required on April 1, 1991 and 53 manufacturers fulfilled their obligation to submit reporting data for 1993 to the ARB by March 1, 1994. One manufacturer has received an innovative product exemption for a gel deodorant stick. Several manufacturers submitted an aerosol compliance plan prior to January 1, 1994 and nine companies have been granted additional time to formulate aerosol products that can comply with the 1995 standards for aerosols. This is discussed in more detail below.

Compliance Plan Submittals

On December 30, 1993 a "group" compliance plan was submitted to the ARB. The compliance plan included fifteen aerosol deodorant and antiperspirant manufacturers. The information included in the group compliance plan was determined to be adequate to support the issuance of an executive order to these fifteen manufacturers suspending the January 1, 1995 aerosol antiperspirant and deodorant limits to January 1, 1996. In this compliance plan manufacturers committed to meeting interim HVOC and MVOC standards for aerosol antiperspirants and deodorants of 40 percent HVOC for antiperspirants and 14 percent HVOC for deodorants. It also specified that each manufacturer submit status reports at predetermined intervals, containing additional technical detail, information on progress made and timetables, including increments of progress.

As mentioned previously, fifteen aerosol antiperspirant and deodorant manufacturers were included in the original group compliance plan. Nine manufacturers have since been issued executive orders extending their compliance date to January 1, 1999 and the remaining manufacturers have asked to withdraw from the compliance plan. The nine above-mentioned

manufacturers submitted sufficient technical detail to indicate that they are making a good faith effort to comply with the standard, and have shown that they require, and should be granted, an extension of the January 1, 1996 VOC standards for aerosol antiperspirants and deodorants to January 1, 1999. After reviewing these compliance plans we are optimistic about the potential for major technological breakthroughs in this area.

Helene Curtis Petition

On January 27, 1995, Helene Curtis, Inc. ("Helene Curtis") submitted a petition to the Board requesting that we revisit the antiperspirant and deodorant regulation. The appeal, entitled "Petition for Repeal Pursuant to Government Code Section 11247" is included as Appendix B of this volume. The primary issue in regard to this petition is the ethanol exemption. Helene Curtis argues that the ethanol exemption is unfair, as they believe that it gives those manufacturers with ethanol-containing existing products a competitive advantage when reformulating to meet the standards. In particular, they are concerned that the aerosol deodorants, which generally contained (and now contain) high levels of ethanol, can be formulated to meet the zero percent HVOC/10 percent MVOC standard, while aerosol antiperspirants (containing very little alcohol) cannot. Therefore consumers, which Helene Curtis believes to be form loyal rather than product loyal, will switch to an aerosol deodorant rather than to an antiperspirant of another form. Therefore, manufacturers that do not have the ethanol exemption will eventually lose their customers to a company producing aerosol deodorants under the ethanol exemption.

On February 4, 1995, the ARB issued a response to the petition, as specified in the Administrative Procedures Act. The ARB response, entitled "Decision Granting Petition and Taking Other Specified Actions," granted the Helene Curtis petition and in it the ARB agreed to schedule a public hearing by September 1995 to consider the adoption of amendments to the antiperspirant and deodorant regulation. The ARB also committed to work with the affected parties prior to the hearing to develop specific regulatory language for the modifications to this regulation. The meetings, workshop, and public document developed as a part of the process of modifying this regulation, along with the scheduled Board hearing, will fulfill our commitments as described above. Both the Helene Curtis petition and the ARB response to that petition are included in Appendix B.

II.

ANTIPERSPIRANT AND DEODORANT EMISSIONS

A. AMBIENT AIR QUALITY AND THE NEED FOR EMISSION REDUCTIONS

Volatile organic compound (VOC) emissions contribute to the formation of both ozone and PM_{10} (particulate matter less than 10 microns equivalent aerodynamic diameter). Ozone formation in the lower atmosphere results from a series of chemical reactions between VOCs and nitrogen oxides in the presence of sunlight. PM_{10} is the result of both direct and indirect emissions. Direct sources include emissions from fuel combustion and wind erosion of soil. Indirect sources result via the chemical reaction of VOCs, nitrogen oxides, sulfur oxides and other chemicals in the atmosphere.

Ozone: VOCs and nitrogen oxides (NOx) react in the presence of sunlight to form ozone. The rate of ozone generation is related closely to the rate of VOC (in the form of reactive organic gases - ROG) production as well as the availability of NOx in the atmosphere (ARB, 1987; Seinfeld, 1989). At low ambient concentrations, ozone is a colorless, odorless gas and the chief component of urban smog. It is by far the state's most persistent and widespread air quality problem. Recent data revealed that 75 percent of the nation's risk from exposure to ozone occurs in California. Ozone continues to be an important environmental and health concern despite nearly 20 years of regulatory efforts.

It has been well documented that ozone adversely affects the respiratory functions of humans and animals. Ozone is a strong irritant that can cause constriction of the airways, forcing the respiratory system to work harder in order to provide oxygen to the body. Besides shortness of breath, it can aggravate or worsen existing respiratory diseases, such as emphysema, bronchitis and asthma (ARB, 1991).

Chronic exposure to ozone can damage deep portions of the lung. ARB research has documented permanent lung damage in young adults, aged 14-25, most of whom were life-long residents of the highly polluted South Coast Air Basin. The research, which provides some of the most definitive research to date of the potential life-long health threat from poor air quality, found early signs of permanent lung disease in 104 out of 107 accident victims who were studied (ARB, 1991). This study suggests that lung tissue does not fully restore itself, but rather reacts somewhat like sunburned skin, losing some of its restorative ability with each exposure and eventually leading to premature or permanent damage (ARB, 1991).

Not only does ozone adversely affect human and animal health, but is also affects vegetation throughout most of California resulting in reduced yield and quality in agricultural crops and disfiguration or unsatisfactory growth in ornamental vegetation. Recent ARB studies indicate that ozone pollution damage to crops is estimated to cost agriculture over 300 million dollars annually (ARB, 1991).

PM_{10}: Particulate matter (PM_{10}) is a solid or liquid substance of less than 10 microns, determined as equivalent aerodynamic diameter. PM_{10} can be directly emitted into the

atmosphere as the result of anthropogenic actions, such as fuel combustion, or through natural causes, such as wind erosion. Indirect PM_{10} is formed via a complex reaction involving a gas-to-particulate matter conversion process in which VOCs can participate. The state PM_{10} standard is violated in virtually the entire state. The focus of this discussion will be on the indirect aerosol formation of PM_{10}.

PM_{10} is composed of up to 35 percent aerosols which may be the result of atmospheric chemical reactions of sulfates, nitrates, ammonium, trace metals, carbonaceous material (VOCs) and water. The products of gas-phase reactions may combine to form new particles (either single or two or more vapor phase species) or increase existing particle growth by condensation of VOCs. Furthermore, although the contribution from VOCs is not known, carbonaceous aerosols generally account for a significant fraction of the fine (< 2 micron equivalent aerodynamic diameter) urban particulate matter. In Los Angeles, for example, aerosol carbon alone accounts for about 40 percent of the total fine particulate mass (Seinfeld, 1989).

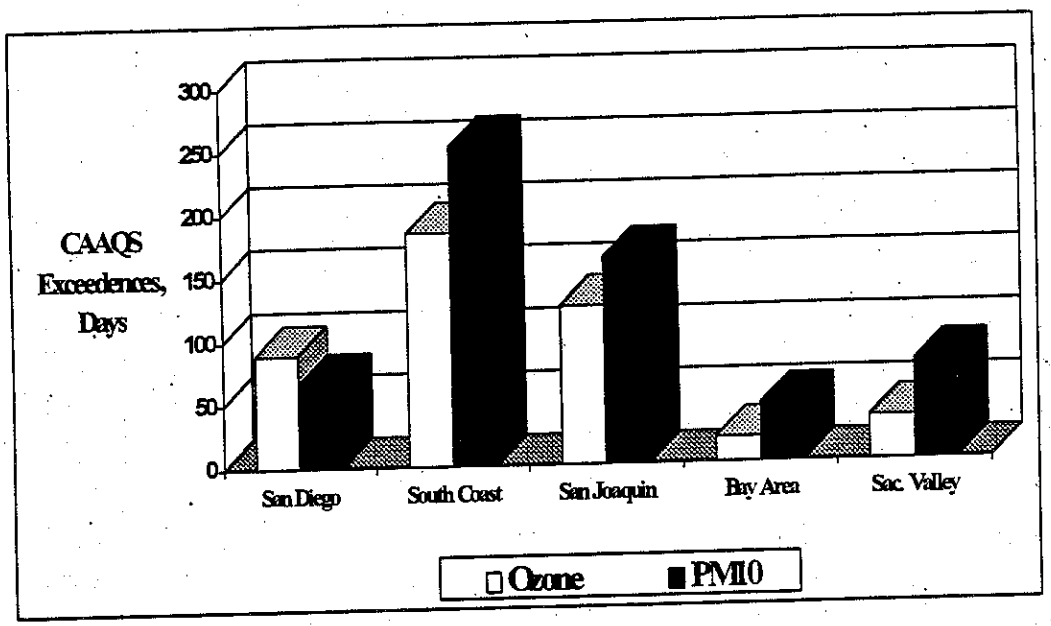
PM_{10} has the greatest impact on the respiratory system because these particles can reach deeply into the lungs. The elderly, persons suffering from lung or cardiovascular disease, infants, children and asthma sufferers have been identified as being at greater risk from exposure to particulate matter. PM_{10} causes irritation of the respiratory tract and may also enter the lungs containing toxic compounds which have adhered to the particle surfaces. Because it is visible in the atmosphere, PM_{10} also contributes to reduced visibility.

To protect California's population from the harmful effects of ozone and PM_{10}, federal and state air quality standards for these contaminants have been established. These standards are shown in Table II-1. The state hourly ozone standard is 0.09 parts per million (pphm) and the national hourly ozone standard is 0.12 pphm. The state PM_{10} standard for a 24 hour period is 50 micrograms per cubic meter ($\mu g/m^3$) and the national standard is 150 $\mu g/m^3$ determined over a 24-hour period. As shown in Figure II-1, most populated areas of California frequently exceed the state standards for PM_{10} and ozone. This is most notable in the South Coast where the state ambient standard for ozone was exceeded on 185 days and the PM_{10} standard over 200 days in 1993.

Table II-1
Ambient Air Quality Standards for Ozone and PM_{10}

Pollutant	Averaging Time	State Standard	National Standard
Ozone	1 hour	9 pphm (180 $\mu g/m^3$)	12 pphm (235 $\mu g/m^3$)
PM_{10}	Annual Geometric Mean 24 hour	30 $\mu g/m^3$ 50 $\mu g/m^3$ -----	----- 150 $\mu g/m^3$ 50 $\mu g/m^3$

Figure II-1
Most Californians Breathe Unhealthy Air Many Days of the Year



Source: 1993 California Air Quality Data Annual Summary, Vol. XXV.

B. WHY REGULATE ANTIPERSPIRANTS AND DEODORANTS?

Antiperspirants and deodorants are the subject of air quality regulations because the use of these products by California consumers results in VOC emissions which, in turn, contribute to the formation of ozone. This was recognized by the legislature in 1988 when it passed the California Clean Air Act (CCAA). In an effort to protect public health and to address the inability of current air pollution programs to achieve the state air quality standards, the California legislature adopted the CCAA. Prior to the passage of the CCAA, air pollution agencies in California focused on the more traditional sources of air pollution–the automobile and smokestacks. While these efforts have resulted in a tremendous reduction in emissions, it was clear that more needed to be done, as most populated areas in California were still non-attainment for both the federal and state ambient air quality standards. The CCAA required the ARB to adopt the most effective emission controls possible for a range of sources–including motor vehicles, fuels, and consumer products.

Over the past seven years, the ARB, along with the local air quality management districts, has been working diligently to fulfill all the CCAA requirements. The ARB has adopted several consumer product regulations, including the 1989 regulation limiting emissions from antiperspirants and deodorants, as one part of this effort. However, even more needs to be accomplished if we are to meet our air quality goals because of the tremendous

projected population growth in California. This became very apparent as California regulatory agencies prepared the State Implementation Plan (SIP) for Ozone, required by the 1990 amendments to the federal Clean Air Act (CAA). The CAA requires California to submit a SIP with commitments to develop control measures in ozone nonattainment areas that will demonstrate attainment by certain dates, depending on the severity of the pollution. This is not an easy task. As an example, even with full implementation of the Low Emission Vehicle/Clean Fuels Program and the corresponding realization of emission reductions projected by that program, the Los Angeles area will still be in nonattainment for federal and state ozone standards. It is clear from the recently adopted South Coast Air Quality Management Plan (South Coast Air Quality Management District, 1994) that significant additional emission reductions are also needed from stationary and area sources such as antiperspirants and deodorants.

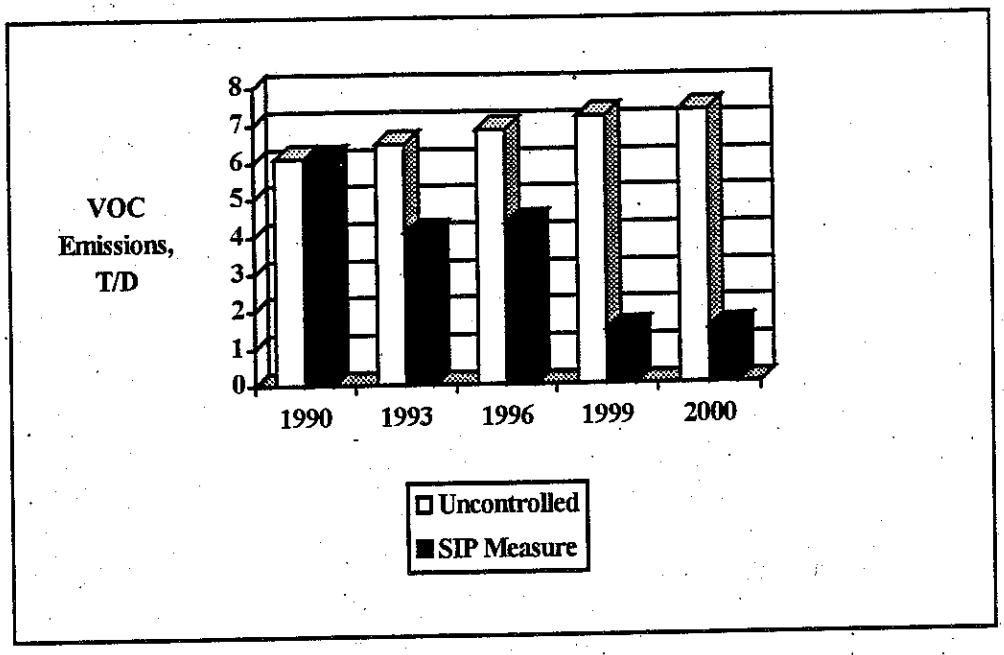
In response to the CAA SIP requirement, the ARB developed a SIP which includes the antiperspirant and deodorant regulation and other consumer products regulations, along with regulations on motor vehicle emissions, fuels, and pesticides (ARB, 1994). The SIP was approved by the Board on November 15, 1994, and has been partially approved by the U.S. EPA. We expect full approval in the near future.

The consumer products component of the SIP is a multifaceted program composed of "near-term," "mid-term," and "long-term" control measures. The near-term SIP measures are comprised of our existing consumer product regulations (including the antiperspirant and deodorant regulation), the Alternative Control Plan (ACP) regulation, and the aerosol paint regulation. Consistent with the emission reduction projection identified when the antiperspirant and deodorant regulation was first adopted in 1989, we have committed to an 80 percent reduction in antiperspirant and deodorant emissions in the SIP by the year 2000. These reductions are from a projected uncontrolled year 2000 baseline of approximately 7.4 tons per day. In Figure II-2 the projected uncontrolled emissions from antiperspirants and deodorants are shown, along with the emission reductions claimed in the SIP. This figure also shows the emissions reductions obtained in a large part by the intermediate standards, effective December 31, 1992, from initial emissions of 6.1 T/D in 1990 to approximately 4.1 T/D in 1993.

C. ESTIMATED ANTIPERSPIRANT AND DEODORANT VOC EMISSIONS

As noted previously, the use of many antiperspirants and deodorants results in VOC emissions. These emissions originate from the solvents and propellants used in these products. The hydrocarbon propellants used in antiperspirants and deodorants include butane, isobutane, and propane and are classified as HVOCs under the regulation. MVOCs are generally the solvents used as the active component in a formula or to help dissolve some the active ingredients or fragrances in an antiperspirant or deodorant. These MVOCs and HVOCs are emitted when an antiperspirant or deodorant is applied, and are available for transport to the atmosphere through air exchange (ARB, 1991). Low volatility organic compounds (LVOC)–defined in part as those compounds with vapor pressures of less than 2 mm Hg at 20°C–while not currently regulated under the antiperspirant and deodorant regulation, may

Figure II-2
Antiperspirant and Deodorant VOC Emissions



also contribute to the overall VOC emissions. However, because the regulation currently provides an exemption for LVOCs, the focus of this section will be on the HVOC and MVOC emissions.

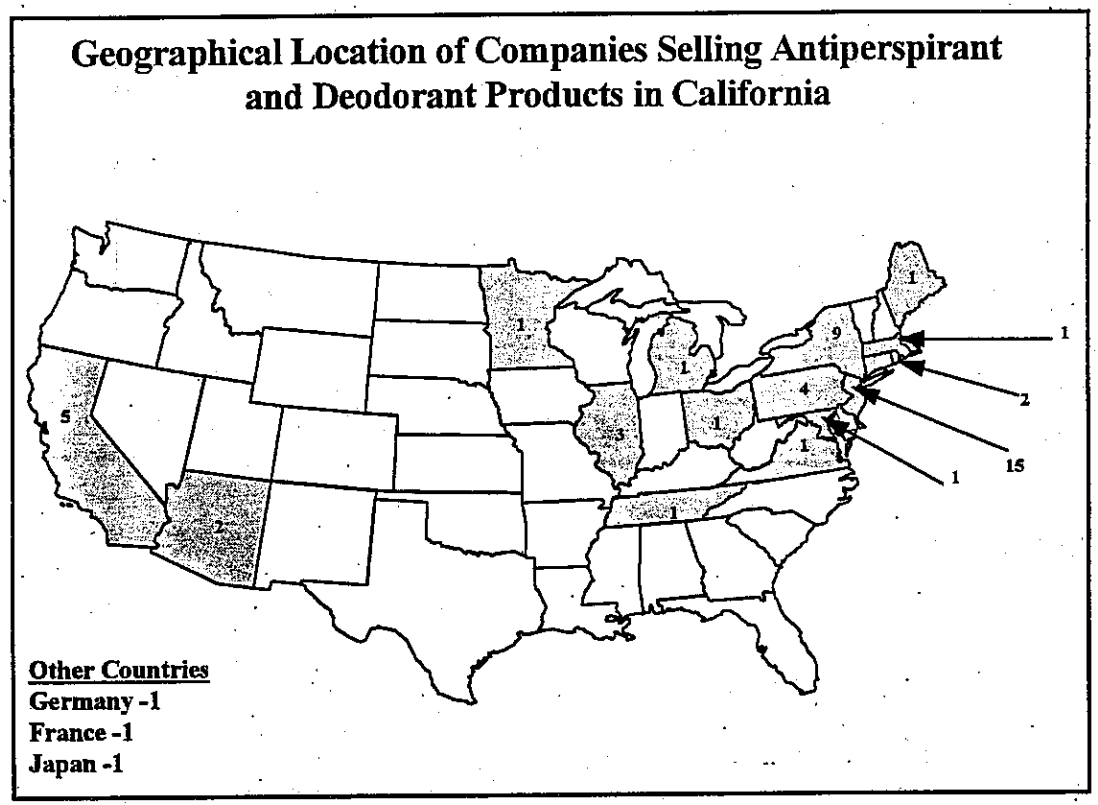
To estimate the emissions from antiperspirants and deodorants, we relied upon the data submitted to the ARB pursuant to the requirements of section 94504 of the antiperspirant and deodorant regulation. Section 94504(b) of the regulation requires manufacturers of antiperspirants and deodorants to submit specific data regarding products sold in California to the Executive Officer of the ARB every three years. The information to be submitted to the ARB includes product names, the owner of the trademark or brand name, product forms (aerosol, pump, liquid, solid, etc.), California annual sales in pounds per year and the method used to calculate California annual sales, and data on volatile organic compound (VOC) content in percent by weight. The most recent reporting date was March 31, 1994. By that date, manufacturers were to provide the ARB with the specified information based on their 1993 sales. To assist manufacturers in providing the ARB with this information, ARB staff designed a survey form for manufacturers to use. This survey form requested the information specified in section 94504(b) along with other data necessary to provide the ARB staff with sufficient information to track the effectiveness of the regulation (ARB, 1995). A brief summary of the results from the data submittal is presented below.

1993 Manufacturers' Survey Summary

Manufacturers Selling Antiperspirant and Deodorant Products in California

Fifty three manufacturers reported selling antiperspirants and deodorant products in California in 1993. Five of these companies are based in California. Figure II-3 illustrates the geographical location of the manufacturers who reported selling antiperspirants and deodorants in the United States. As indicated on the map, the majority of the manufacturers are located east of the Mississippi with three companies located outside of the United States.

Figure II-3



Manufacturers provided data to the ARB on 374 antiperspirant and deodorant formulations, accounting for 746 products. The number of products is larger than the total number of formulations because, in some instances, manufacturers grouped products together when the formulations were similar.

Antiperspirants and deodorants are sold in various forms, including aerosols and non-aerosols such as roll-ons, sticks, and "others." As can be seen in Table II-2, the predominant form is the stick, followed by roll-ons, aerosols, and "others." "Others" includes gels, creams, liquids, pads, pumps, and crystals. As mentioned previously, within both the antiperspirant

and deodorant categories, sticks are the predominant form. However, for deodorants, "other" is the second most prominent form while for antiperspirants, the roll-ons is the second most prevalent form.

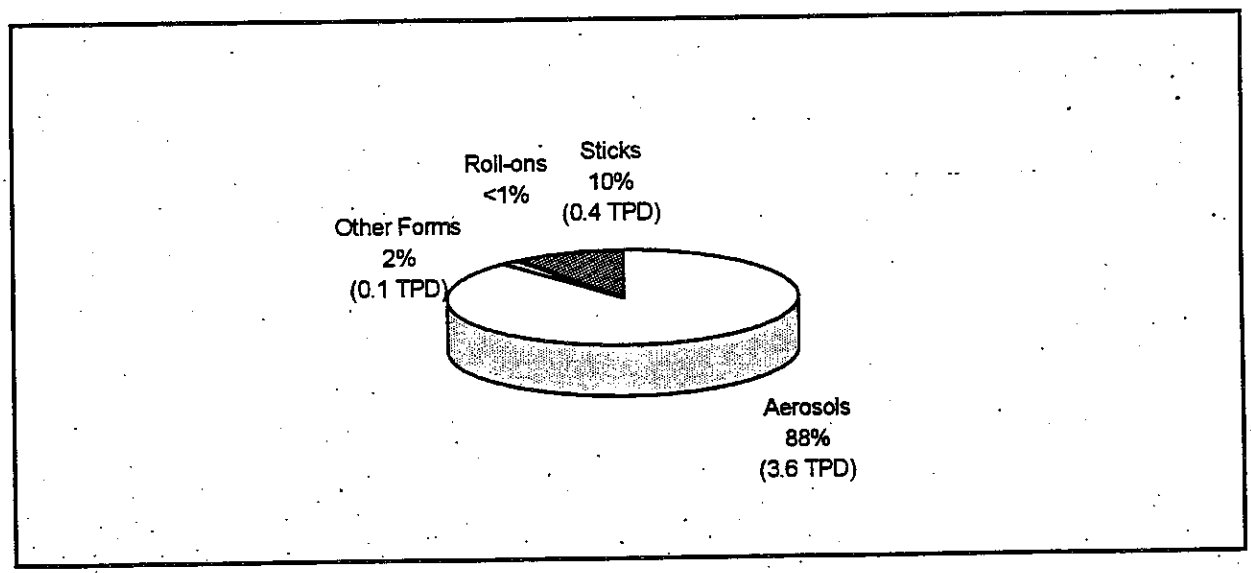
Table II-2 - Product Formulations

	Aerosol	Stick	Roll-on	Others	Total
Antiperspirants	37	93	69	15	214
Deodorants	21	96	8	35	160
Total	58	189	77	50	374

Estimated MVOC and HVOC Emissions from Antiperspirants and Deodorants by Form

The total estimated emissions of HVOCs and MVOCs from antiperspirant and deodorants is approximately 4.1 tons per day (T/D). While aerosols account for about 28 percent of the market sales (by weight) in California, they contribute a disproportionate share of the emissions, comprising 88 percent of the total HVOC and MVOC emissions (3.6 T/D) as shown in Figure II-4. Sticks contribute about 10 percent of the total emissions followed by "other forms" and roll-ons with the remaining 2 percent.

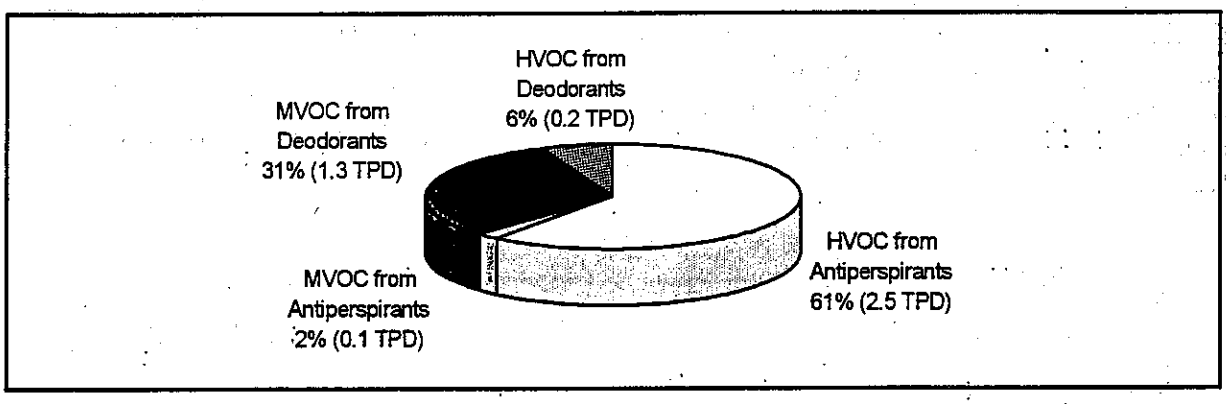
Figure II-4
1993 California Combined HVOC and MVOC Emissions from Antiperspirant and Deodorant Product Forms (Total HVOC and MVOC Emissions = 4.1 T/D)



Estimated MVOC and HVOC Emissions from Antiperspirants and Deodorants

As shown in Figure II-5, the estimated HVOC and MVOC emissions from the individual antiperspirants and deodorants together contribute 2.7 T/D of HVOC emissions and 1.4 T/D of MVOC emissions. The larger portion of the HVOC emissions are contributed by antiperspirants, whereas the larger portion of the MVOC emissions are from deodorants. As can be seen in the figure, the antiperspirant category is responsible for approximately 63 percent of the total HVOC and MVOC emissions, or 2.6 T/D, and deodorants, 37 percent or 1.5 T/D.

Figure 11-5
1993 California Combined HVOC and MVOC Emissions From Antiperspirant and Deodorant Categories



Within the antiperspirant category, again, aerosols contribute the largest share of the estimated emissions. As Figure II-6 depicts, aerosols account for 98 percent of the total HVOC and MVOC emissions from antiperspirant products.

Similarly, as shown in Figure 11-7 for the deodorant category, aerosols are the largest contributor of HVOC and MVOC emissions with 72 percent of the emissions from the aerosol deodorant products. It is noticeable that for deodorants, sticks also contribute a significant portion of the emissions, at 26 percent. For both antiperspirants and deodorants, roll-ons and "others" contribute very little to the HVOC and MVOC emissions, with a combined contribution of about 2 percent.

Figure II-6
1993 California Combined HVOC and MVOC Emissions from Antiperspirants
(Total HVOC and MVOC Emission = 2.6 T/D)

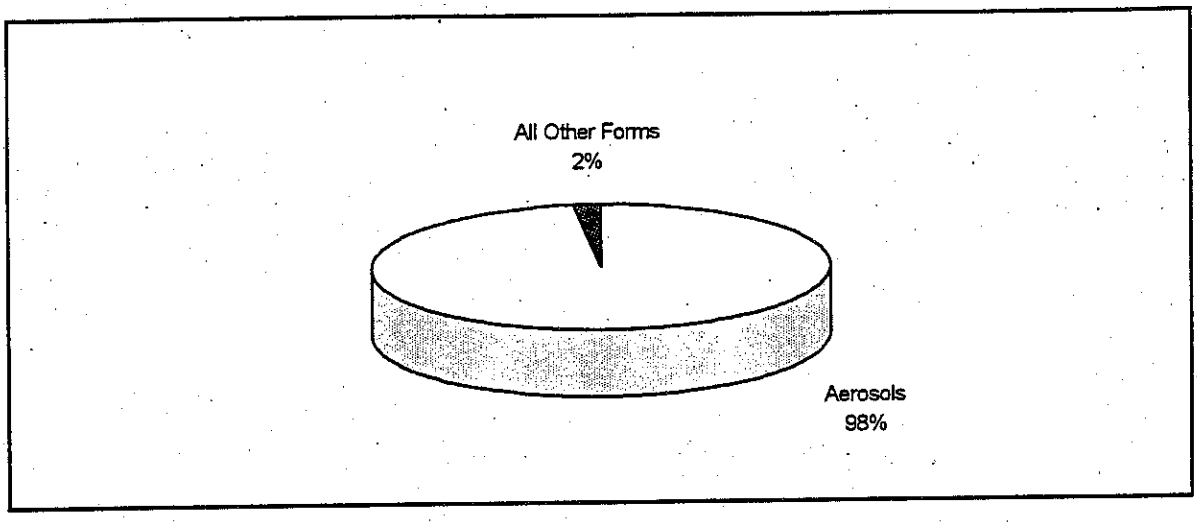
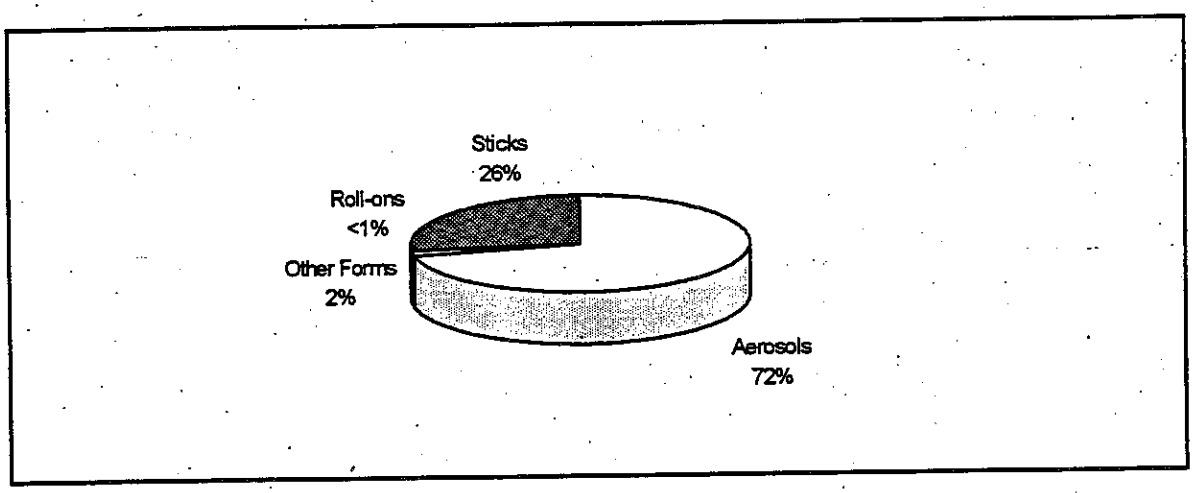


Figure 11-7
1993 California Combined HVOC and MVOC Emissions from Deodorants
(Total HVOC and MVOC Emissions = 1.5 T/D)



References

Air Resources Board, "Summary of 1993 Antiperspirant and Deodorant Manufacturers' Survey," 1995.

Air Resources Board, The California State Implementation Plan for Ozone, Volumes I - IV, November 15, 1994.

Air Resources Board, Technical Support Document - Effects of Ozone on Health, September 1987.

Air Resources Board, Technical Support Document - Proposed Amendments to the Statewide Regulation to Reduce Volatile Organic Compound Emissions from Consumer Products - Phase II, October, 1991.

Seinfeld, J. H., "Urban Air Pollution: State of the Science," Science, Vol. 243, February 1989, pp. 745-752.

South Coast Air Quality Management District, Air Quality Plan, August, 1994.

III.

SUMMARY OF PROPOSED AMENDMENTS TO THE REGULATION

In this chapter, we provide a plain English discussion of the major amendments to the provisions of the antiperspirant and deodorant regulation, and explain the rationale for each provision. The discussion in this chapter is intended to satisfy the requirements of Government Code 11343.2, which requires that a noncontrolling "plain English" summary of the regulation be made to the public.

We are proposing several amendments to the antiperspirant and deodorant regulation. These amendments will address competitiveness issues, expand availability of the compliance plan extension for aerosol manufacturers, and improve consistency between definitions in the antiperspirant and deodorant regulation and the consumer products regulation (see Appendix A for the amended version of the antiperspirant and deodorant regulation). Also, as a part of our effort to improve consistency between regulations and to reflect recent actions by the U.S. EPA, we are proposing amendments to the VOC definition in the antiperspirant and deodorant regulation, the consumer products regulation, and the aerosol paint regulation. The proposed amendments to the VOC definitions will be discussed in more detail in Chapter VI, "Amendments to the VOC Definition in the Antiperspirant and Deodorant Regulation, the Consumer Products Regulation, and the Aerosol Coatings Regulation" (see Appendix C for the proposed amendments to the VOC definition in the consumer products regulation and the aerosol coatings regulation). A description of the proposed amendments to the antiperspirant and deodorant regulation follows.

Amendment to the "Ethanol Exemption"

The first of the proposed amendments modifies the exemption in the antiperspirant and deodorant regulation for ethanol contained in "existing products." As the regulation is presently structured, only manufacturers producing a specific antiperspirant or deodorant before January 1, 1990 are eligible to include ethanol in that product at a concentration greater than that specified under the MVOC limit in the table of standards. Manufacturers with an existing product can continue to include ethanol in their specific existing product at a concentration equal to or less than that contained in that product prior to January 1, 1990. While ethanol can be a useful formulating tool for manufacturers of antiperspirants and deodorants, it is not required and does not appear in the majority of antiperspirant and deodorant formulations. For some perspective as to the amount of antiperspirants and deodorants manufactured under the ethanol exemption, in 1993, 15 percent (by weight) of all products sold were existing products containing ethanol, based on the data reported to the

ARB. As proposed, this amendment will exempt ethanol from the MVOC limits in the table of standards in all products, whether new or existing.

We are proposing this amendment to allow the exemption of ethanol from the MVOC limits in all products in response to industry requests to "even the playing field" for antiperspirant and deodorant manufacturers. The appeal by Helene Curtis, Inc. was formalized in their January 27, 1995 "Petition for Repeal Pursuant to Government Code Section 11347" (Appendix B).

The amendments proposed here to address these concerns involve removing the definition of "existing product" from the regulation and also removing section 94502(b) under "Standards for Antiperspirants and Deodorants," which stipulates, in part, that no existing product may be reformulated to increase either the product's total VOC content or total ethanol content. These amendments will allow new manufacturers, and also manufacturers that were in the marketplace on January 1, 1990 but were not producing an ethanol-containing product, to now produce an ethanol-containing product. These modifications will also allow reformulation of existing products to increase their ethanol content. While industry representatives argue that these amendments will not result in VOC emissions increases–for reasons that are both technical and related to the marketplace–and our research has substantiated this to the extent possible, we have amended the reporting requirements so that we can monitor emissions. To accomplish this, we propose to amend the administrative requirements in the regulation to specify that the ARB receive survey data yearly, rather than every three years as presently specified. We can therefore track emissions and take appropriate action if we see that emissions have increased as a result of these amendments.

Amendments to the "Special Requirements for Aerosol Manufacturers"

The "Special Requirements for Aerosol Manufacturers" provision, as presently structured, allows aerosol antiperspirant and deodorant manufacturers to be temporarily exempt from the 1995 (zero percent HVOC) standards under certain specific conditions. Aerosol antiperspirant and deodorant manufacturers must have, if they could not meet the January 1, 1995 standards and, therefore, required additional time for reformulation, submitted a compliance plan detailing how they would achieve compliance with the standards on or before January 1, 1999. If the compliance plan was determined to be acceptable by the Executive Officer, the January 1, 1995 standards would then be postponed to January 1, 1999, at the latest. This provision extends the deadline for the zero HVOC aerosols about nine years from adoption of the regulation, for those manufacturers choosing to participate in the compliance plan and actively involved in developing zero HVOC alternatives to the standard aerosol product.

We are proposing modifications to this provision in order to (1) allow any new aerosol manufacturers the same opportunities extended to those companies which have submitted compliance plans and received extensions of the January 1, 1995 standards, to (2) ensure that the requirements for all manufacturers operating under compliance plans are consistent, and to (3) assist manufacturers in their efforts to develop compliance plans.

To accomplish these goals we are first proposing to remove the final date by which manufacturers must have submitted a compliance plan. As the regulation is presently written, a compliance plan must have been submitted on or before January 1, 1994 to be considered for approval. However, under the proposed amendments, manufacturers may submit a compliance plan at any time (in effect, prior to January 1, 1999). After the plan is determined to be acceptable by the Executive Officer, the manufacturer will be issued an Executive Order extending the time to meet the January 1, 1995 limits to January 1, 1999. This amendment will remove a competitiveness concern as, under the original version of the regulation, a new manufacturer in the aerosol antiperspirant and deodorant market would not have the same opportunities as those manufacturers that were in the marketplace prior to January 1, 1994.

We are also proposing to modify this provision to more clearly define the key components that must be included in a compliance plan. We believe that these amendments will help to ensure that all the compliance plans are reviewed in a fair and equitable manner and will assist manufacturers in their efforts to develop compliance plans. For example, all manufacturers will be required to submit technical details and information on progress made in complying with the 1997 and 1999 HVOC and MVOC standards. Included must be information such as documentation of past, planned and ongoing research to meet the standards, whether or not HFC-152a will be used to meet these standards, efforts to obtain HFC-152a if it is being used, identification of the critical path to compliance, the expected dates for compliance, and a back-up plan. These amendments will also make the regulation and the standards applicable to various categories (especially aerosols) easier to understand. To this end, a separate table of standards is included for those aerosol products produced under the compliance plan, including an interim January 1, 1997 HVOC limit of 40 percent for antiperspirants and 14 percent for deodorants, and also the zero percent HVOC limits for both aerosol forms effective January 1, 1999.

Currently, there are nine manufacturers that have received extensions under the compliance plan until January 1, 1999. These manufacturers are responsible for the majority of the aerosol sales as, according to our survey (ARB, 1995), these manufacturers represented over 90 percent of the aerosol market in 1993. As a component of their compliance plans, all nine manufacturers proposed, and voluntarily committed to, an interim HVOC limit of 40 percent HVOC for antiperspirant aerosols and 14 percent HVOC for aerosol deodorants by January 1, 1997 (often referred to as the "40/14 standard"). In addition, they provided technical development plans describing how they would develop products to meet the zero percent HVOC required in the regulation by January 1, 1999.

When these interim HVOC limits were proposed by industry as a component of their compliance plans, manufacturers described these intermediate standards as both technically feasible and also resulting in emissions reductions while they continue to work on formulating a zero HVOC aerosol. In a separate proposal, industry representatives, at a February 7, 1995 meeting, indicated that they would commit to this interim standard (in conjunction with the ethanol exemption) as a final limit, in lieu of the zero HVOC standards. After a review of their proposal we determined that these standards were appropriate as interim limits, but that

the infeasibility of the zero HVOC standards for aerosol products has not yet been sufficiently documented to warrant their removal from the regulation at this time. Therefore, we have retained the zero HVOC standards for manufacturers in the compliance plan, effective January 1, 1999. However, we have committed to a review of the zero HVOC standards as a component of the 1997 mid-term consumer products regulations.

Definitional Changes

We are proposing modifications to the definition of "manufacturer" and "fragrance" in the antiperspirant and deodorant regulation and to the VOC definition in all of the consumer products regulations. Specifically, we propose that the definitions for "manufacturer" and "fragrance" in the antiperspirant and deodorant regulation be modified to improve consistency with the ARB consumer products regulation. We are also proposing to amend the "applicability" section and the applicability portion of the table of standards to be consistent with the consumer products regulation. These are minor changes and will help to minimize the differences between all of the consumer product regulations. Also, we are proposing to modify the VOC definition in the antiperspirant and deodorant regulation, the consumer products regulation, and the aerosol coatings regulation to improve consistency with the U.S. EPA's VOC definition. These changes will reflect the U.S. EPA's decision to exempt certain compounds with negligible photochemical reactivity from their VOC definition. The proposed amendments to the VOC definition are discussed in more detail in Chapter VI, "Amendments to the VOC Definition in the Antiperspirant and Deodorant Regulation, the Consumer Products Regulation, and the Aerosol Coatings Regulation."

Variance Section Amendments

We are proposing to remove the one year restriction on maximum variance length to make the antiperspirant and deodorant regulation consistent with the consumer products regulation and the aerosol coating regulation. This change will allow variances of periods longer than one year to be granted when appropriate.

Amendments to the Standards Section Committing the Board to a Public Hearing by July 1, 1997.

In response to industry concerns regarding their ability to successfully formulate and market a zero HVOC aerosol antiperspirant or deodorant by 1999, we have included a requirement in the regulation, as a footnote to the 1999 zero HVOC standards for those manufacturers that have submitted approved compliance plans, for the ARB to hold a public hearing regarding the antiperspirant and deodorant regulation by July 1, 1997. In this public hearing the Board will hear testimony from any concerned parties regarding the appropriateness of the 1999 standards. Based on this testimony and ARB staff assessment the Board will determine how to best obtain the necessary emissions reductions while continuing to meet our SIP commitments in this area.

Amendments to the Administrative Requirements and Test Methods Sections

We are proposing to make two modifications to the "Administrative Requirements" section. One requires the date or date-code information to be located in such a way that it can be viewed without disassembly of the container or container packaging. This will aid enforcement as the inspector may view the date or date-code information in the store without distorting or removing the packaging or dismantling the product.

The second prohibits any person from removing date or date-code information from the container. This is in response to retailer and manufacturer concerns that companies known as "diverters" purchase health and beauty aids outside of the normal distribution channels. To disguise the source of these products diverters routinely remove any dates, date-codes, or batch codes from the container. Many manufacturers (including California manufacturers) manufacture and distribute non-complying product for sale outside of California. Often these diverters will remove the date or date-code information from the non-complying products and then sell them in California, even though the manufacturer originally intended them for sale outside California. These products are sold to unsuspecting distributors and retailers for sale and use in California. This amendment will allow enforcement against unscrupulous diverters rather than putting legitimate retailers and manufacturers at risk for enforcement action when the date or date-codes have been removed through no fault of their own.

We are also proposing an amendment to the test methods section to establish that it is not permissible to modify, change, or fabricate records that may be used to verify product compliance.

References

Air Resources Board, "Summary of 1993 Antiperspirant and Deodorant Manufacturers' Survey," 1995.

IV.

TECHNICAL BASIS FOR THE PROPOSED MODIFICATIONS TO THE REGULATION

A. INTRODUCTION

Of the proposed modifications, only one, that allowing the manufacturers to meet an interim limit of 40 percent HVOC for antiperspirants and 14 percent HVOC for deodorants, requires technical justification and will be discussed here. Both the need for ethanol in some antiperspirant and deodorant products and the future effective zero HVOC standards have been adequately established and discussed in the previous rulemaking documents (ARB Technical Support Document, 1989; ARB Staff Report, 1989; ARB Final Statement of Reasons for Rulemaking, 1989), although we will describe some promising approaches and technologies that may assist manufacturers in developing zero HVOC aerosol products. The remaining proposed amendments address fairness issues and are not proposed based on technical arguments. Therefore, they do not require a technical justification.

In the antiperspirant and deodorant regulation, interim limits, effective December 31, 1992, were established. These are 60 percent HVOC/20 percent MVOC for aerosol antiperspirants and 20 percent HVOC/20 percent MVOC for aerosol deodorants. The final future effective standard for all aerosol products is zero percent HVOC and 10 percent MVOC, effective January 1, 1995. The regulation also includes a provision allowing the Executive Officer of the ARB to extend the January 1, 1995 compliance date to as late as January 1, 1999. As mentioned previously, nine manufacturers have been granted an extension of the January 1, 1995 standards to January 1, 1999. As a part of the compliance plans that have been submitted to the ARB as of September, 1995 requesting an extension to January 1, 1999, manufacturers voluntarily committed to an additional interim limit of 40 percent HVOC/10 percent MVOC for aerosol antiperspirants and 14 percent HVOC/10 percent MVOC for aerosol deodorants, effective January 1, 1997. As discussed in Chapter III, "Summary of Proposed Amendment to the Regulation," in an effort to allow all companies an opportunity to participate in the compliance plans, ensure fairness, and simplify the regulation, we are proposing to include these interim limits in the table of standards for "Aerosol Products in Compliance Plan." The technical justification for these interim limits follows.

B. TECHNICAL JUSTIFICATION

Technical Justification for the Interim 1997 Standards

As a component of their compliance plans, manufacturers contended that the 40 percent HVOC limit for antiperspirants and the 14 percent HVOC limit for deodorants is feasible by the January 1, 1997 compliance date. These intermediate standards were based largely on the proposed use of HFC-152a/hydrocarbon propellant blends. HFC-152a

(1,1 difluoroethane) is an attractive material to consider when formulating low-VOC aerosols. HFC-152a is not a VOC, it has a vapor pressure that is intermediate to those of the commonly used hydrocarbon propellants, it is compatible with common aerosol formulations and packaging, and it has many properties that are similar to hydrocarbons (Applegate, L. E., 1995). HFC-152a also has many properties that are similar to those of CFC-12 (Freon 12), which was used quite extensively in personal and household aerosol products in the 1970's, before being phased out due to its ozone depleting potential. One technical consideration to the use of HFC-152a is its higher than optimal vapor pressure both at room temperature and the elevated temperatures aerosol cans may encounter during shipping or storage. During use, the combination of HFC-152a and currently used nozzles may result in undesirable spray characteristics. At elevated (130°F) temperatures, pure HFC-152a in the commonly used "nonspecified" aerosol can exceeds the maximum pressure allowable by the U.S. Department of Transportation. To mitigate this aspect of HFC-152a use, manufacturers have proposed using HFC-152a/hydrocarbon blends to depress the can pressure to optimal levels both at room temperature and at 130°F. They have proposed a 60 percent HFC-152a/40 percent hydrocarbon mixture for aerosol antiperspirants and deodorants. This translates roughly into a 40 percent HVOC standard for aerosol antiperspirants and a 14 percent HVOC standard for aerosol deodorants.

Manufacturers have argued that these interim standards will allow California to obtain additional emissions reductions at the same time manufacturers continue to investigate viable zero percent HVOC aerosol products, and we concur. Some manufacturers have indicated, in fact, that these are the lowest feasible HVOC standards for aerosol antiperspirants and deodorants. However, ARB staff, as well as manufacturers, have not yet performed an technical analysis sufficient to determine if, indeed, these are the lowest possible concentrations of MVOC or hydrocarbon propellant. In fact, a preliminary technical analysis offers some intriguing possibilities indicating that there is the potential for further reduction of HVOC levels in aerosol antiperspirants and deodorants. We would like to therefore encourage additional research into lower-emitting forms of these products by retaining the zero HVOC limits now present in the regulation.

Technical Justification for the Zero Percent HVOC Standards

The Board, in adopting the antiperspirant and deodorant regulation in 1989, acknowledged that it was not possible to formulate a zero HVOC aerosol antiperspirant or deodorant at that time. However, the Board did determine that the regulation (including the zero HVOC standard), was both commercially and technologically feasible at the time of adoption (ARB, 1989). The Board found the regulation to be feasible based on the fact that "basic market demand" for antiperspirants and deodorants could be met, because over 70 percent of the antiperspirants and deodorants sold in 1989 already met the standards in the proposed regulation, making it clear that antiperspirants and deodorants could be formulated to comply with the regulatory standards. The Board did, however, acknowledge the difficulties in meeting the zero HVOC standard for aerosol products and determined that aerosol manufacturers should be allowed extra time (to January 1, 1999, or nine years from date of adoption) to give them the opportunity to develop low-emitting aerosol alternatives, to

meet the zero HVOC standards. Because of the Board's previous findings regarding the commercial and technological feasibility of the regulation, it is not necessary to include a technical justification for these standards in this document. This justification can be found in the Staff Report (ARB, 1989a), Technical Support Document (ARB, 1989b), and Final Statement of Reasons (ARB, 1989c) for the antiperspirant and deodorant regulation. However, we will discuss some of the progress that has been made and some interesting technologies that may make zero HVOC aerosol antiperspirants and deodorants possible.

Progress Toward the Zero HVOC Standards

Manufacturers have been pursuing the goal of lower-emitting antiperspirants and deodorants since the regulation was adopted. We have been apprised of their progress through the submittal, to date, of about 18 different reports (one compliance plan and one compliance plan update from each of the participating aerosol antiperspirant and deodorant manufacturers). Through the compliance plans and compliance plan updates, conversations with industry spokespeople and raw materials suppliers, and reviews of the trade and technical literature, we are convinced that there are many potentially fruitful avenues to explore in the pursuit of zero HVOC aerosol antiperspirants and deodorants. We are encouraged by manufacturers' progress to date and believe that significant gains have been, and will continue to be, made towards meeting the zero HVOC goals.

One of the main concerns early in the process was the uncertainty of HFC-152a supplies. However, in conversations with DuPont (presently the sole HFC-152a supplier), we have been told that there are now no restrictions on its availability (DuPont Co., 5/24/95), although costs remains about 10-fold higher than that of hydrocarbon propellants. We calculate, based on a 4-ounce can size (and a cost of HFC-152a of $2.00 per pound and the cost of hydrocarbon propellants at $0.15 - $0.20 per pound), that with full replacement of a hydrocarbon propellant with HFC-152a, the material costs for aerosol deodorants or antiperspirants could increase by about $0.35 per can.

As mentioned previously, one technical consideration to the use of HFC-152a is its higher than optimal vapor pressure both at room temperature and the elevated temperatures aerosol cans may encounter during shipping or storage. The higher-than-optimal pressure at room temperature can contribute to delivery problems and reduced efficacy. At elevated (130°F) temperatures, pure HFC-152a in the commonly used "nonspecified" aerosol can exceeds the maximum pressure allowable by the U.S. Department of Transportation. We have determined that there are some avenues to be explored that may help resolve these issues. These include the use of cans which can tolerate the additional pressure at 130°F. These higher-pressure containers were used for aerosols formerly propelled by Freon 12, and typically are one to five percent more expensive than the "nonspecified" containers, so the cost is not substantially greater. It also appears that relatively small amounts of ethanol, on the order of the 10 percent allowed under the aerosol MVOC standard for the zero HVOC aerosol, are sufficient to depress the can pressure at room temperature to an acceptable level. There is also the possibility of using alternative delivery devices, compressed gases such as carbon dioxide, new generations of VOC-free aerosol propellants such as "Polygas"

(O' Sullivan, 1992), barrier packaging technology, and others. For these reasons, we continue to be optimistic regarding the potential for a zero HVOC aerosol product. However, as noted in Chapter III, we will be revisiting this standard during consideration of the mid-term consumer products measures in 1997.

References

Air Resources Board, Staff Report - A Proposed Regulation to Reduce Volatile Organic Compound Emissions from Antiperspirants and Deodorants, September, 1989a.

Air Resources Board, Technical Support Document - A Proposed Regulation to Reduce Volatile Organic Compound Emissions from Antiperspirants and Deodorants, September, 1989b.

Air Resources Board, Final Statement of Reasons for Rulemaking - Public Hearing to Consider the Adoption of a Regulation to Reduce Volatile Organic Compound Emissions from Antiperspirants and Deodorants, November 8, 1989c.

Applegate, L. E., "HFC-152a: A Valuable Propellant for the Reduction of Volatile Organic Compounds," Spray Technology and Marketing, April, 1995, pp. 44-46

DuPont Company, Telephone conversation with ARB staff, May 24, 1995.

O' Sullivan, D., "New Propellant System Devised for Aerosol Packaging," Chemical and Engineering News, January 13, 1992, pp. 21-22.

V.

ENVIRONMENTAL AND ECONOMIC IMPACTS

A. SUMMARY OF ENVIRONMENTAL IMPACTS OF AMENDMENTS TO THE ANTIPERSPIRANT AND DEODORANT REGULATION (NOT INCLUDING THE AMENDMENT TO THE VOC DEFINITION)

ARB staff has conducted an analysis of the environmental impacts of our proposed amendments to the antiperspirant and deodorant regulation. We conducted our analysis with consideration of potential impacts on air quality, water quality, and landfill loading. Based on our investigation we have identified one potential adverse environmental impact; that of increased ethanol emissions. As a component of this environmental impact analysis, we have identified how we will determine if this negative impact occurs as a result of these amendments, and several potential mitigation measures. The following environmental analysis provides the basis for our findings. The environmental impact analysis of the amendments to the VOC definition in the antiperspirant and deodorant regulation, the consumer products regulation, and the aerosol coatings regulation is included in Chapter VI "Amendments to the VOC Definition in the Antiperspirant and Deodorant Regulation, the Consumer Products Regulation and the Aerosol Coatings Regulation."

B. LEGAL REQUIREMENTS APPLICABLE TO THE ANALYSIS

Both the California Environmental Quality Act (CEQA) and Board policy require the ARB to consider the potential adverse environmental impacts of proposed regulations. Because the ARB's program involving the adoption of regulations has been certified by the Secretary of Resources (see Public Resources Codes section 21080.5), CEQA allows the ARB's environmental analysis to be included in the ARB Technical Support Document (TSD) in lieu of preparing an environmental impact report or negative declaration. In addition, the ARB will respond in writing to all significant environmental points raised by the public during the public review period or at the Board hearing. These responses will be contained in the Final Statement of Reasons for the modifications to these regulations.

On January 1, 1994, the new requirements of SB 919 became effective (Stats. 1993, Chapter 1131). SB 919 amended CEQA by adding new Public Resources Code section 21159. With respect to the modifications to these regulations, Public Resources Code section 21159 requires that the environmental analysis conducted by the ARB include, at a minimum, all of the following: (1) an analysis of the reasonably foreseeable environmental impacts of the methods of compliance, (2) an analysis of reasonably foreseeable feasible mitigation measures, and (3) an analysis of reasonably foreseeable alternative means of compliance with the regulation.

Our analysis of the reasonably foreseeable environmental impacts of the methods of compliance and an analysis of reasonable foreseeable feasible mitigation measures is presented in Sections C and D below. In fulfillment of the requirement for an analysis of the reasonably foreseeable alternative means of compliance with the regulation, we foresee no impacts from alternative means of compliance in regard to these amendments.

C. EMISSIONS REDUCTIONS AND OTHER POTENTIAL ENVIRONMENTAL IMPACTS OF THE PROPOSED AMENDMENTS TO THE REGULATION

Environmental Impacts of Antiperspirant and Deodorant Regulation

The primary environmental impact of the antiperspirant and deodorant regulation is a reduction in the VOC emissions from consumer products. Since VOCs are involved in the formation of tropospheric ozone, any reduction in VOC emissions is expected to result in a positive impact on air quality and public health. For a discussion as to the emissions reductions expected from implementation of this regulation, you may refer to the original Technical Support Document, Staff Report (ARB, September 1989), and Final Statement of Reasons for Rulemaking (ARB, November 1989).

Environmental Impacts of Proposed Amendments to the Regulation

We are proposing several amendments to the regulation. First, we are proposing to modify the exemption for ethanol contained in "existing products" from the MVOC content standards specified in the table of standards (the "ethanol exemption"). We are proposing to extend the exemption for ethanol to all antiperspirant and deodorant products. Second, we are proposing to modify the provision entitled "Special Requirements for Aerosol Manufacturers." This provision allows aerosol antiperspirant and deodorant manufacturers to be temporarily exempted from the 1995 (zero percent HVOC) standards under certain specific conditions involving the submittal of an acceptable compliance plan. This compliance plan must detail how they plan to achieve compliance with the standards on or before January 1, 1999. The proposed amendments will specify the necessary components of an acceptable compliance plan, will clarify the requirement that manufacturers meet the interim HVOC/MVOC standards to ensure intermediate reductions, and will provide manufacturers that did not exist in 1994 the opportunity to produce aerosol products, if they are willing to commit to the compliance plan requirements. Third, we are proposing to modify some definitions to provide consistency between this regulation, the other consumer products regulations, and the U.S. EPA VOC definition. The only amendment to the definitions that reasonably requires discussion in regard to potential environmental impacts is that to the VOC definition in the antiperspirant and deodorant regulation, the consumer products regulation, and the aerosol coatings regulation. The potential environmental impacts from this amendment are discussed further in Chapter VI, "Amendments to the VOC Definition in the Antiperspirant and Deodorant Regulation, the Consumer Products Regulation and the Aerosol Coatings Regulation." The remaining modifications to the definitions involve minor amendments to the definition for "manufacturer" and "fragrance" that would not

conceivably result in an adverse environmental impact. Finally, we are also proposing to make some additional amendments to improve consistency with the consumer products regulation, aid in enforcement, and to clarify our future plans for this category.

We have determined that two of the proposed modifications may potentially have an adverse environmental impact: (1) the proposal to extend the ethanol exemption and (2) the proposed modifications to the "Special Requirements for Aerosol Manufacturers provision." The proposed amendment modifying the exemption for ethanol contained in "existing products" to allow the exemption of ethanol from the MVOC standard for all products, whether new or existing, will allow manufacturers to reformulate any of their current ethanol-containing products to a higher ethanol content and reformulate a product that does not now include ethanol to include ethanol. The amendment proposing modifications to the "Special Requirements for Aerosol Manufacturers" provision reopens the period in which additional manufacturers may submit a compliance plan until the zero percent HVOC standard goes into effect on January 1, 1999. This will allow additional manufacturers to become eligible to produce aerosol antiperspirants through submittal of an acceptable compliance plan, and may therefore result in increased HVOC and MVOC emissions.

Modifications to "Special Requirements for Aerosol Manufacturers"

First, we are proposing to modify the provision entitled "Special Requirements for Aerosol Manufacturers." As described above, the proposed amendments will specify the necessary components of an acceptable compliance plan, will clarify the requirement that manufacturers meet the interim HVOC/MVOC standards to ensure intermediate reductions, and will provide manufacturers that did not exist in 1994 the opportunity to produce aerosol products, if they are willing to commit to the compliance plan requirements. This amendment reopens the period in which additional manufacturers may submit a compliance plan. This will allow additional manufacturers to become eligible to produce aerosol antiperspirants through submittal of an acceptable compliance plan, and may, therefore, result in increased HVOC emissions. Although there is the potential for an increase in HVOC emissions under this amendment, we do not believe this will occur for the following reasons. First, well over 90 percent of the aerosol sales in 1993 (before the January 1, 1995 regulatory standards became effective) were by companies that are now producing product under a compliance plan; therefore, the potential additional companies account for less than 10 percent of the remaining aerosol market. We have not seen any serious interest from new or previously existing companies wishing to enter the compliance plan. Second, manufacturers cannot casually enter the compliance plan and produce an HVOC-containing aerosol. In order to receive an exemption from the 1995 aerosol HVOC standards, manufacturers must show a real commitment to producing a zero percent HVOC aerosol product by January 1, 1999. Manufacturers must also commit to achieving the interim 1997 standards and to supplying yearly compliance plan updates. Finally, as noted previously, the aerosol market in general is declining, and that trend is expected to continue (Helene Curtis, August 25, 1994). Even if an additional company were to begin making aerosol products, it is likely that the company would simply take market share away from companies that are currently selling aerosol products, rather than create a new demand for additional aerosol products.

Modifications to "Ethanol Exemption"

While we previously introduced scenarios by which these amendments may result in increased ethanol and/or HVOC emissions, we do not believe that this will, in fact, occur. In regard to the proposal to extend the ethanol exemption to all antiperspirant and deodorant products, we do not foresee an increase in ethanol emissions for the following reasons.

First, the deodorant aerosol market–as determined by pounds sold–is declining, as is the total aerosol market. From the 1989 Technical Support Document we calculate that aerosols accounted for about 44 percent of the antiperspirant and deodorant market share (by weight), compared to about 28 percent in 1993. The aerosol deodorant market share declined from about 9 percent to 6 percent of the market. Aerosol deodorants account for a large proportion of the ethanol use (according to our 1993 survey, 63 percent of all ethanol emissions were from aerosol deodorants) so emissions from this source have declined in the past few years. According to industry sources, the decline in aerosol products is expected to continue (Helene Curtis, Inc., August 25, 1994).

Second, there are aspects to ethanol that tend to limit its use. For example, many women do not like ethanol-containing products as they can irritate recently-shaved underarms (Helene Curtis, 7/7/95). Ethanol used in sticks has a cold, wet sensation that many users dislike (Helene Curtis, August 25, 1994). Additionally, high levels of alcohol can cause stinging and irritation (Jungermann, 1995) and product shrinkage (Calogero, 1992).

Third, the overall market is highly penetrated–over 97 percent of consumers already use an antiperspirant or deodorant every day and the only growth occurring in this market is from population growth (Helene Curtis, Inc., August 25, 1994). Therefore, the market size will not increase based on manufacturers using these amendments to recruit new antiperspirant and deodorant users. Ethanol-containing products are only a small part of the entire market, about 15 percent by weight based on our 1993 survey. New ethanol-containing products would have to compete with well-established products to increase their market share. Additionally, even now, a manufacturer with an "existing product" exemption can market and sell as much ethanol-containing product as the market can support. The regulation does not in any way limit how much product can be sold under the existing product exemption. The only factors that may presently limit ethanol use are the constraints on reformulation and marketing imposed by the "existing product" definition, in that the product must have existed prior to January 1, 1990, and cannot be reformulated to increase the ethanol content or the HVOC content.

Fourth, there are technical considerations which will limit ethanol use in reformulating to the zero percent HVOC standards. Ethanol depresses the vapor pressure of HFC-152a. Therefore, use of high amounts of ethanol with HFC-152a as propellent would depress the vapor pressure to a level that would render the product unusable. To maximize the use of ethanol, it would be necessary to increase the amount of HFC-152a in the can. As HFC-152a is quite expensive, this would no doubt be avoided, if possible. In fact, under the zero HVOC standard, manufacturers may need to decrease the ethanol content in their aerosol deodorants to maintain an adequate vapor pressure, so ethanol emissions could, in fact, decrease in this category.

In conclusion, we believe that it is not likely that ethanol emissions will increase as a result of the proposed amendment. In fact, we believe that it is possible that ethanol emissions could decrease as a result this amendment. By allowing innovation in the formulation of products with small amounts of ethanol, product forms may be created which may encourage aerosol users to switch from that form to the lower emitting, non-aerosol forms.

Overriding Consideration for the Proposed Amendments to the Antiperspirant and Deodorant Regulation

In the previous discussion, we identified one negative impact that could potentially occur as a result of these amendments: that of increased ethanol and/or HVOC emissions. However, these amendments are designed to "level the playing field" and achieve fairer, more equitable treatment for all manufacturers. We believe that these considerations override any adverse environmental impacts that might possibly occur as a result of these amendments. Additionally, as the above discussion indicates, we do not believe these negative impacts are likely to occur. However, because of the potential negative impact, we discuss below how we will monitor for this negative impact and present potential mitigation measures. Other than the measures identified in this chapter, there are no other feasible mitigation measures that would reduce possible environmental impacts while at the same time providing the benefits of increased fairness, flexibility, and competitiveness realized by these amendments.

Reporting Requirements

Because of this potential adverse environmental impact discussed previously, we have modified the reporting requirement included in the antiperspirant and deodorant regulation. We are now asking for sales and VOC information yearly, rather than every third year as it is presently included in the regulation. In the survey for the 1993 sales year, we asked for the information by March 1, 1994, and generally received the surveys promptly. By collecting these data yearly we will be able to react to an increase in ethanol emissions quickly and, if appropriate, adopt regulatory changes to mitigate these impacts. These measures could include various possibilities such as modifying the regulation by limiting the amount of ethanol that can be used, removing the ethanol exemption from the regulation altogether, or setting standards for ethanol in the various categories. Additionally, we will continue to monitor implementation of the modifications to ensure that no adverse impacts occur in the future.

D. OTHER POTENTIAL ENVIRONMENTAL IMPACTS

Impact on Global Warming

We do not foresee any increase in global warming due to these modifications. Although use of HFC-152a (1,1-difluoroethane) would not increase under the proposed amendments, we will comment on its ability to impact global warming, as it is expected to be likely be a component of future aerosol antiperspirants and deodorants. This is because HFCs are not considered VOCs, and they are therefore considered possible replacements for hydrocarbon propellants for some applications, including aerosol antiperspirants and deodorants. HFCs are

non-chlorinated methane and ethane derivatives which contain hydrogen and fluorine. It is generally accepted that HFCs, because they lack chlorine, do not significantly contribute to ozone depletion. Since they are not considered to be ozone depleters, HFCs are not scheduled for phase-out under the 1990 Federal Clean Air Act amendments. However, these compounds do absorb infrared energy and can therefore potentially contribute to global warming when emitted in significant quantities.

We have determined that use of HFC-152a as a replacement for hydrocarbon propellants in antiperspirants and deodorants would have a negligible effect on global warming. This is because, at most, only a few tons per day of HFCs would be emitted to the atmosphere. Even though HFC-152a has a significantly higher global warming potential than hydrocarbon propellants (in the range of 150-fold higher), its effect is insignificant if compared to the nearly 16 million metric tons per day of carbon dioxide, the primary man-made greenhouse gas of concern, emitted into the atmosphere from existing processes. HFC-152a is also used presently in some other aerosol consumer products, as it is a non-VOC propellant. However, its impact on global warming remains insignificant even if we consider the cumulative impact of its potential use in multiple aerosol consumer products. Assuming propellants are responsible for about 50 percent of VOC emissions, or approximately 125 tons per day, and HFC-152a is used exclusively for this purpose, there would still be a negligible impact when these emissions compared to existing carbon dioxide and methane emissions.

As mentioned above, carbon dioxide is the primary man-made greenhouse gas of concern. Carbon dioxide has found some use as a replacement propellant in consumer products, and could be a replacement for hydrocarbon propellants in the near future. Even with its use in antiperspirants and deodorant we do not believe there will be an impact on global warming. This is because most carbon dioxide used as a propellant is a recycled by-product of existing processes and therefore does not increase global warming due to carbon dioxide.

Impact on Stratospheric Ozone Depletion

Stratospheric ozone shields the earth from harmful ultraviolet (UV) radiation. Its depletion causes higher UV radiation levels at the earth's surface. The U.S. EPA has estimated that for every one percent decrease in stratospheric ozone, there would be approximately 20,000 additional skin cancer cases. In addition to the increase in skin cancer incidence, an increase in eye cataracts and suppression of human and animal immune systems may also occur because of the increase in UV radiation (40CFR Part 82, 8/12/88). Since the reactions which form tropospheric ozone are driven by UV radiation, it is conceivable that a reduction in stratospheric ozone may also result in an increase in photochemical smog formation because of the increased UV radiation.

Compounds such as chlorofluorocarbons (CFCs) and other halocarbons (e.g. halons, 1,1,1-trichloroethane (1,1,1-TCA), and carbon tetrachloride) cause the destruction of the UV protective stratospheric ozone. These compounds are generally very stable and do not degrade appreciably in the troposphere. Instead, they gradually diffuse into the stratosphere where they release chlorine or bromine atoms. It has been estimated that each chlorine atom released can remain in

the stratosphere long enough to react with 10,000 molecules of ozone. Bromine atoms released from halons are even more reactive than chlorine atoms.

CFCs have been banned from use in most aerosols since 1978. Additionally, the antiperspirant and deodorant regulations specifically disallows the use of any compound with an ozone-depletion potential of greater than 0.01 (which includes the hydrochlorofluorocarbons or HCFCs), and no changes to this provision have been proposed. Furthermore, because of the Montreal Protocols and the 1990 Federal Clean Air Act amendments, all CFCs are scheduled for production phase-out by January 1, 1996. Therefore, the proposed amendments to the antiperspirant and deodorant regulation will have no adverse impact on the stratospheric ozone layer.

Impacts on Water Quality and Solid Waste Disposal

We do not expect an adverse impact on water quality or solid waste disposal from the aerosol paint regulations. As the primary goal of the modifications is to "level the playing field" and make the market more competitive and fairer for new entrants there should be no changes in packaging or disposal due to these modifications.

E. ECONOMIC IMPACTS

Summary of Economic Impacts

Because of the increased flexibility in the reformulation of new products that will result from these modifications, we expect no significant adverse impact on: manufacturers' profitability; employment in California; the status of California businesses; or competitiveness of California businesses with other states. In fact, because of the overall cost savings that may result from these amendments, manufacturers may experience a positive economic impact. The California consumers may also benefit from the availability of more types of products and less expensive products, if manufacturers' cost savings are passed on to the consumer.

Legal Requirements Applicable to the Economic Impacts Analysis

Two bills passed by the California Legislature in 1993 require regulators to evaluate the effect of regulations on jobs, business, and the ability to compete in the national marketplace. These bills are (1) Senate Bill 513 - Job losses and gains; Business creations and elimination, and (2) Assembly Bill 969 - Business competitiveness. Senate Bill 513 requires state agencies to assess the potential impact of their regulations on California jobs and on business expansion, elimination, or creation.

Assembly Bill 969 requires a state agency to include the ability of California business to compete with business in other states in its adverse economic impact assessment. The requirements of these bills, as well as other economic analysis requirements, are codified in Government Code sections 11346.3 and 11346.5.

Businesses Affected

Any business which manufacturers or markets antiperspirants or deodorants subject to the requirements of the Regulation for Reducing Volatile Organic Compound Emissions from Antiperspirants and Deodorants (sections 94500-94506) can potentially be affected by the proposed modifications. According to our survey results (ARB, 1995) in 1993 there were 53 manufacturers supplying antiperspirants and deodorants to the California market. Five of these manufacturers were located within California.

Economic Impacts

In regard to potential negative impacts, the proposed amendments to the "Special Requirements for Aerosol Manufacturers," and, more specifically, the "ethanol exemption" are intended to rectify an unintended effect of the original regulation, that of restricting competition from new entrants into the market. By restricting all but companies with "existing products" from using ethanol in concentrations greater than those specified in the table of standards, competition between manufacturers is limited. The modifications to the ethanol exemption will provide greater flexibility, which will ultimately result in the introduction of a greater variety of products and an overall cost savings to industry. The consumer will benefit from the availability of a greater variety of products and, to the extent that these cost savings are passed on to consumers, they may also realize a savings benefit in the form of less expensive products. However, the proposed amendments may increase competition among manufacturers and marketers. As a result, some individual manufacturers that were benefitting from the structure of the existing regulation may experience a negative economic impact, while manufacturers that were restricted by the present regulation may experience a positive impact. It is not possible to quantify these potential impacts.

Since the proposed amendments affect all manufacturers and marketers in the same way, regardless of their location, California businesses will not be at a competitive disadvantage. Also, the proposed amendments will have no noticeable impact on employment and the status of business in California, because they impose no additional costs on businesses.

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VI.

AMENDMENTS TO THE VOC DEFINITION IN THE ANTIPERSPIRANT AND DEODORANT REGULATION, THE CONSUMER PRODUCTS REGULATION AND THE AEROSOL COATINGS REGULATION

A. SUMMARY OF AMENDMENTS

We are proposing to modify the VOC definition to exempt linear, branched, or cyclic fully methylated siloxanes ("volatile methyl siloxanes" or "VMS") and *p*-chlorobenzotrifluoride (PCBTF). This modification will be made to the VOC definitions in the antiperspirant and deodorant regulation, the consumer products regulation, and the aerosol paints regulation (currently pending review by the Office of Administrative Law). The modification will also affect the Alternative Control Plan (ACP) regulation for consumer products since the ACP regulation incorporates by reference the VOC definition in the consumer products regulation and the aerosol coating products regulation (see Title 17, California Code of Regulations, Article 4, Alternative Control Plan, sections 94540-94555).

At this time, we are not providing a recommendation regarding the exemption of acetone from the VOC definition. The U.S. EPA recently proposed an exemption for acetone (published in 59 FR 49877) from its VOC definition (40 CFR 51.100(s)). On June 6, 1995, the final action on this proposed exemption was signed by Ms. Carol Browner, U.S. EPA Administrator and it was published in the Federal Register on June 16, 1995. Because of U.S. EPA's exemption of acetone, we recently began a comprehensive evaluation to ensure that no significant adverse impacts to the environment would result from exempting acetone in California. Given the air quality needs of California, we believe it is important to conduct photochemical modeling and other technical analyses that are specific to California conditions and at a detailed level at which the U.S. EPA may not have conducted for this state. We will be conducting our technical analyses through July and August of 1995 and will make a recommendation based on our findings at the September Board meeting. Any technical justification will be made available for public comment as part of a 15-day notice.

B. WHY THESE AMENDMENTS ARE NECESSARY

We are proposing to exempt VMS and PCBTF in response to the petition submitted to the ARB by Dow Corning Corporation and the request by Occidental Chemical Corporation, respectively (Dow Corning, 12/12/94; Air Resources Board Response to Dow Petition, 2/1/95, Occidental Chemical Company, 11/15/1994). These compounds were recently exempted by the U.S. EPA from their VOC definition (59 FR 50693). The exemptions were based on recent studies documenting the negligible contribution to ground-level ozone formation from these compounds (i.e., negligible reactivity). As we will discuss in the following section, these

exemptions will provide manufacturers additional flexibility in formulating complying products without increasing ground-level ozone levels or having any other significant adverse environmental impacts.

C. ENVIRONMENTAL IMPACTS

Summary of Environmental Impacts

ARB staff has conducted an analysis of the potential environmental impacts of the proposed modification to the VOC definition. Based on our analysis, we have determined that the modification will not have any significant adverse impacts on the environment. We conducted our analysis with consideration of potential impacts on water quality, landfill loading, and air quality. The following discussion provides the basis for our findings.

Legal Requirements Applicable to the Environmental Impacts Analysis

On January 1, 1994, the requirements of SB 919 became effective (Stats. 1993, Chapter 1131). Among other provisions, SB 919 amended the California Environmental Quality Act (CEQA) by adding new Public Resources Code section 21159. With respect to the proposed modification, Public Resources Code section 21159 requires the ARB to conduct an environmental analysis which includes, at a minimum, all of the following: (1) an analysis of the reasonably foreseeable environmental impacts of the methods of compliance, (2) an analysis of the reasonably foreseeable feasible mitigation methods, and (3) an analysis of the reasonably foreseeable alternative means of compliance with the regulation.

Environmental Impacts Analysis

In analyzing the environmental impacts of the proposed modification, it is important to keep in mind that the modification is designed to allow the use of additional alternative compounds to comply with the VOC standards in the affected regulations. The Board has already determined that the antiperspirant and deodorant, consumer products, ACP, and aerosol paints regulations would have no significant adverse environmental impacts (ARB, 1989; ARB, 1990; ARB, 1991; ARB, 1994; ARB, 1995). Rather, the regulations would result in beneficial environmental impacts due to a reduction in VOC emissions as manufacturers reformulate their products to comply with the VOC requirements. In these reformulations, manufacturers will be relying on technologies for which the possible impacts have already been thoroughly analyzed as part of the antiperspirant and deodorant, Phase I and II consumer products regulation, and ACP (ARB, 1989a; ARB, 1990a; ARB, 1992a).

In concluding that the modification will not have any adverse impacts, the staff considered the possible impacts to the environment if manufacturers formulate products to take advantage of the proposed modification to the VOC definition. The primary concern is whether any adverse impacts to ground-level ozone will occur as a result of reformulations using VMS or PCBTF. Other impacts that were evaluated include the possibility for increased depletion of stratospheric ozone, increased global warming, and impacts to landfills and water quality. Each of these issues

is discussed in more detail under the section below entitled "Findings." The basic conclusion of ARB staff is that adverse environmental impacts will not result in any of these areas.

Public Resources Code section 21159 also requires an analysis of the reasonably foreseeable mitigation measures and alternative means of compliance. As noted above, the alternative to using VMS or PCBTF is to use other formulation technologies already determined by the Board to have no significant adverse environmental impacts. Thus, the ARB staff expect that no significant adverse impacts will occur due to the "reasonably foreseeable alternative means of compliance" with the modified regulations and VOC definitions. In addition, there are no reasonably foreseeable mitigation measures, since the ARB staff's environmental analyses conclude that the regulations will have no significant adverse impacts on the environment. Because of the analyses' conclusions, there are no adverse impacts that would require mitigation.

Findings

Impacts on Water Quality and Landfills

Paracholorobenzotrifluoride's solubility in water is 29 ppm at 23°C (Occidental Chemical Co., 6/15/95). At this very low level, PCBTF is essentially insoluble in water. Therefore, its removal from the atmosphere by contact with water (e.g., rain or fog) is expected to be negligible (Nelson and Brown, 1992). Based on this, the ARB staff expect no significant adverse impact on water quality due to the proposed exemption of PCBTF.

Volatile methyl siloxanes are also essentially immiscible in water (Hawley's Condensed Chemical Dictionary, 1987). We therefore expect removal of VMS from the atmosphere via contact with water to be negligible. Moreover, volatile methyl siloxanes are currently used in a variety of consumer products, including personal care products such as antiperspirant/deodorants, hairsprays, lotions, and others (Directory of Cosmetic and Toiletry Ingredients USA, 1990). There are no data in the available literature which suggest that the current uses of VMS in consumer products adversely impact water quality. Because of these reasons, we believe the proposed exemption for VMS will have no significant adverse impacts on water quality.

With regards to landfill loading, the ARB staff was unable to identify any scenario in which the modified regulations and VOC definition would result in any impacts to landfills beyond those already evaluated in the rulemaking record for the existing regulations. As stated above, manufacturers already use VMS and PCBTF in a variety of personal care and automotive care products, respectively (ARB, 1989b; Ostrowski, 1993; Directory of Cosmetic and Toiletry Ingredients USA, 1990). The ARB has already determined the existing uses of these compounds to have no significant adverse impacts to landfill loading. Based on existing uses, it is reasonable to conclude that reformulated products using these compounds will be packaged in the same types of containers and will be used in the same ways as existing products already containing these compounds. Therefore, we expect no additional significant adverse impacts to landfills from the proposed exemptions.

Impacts on Ground-Level Ozone

The VOC definition essentially classifies organic compounds as either "reactive" or "negligibly reactive" in terms of their propensity to form ozone within short timeframes. Since the proposed modification would recognize VMS and PCBTF as "negligibly reactive," the use of these compounds should not result in adverse impacts to ground-level ozone. More importantly, if these compounds are substituted for more reactive compounds (e.g., petroleum distillates, alcohols, etc.), the net effect would be additional reductions in ground-level ozone. The overall reductions in ground-level ozone levels should, therefore, be the same or more under the proposed modification as they would have been under the existing regulations. Because of this, we expect no adverse impacts to ground-level ozone due to the proposed modification.

Stratospheric Ozone Depletion

It is well established in the scientific literature that certain chlorinated and other halogenated compounds contribute to the depletion of the stratospheric ozone layer. Since VMS contain no halogenated compounds (only carbon, hydrogen, oxygen, and silicon atoms), no stratospheric ozone depletion is expected to occur with the use and emissions of VMS. On the other hand, PCBTF does contain a chlorine atom as shown in the following structural diagram:

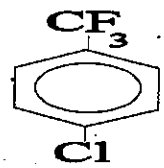

Figure VI-1
Structure of p-chlorobenzotrifluoride

Significant ozone depletion potential is highly unlikely, however, since the atmospheric lifetime of PCBTF has been estimated to be less than or equal to approximately 50-70 days (Atkinson et. al., 1984; Nelson and Brown, 1992). For comparison, methyl chloroform (1,1,1-trichloroethane), a compound considered to be ozone depleting, has a lifetime estimated to be 5.7 years (Prinn et. al., 1992). HCFC-121 (C_2HFCl_4) has an estimated lifetime of 0.6 years (219 days), which is the shortest atmospheric lifetime of all the ozone depleting compounds listed by the U.S. EPA in Title VI of the Federal Clean Air Act (56 FR 2420). On the other hand, methylene chloride (dichloromethane), which is not considered to be ozone depleting, has an estimated lifetime of 131 days (*Id.*). Thus, based on PCBTF's short atmospheric lifetime relative to other suspected ozone-depleting compounds, we do not expect PCBTF to survive long enough to reach the stratosphere in high concentrations and significantly add to existing ozone depletion.

Global ("Greenhouse") Warming

The ARB staff does not expect the proposed exemption of VMS and PCBTF to contribute significantly to existing global warming. Given their high cost (e.g., PCBTF costs approximately $2.00 per pound bulk rate; Occidental Chemical Company, 4/6/95) and limited utility (e.g., VMS has negligible miscibility in water and PCBTF is likely to be used mainly in automotive, degreasing, and paint applications; *Id.*), we would expect the increased usage of VMS and PCBTF to be relatively minor. Moreover, the Office of Technology Assessment (United States Congress) recently estimated that the total global warming commitment or "radiative forcing" is represented as follows (not including warming due to water vapor and tropospheric ozone): 55 percent by CO_2 (6 billion metric tons of carbon released in 1988), 24 percent by halocarbons, 15 percent by methane, and 6 percent by nitrous oxide (U.S. Congress, Office of Technology Assessment, 1991). Thus, based on this estimate, any potential increase in global warming due to increased usage of PCBTF and VMS would clearly be negligible and would be overwhelmed by the effects of these other, more significant greenhouse gases.

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APPENDIX A:

PROPOSED AMENDMENTS TO THE ANTIPERSPIRANT AND DEODORANT REGULATION

REGULATION FOR REDUCING VOLATILE ORGANIC COMPOUND EMISSIONS FROM ANTIPERSPIRANTS AND DEODORANTS

Amend Subchapter 8.5, Article 1. Antiperspirants and Deodorants, Sections 94500-94504, Title 17, California Code of Regulations, to read as follows:

[Note: The new text is shown in **bold/underline**, except within the Table of Standards, which, for clarity, is shown in **bold** only. Text to be removed is shown in ~~strikeout~~.]

SUBCHAPTER 8.5. CONSUMER PRODUCTS

Article 1. Antiperspirants and Deodorants

94500. Applicability.

Except as provided in Section 94503, this article shall apply to any person who sells, supplies, offers for sale, or manufactures antiperspirants or deodorants **for use** in the state of California.

NOTE: Authority cited: Sections 39600, 39601, and 41712, Health and Safety Code. Reference: Sections 39002, 39600, 40000, and 41712, Health and Safety Code.

Amend Sections 94501, 94502, 94503.5, 94505 and 94506, Title 17, California Code of Regulations, to read as follows:

94501. Definitions.

For the purpose of this article, the following definitions apply:

(a) "Aerosol Product" means a pressurized spray system that dispenses antiperspirant or deodorant ingredients.

(b) "Antiperspirant" means any product including, but not limited to, aerosols, roll-ons, sticks, pumps, pads, creams, and squeeze-bottles, that is intended by the manufacturer to be used to reduce perspiration in the human axilla by at least 20 percent in at least 50 percent of a target population.

(c) "Colorant" means any substance or mixture of substances, the primary purpose of which is to color or modify the color of something else.

(d) "Deodorant" means any product including, but not limited to, aerosols,

roll-ons, sticks, pumps, pads, creams, and squeeze-bottles, that is intended by the manufacturer to be used to minimize odor in the human axilla by retarding the growth of bacteria which cause the decomposition of perspiration.

(e) "Executive Officer" means the Executive Officer of the Air Resources Board, or his or her delegate.

~~(f) Existing Product means any antiperspirant or deodorant formulation which was sold, supplied, offered for sale, or manufactured in California prior to January 1, 1990, or any identical antiperspirant or deodorant formulation which is sold, supplied, offered for sale, or manufactured in California by any person after January 1, 1990.~~

(f)~~(g)~~ "Fragrance" means ~~any substance or mixture of substances, the primary purpose of which is to impart an odor or scent~~ **a substance or complex mixture of aroma chemicals, natural essential oils, and other functional components with a combined vapor pressure not in excess of 2 mm of Hg at 20°C, the sole purpose of which is to impart an odor or scent, or to counteract a malodor**.

(g)~~(h)~~ "High Volatility Organic Compound (HVOC)" means any organic compound that exerts a vapor pressure greater than 80 millimeters of Mercury (mm Hg) when measured at 20°C.

(h)~~(i)~~ "Manufacturer" means any person ~~or business entity that produces an antiperspirant or deodorant for sale in California~~ **who imports, manufacturers, assembles, produces, packages, repackages, or relabels an antiperspirant or deodorant**.

(i)~~(j)~~ "Medium Volatility Organic Compound (MVOC)" means any organic compound that exerts a vapor pressure greater than 2 mm Hg and less than or equal to 80 mm Hg when measured at 20°C.

(j)~~(k)~~ "Non-aerosol Product" means any antiperspirant or deodorant that is not dispensed by a pressurized spray system.

(k)~~(l)~~ "Roll-on Product" means any antiperspirant or deodorant that dispenses active ingredients by rolling a wetted ball or wetted cylinder on the affected area.

(l)~~(m)~~ "Stick Product" means any antiperspirant or deodorant that contains active ingredients in a solid matrix form, and that dispenses the active ingredients by frictional action on the affected area.

~~(n) Volatile Organic Compound (VOC) means any compound containing at least one atom of carbon except methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, 1,1,1 trichloroethane, methylene chloride, trichlorofluoromethane (CFC-11), dichlorodifluoromethane (CFC-12), chlorodifluoromethane (HCFC-22), trifluoromethane (HFC-23),~~

~~1,1,1 trichloro-2,2,2 trifluoroethane (CFC-113),~~
~~1 chloro 1,1 difluoro 2 chloro 2,2 difluoroethane (CFC-114),chloropentafluoroethane (CFC-115), 2,2 dichloro-1,1,1 trifluoroethane (HCFC-123), 1,1,1,2 tetrafluoroethane (HFC-134a), 1,1-dichloro 1 fluoroethane (HCFC-141b), 1 chloro-1,1 difluoroethane (HCFC-142b), 2 chloro-1,1,1,2 tetrafluoroethane (HCFC-124), pentafluoroethane (HFC-125), 1,1,2,2-tetrafluoroethane (HFC-134), 1,1,1-trifluoroethane (HFC-143a), 1,1 difluoroethane (HFC-152a), and the following classes of perfluorocarbons: (A) cyclic, branched, or linear, completely fluorinated alkanes; (B) cyclic, branched, or linear, completely fluorinated ethers with no unsaturations; (C) cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations; and (D) sulfur-containing perfluorocarbons with no unsaturations and with the sulfur bonds only to carbon and fluorine.~~

(m) **"Volatile Organic Compound (VOC)" means any compound containing at least one atom of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, and excluding the following:**

(1) **methane,**
methylene chloride (dichloromethane),
1,1,1-trichloroethane (methyl chloroform),
trichlorofluoromethane (CFC-11),
dichlorodifluoromethane (CFC-12),
1,1,2-trichloro-1,2,2-trifluoroethane (CFC-113),
1,2-dichloro-1,1,2,2-tetrafluoroethane (CFC-114),
chloropentafluoroethane (CFC-115),
chlorodifluoromethane (HCFC-22),
1,1,1-trifluoro-2,2-dichloroethane (HCFC-123),
1,1-dichloro-1-fluoroethane (HCFC-141b),
1-chloro-1,1-difluoroethane (HCFC-142b),
2-chloro-1,1,1,2-tetrafluoroethane (HCFC-124),
trifluoromethane (HFC-23),
1,1,2,2-tetrafluoroethane (HFC-134),
1,1,1,2-tetrafluoroethane (HFC-134a),
pentafluoroethane (HFC-125),
1,1,1-trifluoroethane (HFC-143a),
1,1-difluoroethane (HFC-152a),
cyclic, branched, or linear completely methylated siloxanes,
the following classes of perfluorocarbons:

(A) **cyclic, branched, or linear, completely fluorinated alkanes;**

(B) **cyclic, branched, or linear, completely fluorinated ethers with no unsaturations;**

(C) **cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations; and**

(D) **sulfur-containing perfluorocarbons with no unsaturations and with the sulfur bonds to carbon and fluorine, and**

(2) **the following low-reactive organic compounds which have been exempted by the U.S. EPA:**

parachlorobenzotrifluoride (1-chloro-4-trifluoromethyl benzene).

NOTE: Authority cited: Sections 39600, 39601, and 41712, Health and SafetyCode. Reference: Sections 39002, 39600, 40000, and 41712, Health and Safety Code.

94502. Standards for Antiperspirants and Deodorants.

(a) Except as provided in Section 94503, no person shall sell, supply, offer for sale, or manufacture **for sale** in California any antiperspirant or deodorant which, at the time of sale or manufacture, contains volatile organic compounds in excess of the limits specified in the following Table of Standards, after the specified effective date, or after any date that has been specified by the Executive Officer pursuant to subsections ~~(e)~~**(d)**(2) or ~~(e)~~**(d)**(5):

~~**Table of Standards**~~
~~(percent volatile organic compounds by weight)~~

~~Product Form~~	~~Effective Dates~~			
	~~Immediately upon the effective date of this article~~	~~12/31/1992~~	~~1/1/1995~~	
	~~HVOC[a/]~~	~~MVOC[b/]~~	~~HVOC[a/]~~	~~MVOC[b/]~~
~~Aerosol Product~~				
~~Antiperspirant current level[c/]~~	~~60~~	~~20~~	~~0~~	~~10~~
~~Deodorant current level[c/]~~	~~20~~	~~20~~	~~0~~	~~10~~
~~Non-aerosol product~~				
~~current level[c/]~~	~~0~~	~~0~~	~~0~~	~~0~~

~~a/ High volatility organic compounds, i.e., any organic compound that exerts a vapor pressure greater than 80 mm Hg when measured at 20°C.~~

~~b/ Medium volatility organic compounds, i.e., any organic compound that exerts a vapor pressure greater than 2 mm Hg and less than or equal to 80 mm Hg when measured at 20°C.~~

~~c/ Current level is the VOC content of each existing product by manufacturer, package type, and label.~~

[Note: For clarity, the new text within the table below is indicated in **bold**, rather than the **bold/underline** used in the rest of the document.]

Table of Standards
(percent volatile organic compounds by weight)

Effective Dates

	12/31/92		1/1/95		1/1/97		1/1/99[d]	
	HVOC[a]	MVOC[b]	HVOC[a]	MVOC[b]	HVOC[a]	MVOC[b]	HVOC[d]	MVOC[b]
Aerosol Products in Compliance Plan[c]								
Antiperspirants	60	20			40	10	0	10
Deodorants	20	20			14	10	0	10
All Other Aerosol Products								
Antiperspirants	60	20	0	10				
Deodorants	20	20	0	10				
Non-Aerosol Products	0	0	0	0				

[a] High volatility organic compounds, i.e., any organic compound that exerts a vapor pressure greater than 80 mm Hg when measured at 20°C.

[b] Medium volatility organic compounds, i.e., any organic compound that exerts a vapor pressure greater than 2 mm Hg and less than or equal to 80 mm Hg when measured at 20°C.

[c] **These standards apply to aerosol products manufactured by companies that have submitted a compliance plan pursuant to Section 94502(d), which has been approved by the Executive Officer.**

[d] **The Board will hold a public hearing by July 1, 1997 to review and consider any appropriate modifications to the January 1, 1999 zero HVOC limits for aerosol antiperspirant and deodorant products.**

~~(b) No existing product may be reformulated to increase either the product's total VOC content or total ethanol content. An existing product may be reformulated to reduce the product's total ethanol content or total VOC content, as long as the reformulation does not increase the product's total HVOC content.~~

(b)~~(c)~~ No person shall sell, supply, offer for sale, or manufacture **for sale** in California any antiperspirant or deodorant which contains any of the following ozone-depleting compounds: CFC-11 (trichlorofluoromethane), CFC-12 (dichlorodifluoromethane), CFC-113 (1,1,~~1~~**2**-trichloro-~~2~~**1**,2,2-trifluoroethane), CFC-114 (1-chloro-1,1-difluoro-2-chloro-2,2-difluoroethane), CFC-115 (chloropentafluoroethane), halon 1211 (bromochlorodifluoromethane), halon 1301 (bromotrifluoromethane), halon 2404 (dibromotetrafluoroethane), HCFC-22 (chlorodifluoromethane), HCFC-123 (2,2-dichloro-1,1,1-trifluoroethane), HCFC-124 (2-chloro-1,1,1,2-tetrafluoroethane), HCFC-141b (1,1-dichloro-1-fluoroethane), HCFC-142b (1-chloro-1,1-difluoroethane), 1,1,1-trichloroethane, and carbon tetrachloride.

(c)~~(d)~~ No person shall sell, supply, offer for sale, or manufacture **for sale** in California any antiperspirant or deodorant which contains any compound that has been identified by the ARB in Title 17, California Code of Regulations, Division 3, Chapter 1, Subchapter 7, Section 93000 as a toxic air contaminant.

(d)~~(e)~~ Special Requirements for Aerosol Manufacturers

(1) ~~On or before January 1, 1994, a~~ **A** manufacturer of aerosol products may submit to the Executive Officer a compliance plan which describes how the manufacturer will achieve compliance with the requirements of Section 94502(a) for aerosol products.

(2) For each aerosol manufacturer who submits a compliance plan pursuant to subsection ~~(e)~~**(d)**(1), the Executive Officer shall suspend the 1/1/1995 requirements of section 94502(a) for aerosol products until a date on or before January 1, 1999, if the compliance plan demonstrates to the Executive Officer's satisfaction that the manufacturer is making good faith efforts, either independently or as part of a cooperative effort with other manufacturers, to develop aerosol products that will comply with the requirements of section 94502(a) in accordance with a schedule which is reasonably likely to enable the manufacturer to produce an acceptable aerosol product which complies with these requirements by a date on or before January 1, 1999. ~~The Executive Officer shall specify the date by which each manufacturer shall comply with the requirements of Section 94502(a) for aerosol products. This date shall be the earliest practicable date by which each manufacturer can comply with the requirements of Section 94502(a), based on all information contained in the compliance plan and any other information available to the Executive Officer.~~ ~~b~~**B**efore reaching a decision to suspend the requirements of Section 94502(a), the Executive Officer may request an aerosol manufacturer to modify the compliance plan to include additional information.

(3) In order to qualify for a suspension under subsection ~~(e)~~**(d)**~~(1)~~**(2)**, the compliance plan submitted by the manufacturer must contain **all of the following:**

(A) A compliance schedule setting forth the sequence and respective dates for all key events in the process of developing aerosol products complying with the requirements of Section 94502(a)~~, including information on the development of substitute aerosol propellants, and the progress that has been made to test these propellants for toxicity and feasibility.~~

(B) A commitment by each manufacturer which specifies that:

1. No later than January 1, 1997, the manufacturer will complete reformulation of aerosol antiperspirant and deodorant products to meet the 1/1/1997 standards specified in Section 94502(a) for aerosol products in a compliance plan.

2. No later than January 1, 1997 the manufacturer will cease manufacturing products for use in California that do not comply with the 1/1/1997 standards specified in Section 94502(a) for aerosol products in a compliance plan.

3. No later than July 1, 1998 the manufacturer will cease to sell, supply, or offer for sale of all products manufactured prior to January 1, 1997 that do not comply with the 1/1/1997 standards specified in Section 94502(a) for aerosol products in a compliance plan.

(C) For each manufacturer, technical detail and information on the progress each manufacturer has made and the effort each plans to make to comply with both the 1/1/1997 and 1/1/1999 HVOC standards specified in Section 94502(a) for aerosol products in a compliance plan, including individual company timetables with "milestones" or increments of progress which allow progress to be measured. The technical information shall be sufficiently detailed to allow individual manufacturer's compliance efforts to be monitored including, at a minimum, the following information:

1. Documentation of past, planned and ongoing research to meet the 1/1/1997 HVOC standards. Documentation will include data to support whether the 1/1/1997 standards represent the lowest achievable HVOC content, by whatever method or technology is chosen by the manufacturer. If hydrofluorocarbon-152a ("HFC-152a") is a part of the technology to be used by the manufacturer, the information shall include, at a minimum: the manufacturer's current HFC-152a allocation for any use; the supply of HFC-152a to meet the manufacturer's needs for the aerosol antiperspirant and deodorant market; an indication as to whether the amount specified is needed to cover national or California sales; manufacturer's efforts to date to receive necessary allocations; time-frame to receive allocations; the actual path to compliance, including information on the types of formulations to be tested, formulation data, prototype testing, toxicity and stability tests, packaging and valve testing, safety and

efficacy testing, consumer market testing and consumer acceptance, management decision for go-ahead, large-scale production, and availability to consumer; critical path identification; the expected date of aerosol antiperspirant and deodorant production that meets the 1/1/1997 standards; and a back-up plan that describes the manufacturer's actions should HFC-152a not be available in sufficient quantities.

If a compliance method or technology other than the use of HFC-152a is chosen, the information will include at a minimum: actual path to compliance, including information on the types of formulations to be tested, formulation data, prototype testing, toxicity and stability tests, packaging and valve testing, safety and efficacy testing, consumer market testing and consumer acceptance, management decision for go-ahead, large-scale production, and availability to consumer; critical path identification; expected date to produce aerosol antiperspirants and deodorants that meet the 1/1/1997 HVOC standards; and a back-up plan describing the manufacturer's actions should the chosen compliance method or technology not succeed.

2. A description of past, ongoing, and planned research efforts to achieve the 1/1/1999 HVOC standards. The information required will be the same as for the 1/1/1997 HVOC standards, as described in Section 94502(d)(3)(C) above. This information will also include a detailed description of the pursued technologies, current status of this technology, and the feasibility of attaining the 1/1/1999 standards. The documentation will outline key events and a timetable in the development of products to meet the 1/1/1999 HVOC standards and alternative plans if the technology does not develop as expected.

3. A list of products which each individual manufacturer will be producing under this compliance plan.

(4) A manufacturer who has received a suspension pursuant to subsection ~~(e)~~**(d)**(2) shall submit annual updates to the compliance plan to the Executive Officer on January 1, 1995, January 1, 1996, January 1, 1997, January 1, 1998, and January 1, 1999. These updates shall describe any changes or revisions that should be made to the compliance plan, based on any changed circumstances that have occurred since the submittal of the compliance plan or the last update. A manufacturer who has received a suspension pursuant to subsection ~~(e)~~**(d)**(2) shall also notify the Executive Officer in writing within 10 days after the failure of the manufacturer to meet any increment of progress specified in the compliance plan, or in any annual update to the compliance plan, and the likely effect of that failure on the ability of the manufacturer to comply with Section 94502(a) by the date specified by the Executive Officer pursuant to subsection ~~(e)~~**(d)**(2).

(5) Within ~~90~~ **120** days after each compliance plan update is due, or within ~~90~~ **120** days after notification by a manufacturer pursuant to subsection ~~(e)~~**(d)**(4), the Executive Officer shall determine whether the manufacturer is continuing to make good faith efforts to develop aerosol products that will comply with the requirements of Section 94502(a) in accordance with a schedule which is reasonably likely to enable the manufacturer to produce an acceptable aerosol product which complies with these requirements ~~by the date specified by the Executive Officer pursuant to subsection (e)(2)~~. If the Executive Officer determines that the manufacturer is not making such good faith efforts, the Executive Officer shall withdraw the suspension effective **immediately** ~~eighteen months after~~ **upon** written notification of the withdrawal to the manufacturer. **Any antiperspirant or deodorant product manufactured prior to the date on which the manufacturer is notified that the suspension is withdrawn may be sold, supplied, or offered for sale up to eighteen months after the effective date of the suspension withdrawal.**

(6) A manufacturer may request a public hearing to review any decision made by the Executive Officer pursuant to subsections ~~(e)~~**(d)**(2) and ~~(e)~~**(d)**(5). The hearing shall be held in accordance with the procedures specified in Title 17, California Code of Regulations, Division 3, Chapter 1, Subchapter 1, Article 4 (commencing with Section 60040).

(e)~~(f)~~ Notwithstanding the provisions of Section 94502(a), an antiperspirant or deodorant product manufactured prior to each of the effective dates specified for that product in the Table of Standards may be sold, supplied, or offered for sale up to eighteen months after each of the specified effective dates. In addition, an aerosol antiperspirant or deodorant product manufactured prior to any compliance date specified by the Executive Officer pursuant to Section 94502~~(e)~~**(d)**(2) may be sold supplied, or offered for sale up to eighteen months after the specified compliance date. This subsection ~~(f)~~**(e)** does not apply to any antiperspirant or deodorant product which does not display on the product container or package the date on which the product was manufactured, or a code indicating such date.

NOTE: Authority cited: Sections 39600, 39601, and 41712, Health and Safety Code. Reference: Sections 39002, 39600, 40000, and 41712, Health and Safety Code.

94503. Exemptions.

(a) This article shall not apply to any person who manufactures antiperspirants or deodorants in California for shipment and use outside of California.

(b) The requirements of Section 94502(a) shall not apply to fragrances and colorants up to a combined level of 2 percent by weight contained in any antiperspirant or deodorant.

(c) The requirements of Sections 94502(a) ~~and (b)~~ shall not apply to those volatile organic compounds that contain more than 10 carbon atoms per molecule and for which the vapor pressure is unknown, or that have a vapor pressure of 2 mm Hg or less at 20°C.

(d) The medium volatility organic compound (MVOC) content standards specified in Section 94502 (a), shall not apply to ethanol ~~contained in existing products~~.

NOTE: Authority cited: Sections 39600, 39601, and 41712, Health and Safety Code. Reference: Sections 39002, 39600, 40000, and 41712, Health and Safety Code.

94503.5 Innovative Products

(a) The Executive Officer shall exempt ~~a consumer~~ **an antiperspirant or deodorant** product from the requirements of Sections 94502(a) ~~or 94502(b)~~ if a manufacturer demonstrates by clear and convincing evidence that, due to some characteristic of the product formulation, design, delivery systems or other factors, the use of the product will result in less VOC emissions as compared to:

(1) the VOC emissions from a representative ~~consumer~~ **antiperspirant or deodorant** product which complies with the VOC standards specified in Sections 94502(a) ~~and 94502(b)~~, or

(2) the calculated VOC emissions from a noncomplying representative product, if the product had been reformulated to comply with the VOC standards specified in Section 94502(a) ~~and 94502(b)~~. VOC emissions shall be calculated using the following equation:

$$E_R = E_{NC} \times VOC_{STD} \div VOC_{NC}$$

Where:

E_R = The VOC emissions from the noncomplying representative product, had it been reformulated.

E_{NC} = The VOC emissions from the noncomplying representative product in its current formulation.

VOC_{STD} = The VOC standard specified in 94502(a).

VOC_{NC} = The VOC content of the noncomplying product in its current formulation.

If a manufacturer demonstrates that this equation yields inaccurate results due to some characteristic of the product formulation or other factors, an alternative method which accurately calculates emissions may be used upon approval of the Executive Officer.

(b) For the purposes of this section, "representative ~~consumer~~ **antiperspirant or deodorant** product" means ~~a consumer~~ **an antiperspirant or deodorant** product which meets all of the following criteria:

(1) the representative product shall be subject to the same VOC limit in Section 94502(a) ~~and 94502(b)~~ as the innovative product,

(2) the representative product shall be of the same product form as the innovative product, unless the innovative product uses a new form which does not exist in the product category at the time the application is made.

(3) the representative product shall have at least similar efficacy as other consumer products in the same product category based on tests generally accepted for that product category by the consumer products industry.

(c) A manufacturer shall apply in writing to the Executive Officer for any exemption claimed under subsection (a). The application shall include the supporting documentation that demonstrates the emissions from the innovative product, including the actual physical test methods used to generate the data and, if necessary, the consumer testing undertaken to document product usage. In addition, the applicant must provide any information necessary to enable the Executive Officer to establish enforceable conditions for granting the exemption including the VOC content for the innovative product and test methods for determining the VOC content. All information submitted by a manufacturer pursuant to this section shall be handled in accordance with the procedures specified in Title 17, California Code of Regulation, Sections 91000-91022.

(d) Within 30 days of receipt of the exemption application the Executive Officer shall determine whether an application is complete as provided in Section 60030(a), Title 17, California Code of Regulations.

(e) Within 90 days after an application has been deemed complete, the Executive Officer shall determine whether, under what conditions, and to what extent, an exemption from the requirements of Sections 94502(a) ~~and 94502(b)~~ will be permitted. The applicant and the Executive Officer may mutually agree to a longer time period for reaching a decision and additional supporting documentation may be submitted by the applicant before a decision has been reached. The Executive Officer shall notify the applicant of the decision in writing and specify such terms and conditions that are necessary to insure that emissions from the product will meet the emissions reductions specified in subsection (a), and that such emissions reductions can be enforced.

(f) In granting an exemption for a product the Executive Officer shall establish conditions that are enforceable. These conditions shall include the VOC content of the innovative product, dispensing rates, application rates and any other parameters determined by the Executive Officer to be necessary. The Executive Officer shall also specify the test

methods for determining conformance to the conditions established. The test methods shall include criteria for reproducibility, accuracy, and sampling and laboratory procedures.

(g) For any product for which an exemption has been granted pursuant to this section, the manufacturer shall notify the Executive Officer in writing within 30 days of any change in the product formulation or recommended product usage directions, and shall also notify the Executive Officer within 30 days if the manufacturer learns of any information which would alter the emissions estimates submitted to the Executive Officer in support of the exemption application.

(h) If VOC standards are lowered for a product category through any subsequent rulemaking, all innovative product exemptions granted for products in the product category, except as provided in this subsection ~~(i)~~**(h)**, shall have no force and effect as of the effective date of the modified VOC standard. This subsection ~~(i)~~**(h)** shall not apply to those innovative products which have VOC emissions less than the appropriate lowered VOC standard and for which a written notification of the product's emissions status versus the lowered VOC standard has been submitted to and approved by the Executive Officer at least 60 days before the effective date of such standard.

(i) If the Executive Officer believes that an antiperspirant or deodorant product for which an exemption has been granted no longer meets the criteria for an innovative product specified in subsection (a), the Executive Officer may modify or revoke the exemption as necessary to assure that the product will meet these criteria. The Executive Officer shall not modify or revoke an exemption without first affording the applicant an opportunity for a public hearing held in accordance with the procedures specified in Title 17, California Code of Regulations, Division 3, Chapter 1, Subchapter 1, Article 4 (commencing with Section 60040), to determine if the exemption should be modified or revoked.

NOTE: Authority cited: Sections 39600, 39601, and 41712, Health and Safety Code. Reference: Sections 39002, 39600, 40000, and 41712, Health and Safety Code.

94504. Administrative Requirements

(a) Labeling.

(1) No later than three months after the effective date of this article, each manufacturer of an antiperspirant or deodorant subject to this article shall clearly display on each container of antiperspirant or deodorant, the date on which the product was manufactured, or a code indicating such date. If a manufacturer uses a code indicating the date of manufacture, an explanation of the code must be filed with the Executive Officer in advance of the code's use by the manufacturer.

(2) **Location of Labeling Information: The date or date-code information required by subsection (a)(1) shall be located in the container so that it is readily observable without disassembling any part of the container or packaging.**

(3) **Defacing of Containers: No person shall erase, alter, deface or otherwise remove or make illegible any date or date-code from any regulated product container without the express authorization of the manufacturer.**

(b) Reporting.

(1) ~~On or before April 1, 1991, and n~~ No later than March 1 of **every** ~~each third~~ year ~~thereafter~~, each manufacturer subject to this article shall submit to the Executive Officer a written report. The report shall describe how the manufacturer will meet the requirements of Section 94502.

(2) The report submitted pursuant to subsection (b)(1) shall include the following information:

(A) the brand name for each antiperspirant or deodorant product;

(B) the owner of the trademark or brand name;

(C) the product forms (aerosol, pump, liquid, solid, etc.);

(D) the California annual sales in pounds per year and the method used to calculate California annual sales;

(E) the total VOC (as defined in Section 94501(n)) content in percent by weight which: (a) has a vapor pressure of 2.0 mm Hg or less at 20° ~~Centigrade~~, or (b) consists of more than 10 carbon atoms, if the vapor pressure is unknown;

(F) the total HVOC and MVOC content **and type** (as defined in Section 94502(a)) in percent by weight.

(3) Upon 90 days written notice, the Executive Officer may also require the manufacturer to supply any additional information necessary to determine volatile organic compound emissions from any antiperspirant or deodorant products that the Executive Officer may specify.

(4)~~(3)~~ All information submitted by manufacturers pursuant to Section 94504(b) shall be handled in accordance with the procedures specified in Title 17, California Code of Regulations, Sections 91000-91022.

Note: Authority cited: Sections 39600, 39601, 41511, and 41712, Health and Safety Code. Reference: Sections 39002, 39600, 40000, 41511, and 41712, Health and Safety Code.

94505. Variances

(a) Any person who cannot comply with the requirements set forth in Section 94502, because of extraordinary reasons beyond the person's reasonable control may apply in writing to the Executive Officer for a variance. The variance application shall set forth:

(1) the specific grounds upon which the variance is sought;

(2) the proposed date(s) by which compliance with the provisions of Section 94502 will be achieved, and

(3) a compliance report reasonably detailing the method(s) by which compliance will be achieved.

(b) Upon receipt of a variance application containing the information required in subsection (a), the Executive Officer shall hold a public hearing to determine whether, under what conditions, and to what extent, a variance from the requirements in Section 94502 is necessary and will be permitted. A hearing shall be initiated no later than 75 days after receipt of a variance application. Notice of the time and place of the hearing shall be sent to the applicant by certified mail not less than 30 days prior to the hearing. Notice of the hearing shall also be submitted for publication in the California Regulatory Notice Register and sent to every person who requests such notice, not less than 30 days prior to the hearing. The notice shall state that the parties may, but need not be, represented by counsel at the hearing. At least 30 days prior to the hearing, the variance application shall be made available to the public for inspection. Information submitted to the Executive Officer by a variance applicant may be claimed as confidential, and such information shall be handled in accordance with the procedures specified in Title 17, California Code of Regulations, Sections 91000-91022. The Executive Officer may consider such confidential information in reaching a decision on a variance application. Interested members of the public shall be allowed a reasonable opportunity to testify at the hearing and their testimony shall be considered.

(c) No variance shall be granted unless all of the following findings are made:

(1) that, because of reasons beyond the reasonable control of the applicant, requiring compliance with Section 94502 would result in extraordinary economic hardship;

(2) that the public interest in mitigating the extraordinary hardship to the applicant by issuing the variance outweighs the public interest in avoiding any increased emissions of air contaminants which would result from issuing the variance;

(3) that the compliance report proposed by the applicant can reasonably be implemented, and will achieve compliance as expeditiously as possible.

(d) Any variance order shall specify a final compliance date by which the requirements of Section 94502 will be achieved. Any variance order shall contain a condition that specifies increments of progress necessary to assure timely compliance, and such other conditions that the Executive Officer, in consideration of the testimony received at the hearing, finds necessary to carry out the purposes of Division 26 of the Health and Safety Code.

~~(e) No variance issued shall have a duration of more than one year.~~

(e)~~(f)~~ A variance shall cease to be effective upon failure of the party to whom the variance was granted to comply with any term or condition of the variance.

(f)~~(g)~~ Upon the application of any person, the Executive Officer may review, and for good cause, modify or revoke a variance from requirements of Section 94502 after holding a public hearing in accordance with the provisions of subsection (b).

NOTE: Authority cited: Sections 39600, 39601, and 41712, Health and Safety Code. Reference: Sections 39002, 39600, 40000, and 41712, Health and Safety Code.

94506. Test Methods

(a) Testing to determine the volatile organic compound content of an antiperspirant or deodorant, or to determine compliance with the requirements of this article, shall be performed using one or more of the following methods which are incorporated by reference herein: (1) Method 24-24A, Part 60, Title 40, Code of Federal Regulations, Appendix A, July 1, 1988; (2) Method 18, Federal Register 48, no. 202, October 18, 1983; (3) Method 1400, NIOSH Manual of Analytical Methods, Volume 1, February 1984; or (4) Environmental Protection Agency Method 8240 "GC/MS Method for Volatile Organics," September 1986. Alternative methods which are shown to accurately determine the concentration of VOCs in a subject product or its emissions may be used upon approval of the Executive Officer.

(b) Testing to determine compliance with the requirements of this article may also be demonstrated through calculation of the volatile organic compound content from records of the amounts of constituents used to make the product. Compliance determination based on these records may not be used unless the manufacturer of a consumer product keeps accurate records for each day of production of the amount and chemical composition of the individual product constituents. These records must be kept for at least three years.

(c) **No person shall create, alter, falsify, or otherwise modify records in such a way that the records do not accurately reflect the constituents used to manufacture a product, the chemical composition of the individual product, and any other tests, processes, or records used in connection with product manufacture.**

NOTE: Authority cited: Sections 39600, 39601, and 41712, Health and Safety Code. Reference: Sections 39002, 39600, 40000, and 41712, Health and Safety Code.

94506.5 Federal Enforceability

For purposes of federal enforceability of this article, the Environmental Protection Agency is not subject to approval determinations made by the Executive Officer under Sections 94503.5 and 94505. Within 180 days of a request from a person who has been granted an exemption or variance under Section 94503.5 or 94505, an exemption or variance meeting the requirements of the Clean Air Act shall be submitted by the Executive Officer to the Environmental Protection Agency for inclusion in the applicable implementation plan approved or promulgated by the Environmental Protection Agency pursuant to Section 110 of the Clean Air Act, 42 U.S.C., Section 7410. Prior to submitting an exemption granted under Section 94503.5 as a revision to the applicable implementation plan, the Executive Officer shall hold a public hearing on the proposed exemption. Notice of the time and place of the hearing shall be sent to the applicant by certified mail not less than 30 days prior to the hearing. Notice of the hearing shall also be submitted for publication in the California Regulatory Notice Register and sent to the Environmental Protection Agency, every person who requests such notice, and to any person or group of persons whom the Executive Officer believes may be interested in the application. Within 30 days of the hearing the Executive Officer shall notify the applicant of the decision in writing as provided in Section 94503.5(f). The decision may approve, disapprove, or modify an exemption previously granted pursuant to Section 94503.5.

NOTE: Authority cited: Section 39600, 39601, 39602, and 41712, Health and Safety Code. Reference: Sections 39002, 39600, 39602, 40000, and 41712, Health and Safety Code.

APPENDIX B:

HELENE CURTIS, INC. PETITION AND ARB RESPONSE TO PETITION

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January 27, 1995

Members of the California Air Resources Board
James D. Boyd, Executive Officer
2020 L Street
Sacramento, California 95812

Re: Petition for Repeal Pursuant to Government Code Section 11347

Ladies and Gentlemen:

This Petition for Repeal is filed on behalf of Helene Curtis, Inc., to request the repeal of the ethanol exemption from the medium volatile organic compound ("MVOC") standards for antiperspirant and deodorant products and the revision of these standards. The MVOC standards were adopted as part of comprehensive regulation of all volatile organic compounds ("VOCs") in antiperspirant and deodorant products. The goal of the standards was to cause a significant reduction in VOC emissions, a key ingredient in smog formation, from these products. Significantly, however, companies which sold products containing MVOCs in California before January 1, 1990 were allowed an exemption from the standards. The rationale was that consumers would not be inconvenienced by the loss of a product form, while ethanol use would be capped in 1989 levels.

In fact, the primary result of the ethanol exemption has been to create a monopoly among the exempted companies to sell aerosol deodorants and to foster the creation of new products containing ethanol by the same companies. The regulation has not capped MVOC use at 1989 levels, much less caused the maximum feasible reduction of VOC emissions from antiperspirant or deodorant products. For these reasons, the regulations should be revised, pursuant to the California Air Resources Board's ("ARB's") authority under H&SC Section 41712.

In this Petition we will do the following:

1) Review the offending regulations and the background facts;

2) Discuss the unfair and anti-competitive effects of the regulation;

3) Verify why the regulations have not resulted in the maximum feasible reduction in VOC emissions;

4) Suggest an alternative to the current regulatory scheme which will not disturb the sale of existing products, but which will result in significant ethanol reductions;

5) Explain why, after two years of discussions, the ARB must act promptly to ensure that these regulations do not become federally enforceable.

1. The regulations and relevant background information

A. The Regulatory Scheme

The California legislature has given the ARB a mandate to adopt regulations that will achieve the maximum feasible reduction in reactive organic compounds emitted by consumer products which are technologically and commercially feasible. H&SC Section 41712. Effective February 1991, the ARB adopted VOC limits for antiperspirants and deodorants sold in California. 17 CCR Section 94502. The Table of Standards sets limits which establish the percent VOCs by weight allowed in aerosol and non-aerosol antiperspirants and deodorants, in terms of HVOCs (high volatility organic compounds) and MVOCs, effective December 31, 1992 and January 1, 1995. In summary, non-aerosol products may contain no HVOCs or MVOCs. Aerosol antiperspirants are allowed 60% HVOC until 1995, when the limit becomes zero. Aerosol deodorants may only contain small quantities of MVOCs.

However, also included in the regulation is a provision which exempts ethanol in existing products from having to comply with the MVOC standards. 17 CCR Section 94503(d). Section 94501(f) defines an "existing product" as follows:

> Existing Product means any antiperspirant or deodorant formulation which was sold, supplied, offered for sale, or manufactured in California prior to January 1, 1990, or any identical antiperspirant or deodorant formulation which is

sold, supplied, offered for sale, or manufactured in California by any person after January 1, 1990.

As a result of the exemption and this definition, a manufacturer which was selling an ethanol-containing antiperspirant or deodorant before January 1, 1990 is "grandfathered" and need not meet the Table of Standards limits because that manufacturer can continue to use ethanol in that product at the same level without further restriction. Moreover, a manufacturer which is selling one of these products before the cut-off date may reformulate the product, sell a new brand using the exempted formula or even create and sell an entirely new product so long as the ethanol level in that product remains the same or is lowered from the ethanol contained in the existing product and other emissions remain the same.

B. The ARB's rationale for adopting this regulatory scheme

The Staff Report on the proposed regulations, dated September 1989, identified a few key reasons for proposing the current regulatory scheme, including the ethanol exemption, to the Board. The Staff recognized that ethanol is a critical ingredient in many antiperspirant and deodorant products and has a "critical role in product formulation". Staff Report at 29. In particular, ethanol provides significant product attributes, such as acting as an effective antimicrobial agent, deterring allergic reactions in persons with sensitive skin and acting as "an important solvent to the viability of many current formulations". Id. at 29. Staff specifically acknowledged that there is "no known substitute" for ethanol for many products. Id. at 33.

While the Staff initially estimated a reduction in VOC emissions of 4.7 tons a day for antiperspirant and deodorant products if the Table of Standards (with limits of 0% MVOC for non-aerosol products and 20% MVOC for aerosols) applied to all companies, the Staff further estimated that the regulations would still result in a reduction in VOC emissions of 4 tons a day by having a Table of Standards and an exemption for ethanol for grandfathered companies. Staff Report at 29. This was preferred by the Staff because permitting continued use of ethanol would avoid the possible elimination of certain product forms (such as aerosol deodorants) where ethanol is critical. Staff did suggest in its Report that in order to prevent emission increases, however, the ethanol content would be capped at 1989 levels in each product. Staff Report at 29.

Staff also stated it preferred this approach because it would allow manufacturers time to develop substitute aerosol products and that thereby aerosols would continue to be available to the public. Staff Report at 7, 33. Staff estimated that non-VOC propellants such as hydrochlorofluorocarbons would be available by 1996 to meet the

deadline for the lower limit. Industry representatives estimated that such substitutes would not be available until 1999 or 2001. Staff Report at 37.

C. Scope of the Exemption

What is significant, for purposes of this Petition, is the scope of the ethanol exemption. The companies covered by the exemption are Procter & Gamble, Bristol-Myers, Colgate, Dial, Gillette, Revlon and Unilever. Based on a 1994 Nielsen Survey for the prior 52 weeks, the covered companies' combined share of the market is 77% (based on units of products sold) and 81% (based on dollars earned from the products). Thus, roughly four-fifths of all antiperspirant and deodorant sales in California are products offered by companies who have the advantage of an exemption from the VOC regulations.

Companies that did not have ethanol-containing antiperspirant or deodorant products on the market as of January 1, 1990, are penalized by not being permitted to utilize the exemption. The companies excluded are only two: Helene Curtis and Carter-Wallace. What this means is that Helene Curtis, Carter-Wallace and any other new company who might want to enter the antiperspirant and deodorant category are not allowed to compete fairly with their competitors. The companies who cannot use the exemption are limited in the development of new products and product forms because they cannot use a key ingredient, ethanol.

2. The regulations are anti-competitive and created a monopoly among companies which continue to manufacture products with ethanol

The regulations give an unfair competitive advantage to companies which, by chance, were selling antiperspirant and deodorant products with ethanol in California before January 1, 1990. This is especially true, as acknowledged by Staff, with respect to aerosol deodorants where ethanol is an essential ingredient. In fact, ethanol is usually 70% or more of the product's weight, resulting in a formula with more than 90% VOCs. Manufacturers which are not protected by the ethanol exemption are precluded from entering this market because they are currently limited to 20% MVOC (ethanol) in the formula. Unfortunately, aerosol deodorants meeting the Table of Standard 20% ethanol limit are too wet and not accepted by consumers. Therefore, the only commercially feasible aerosol deodorants are ones which can be developed and marketed by companies which can take advantage of the ethanol exemption. The impact of this competitive disparity will become even more significant if the 0% HVOC limits become effective, thereby eliminating aerosol antiperspirants. Because antiperspirant and deodorant users are particularly form loyal, many, if not all, of these consumers can be expected to switch to aerosol deodorants if aerosol antiperspirants are no longer available.

Ethanol is also necessary to manufacture pump sprays. This form also has the potential of becoming even more important because of the possibility that aerosol antiperspirants may eventually be regulated out of the market. If so, aerosol antiperspirant consumers who need the wetness protection afforded by antiperspirant products and, therefore, do not switch to aerosol deodorants will likely turn to antiperspirant pump sprays as the closest alternative to aerosol antiperspirant products. If they do, there will be yet another market which non-exempt companies will be banned from entering.

Finally, and perhaps most significantly, ethanol has proven to be an essential ingredient in new product forms. Because of the way the regulation was drafted, manufacturers which qualify can and have expanded the use of the ethanol exemption to develop and introduce new product forms that did not even exist at the time the regulations were drafted. The most obvious example of this is the new market segment of ethanol-based products: antiperspirant and deodorant gels. Gillette, for example, has introduced a whole new form of products, the clear gel, which requires ethanol. This market segment is currently the fastest growing in the category. Because of this success, other companies which benefit from the ethanol exemption have and will continue to develop their own clear gels, also containing ethanol. The non-exempt companies are now frozen out of this whole new market. Clear gels are gaining market share while stick deodorants and roll-on antiperspirants are declining.

Most stick deodorants do not contain ethanol and ethanol has no function in roll-on antiperspirants. Thus, to the extent clear gels are developed, sold and displace non-ethanol based stick and roll-on products, it will result in increased VOC emissions. This is the upside down and inequitable result of the current regulatory scheme. While it is difficult to predict what new and innovative forms may be developed in the future, it is apparent that companies without the benefits of the ethanol exemption will be severely limited in their research and development efforts. Moreover, these companies cannot do their part to be technology-forcing and develop products with lower ethanol emissions than existing products and thereby reduce overall VOCs emissions.

3. <u>The regulations containing the ethanol have not resulted in the maximum feasible reduction in VOC emissions</u>

One critical fact which was not discussed in the Staff Report concerns the number of companies helped by the exemption and those frozen out of markets because of it. This fact is key to understanding why the regulations have not caused any reduction in VOC emissions.

It is not surprising, under the circumstances, that these regulations have not accomplished their goal. As identified previously, grandfathered companies represent more than 80% of the market. They have no incentive to reformulate their products to produce equivalent products with less or no ethanol. While ARB Staff has stated that a reformulated products is one which replaces the existing product, the regulation actually place no such restrictions on the manufacturer. So long as each new product has the same ethanol and total VOC content or less it will be allowed. Further, there has been no cap on ethanol use at 1989 levels, as advertised. Thus, the 80% super-majority of companies with access to ethanol have not been required to reduce VOCs in their products and they have not done so.

4. The ARB should eliminate the ethanol exemption and revise the standards

The ethanol exemption was unfair from the start. Further, it has not worked to reduce VOCs. What Helene Curtis is asking for in this Petition is that the playing field be level for all competitors. While Helene Curtis supports removal of the ethanol exemption, we understand that the immediate elimination of the exemption without relief in the standards would create substantial dislocation to covered manufactures and to the customers in California who use these products. Antiperspirant and deodorants are not products we want to encourage consumers to do without.

For these reasons, we suggest a compromise. The ARB should eliminate the ethanol exemption and revise the limits for MVOC in each of the various product forms, such as aerosols, pumps, sticks and gels. To push technology, there should be a set of interim and final limits for each product form. However, the zero VOC limits for aerosols and other products is technologically not feasible. As now, there should be a variance procedure available to all companies which cannot comply, so long as they can establish they have taken all feasible steps to foster development of technology.

The benefit of this approach is that it will reduce VOC emissions to the maximum extent technologically feasible. The problem with this approach, however, is that it will take away the privileged position of the grandfathered companies and it will be difficult to secure industry cooperation in the development of revised regulations.

For this reason, we present an alternative to this approach. The ARB may wish to eliminate the ethanol exemption and eliminate regulation of MVOCs at the same time. The Texas Natural Resource Conservation Commission has taken this approach by treating all similarly situated companies equally and focussing on HVOCs alone. This approach has also been accepted by the states of Oregon, Connecticut and New Jersey. EPA, in fact, plans to use this approach in a national consumer products regulation. Industry has reached a consensus and given its blessing to this approach. This may make sense

because over 80% of aerosol products are antiperspirants and the MVOC content in these products is very low.

5. Prompt action is needed

Helene Curtis manufacturers and distributes personal care products, including antiperspirants and deodorants. Familiar brands include Suave and Degree. At the time these regulations were being drafted, Helene Curtis was relatively new to, and not a major competitor in, the California antiperspirant and deodorant market; Suave antiperspirant represented a very small percentage of the market and Degree had not yet been introduced. Helene Curtis, therefore, did not directly participate in the development of the regulations at issue. Rather, it relied for representation in the regulatory process on its trade association. Once Helene Curtis was made aware of the effect of the regulations, it immediately became active working with Staff to attempt to overcome the problems posed.

Helene Curtis has been working with ARB Staff to resolve this inequity for almost two years. We believe that Staff recognizes that the regulations have not resulted in lowered emissions and that there is no likelihood that ethanol will be reformulated out of most of the products now being offered for sale in California. Unfortunately, although Staff appears to be in agreement that the regulations should be revised they have failed to take any action to effect a revision.

Helene Curtis can no longer afford to wait. The ARB submitted the 1994 SIP revision to US EPA on November 17, 1994. The SIP revisions include these antiperspirant and deodorant regulations. According the Region IX, EPA will be conditionally approving the SIP as soon as possible, which may be as early as February 15, 1995. Certainly it is possible for the ARB to notify US EPA that it has revised the regulations and that the superseded regulations should take the place of the current ones. However, it is much simpler to revise the regulations now and submit the revised regulations before the current ones become federally enforceable.

6. Conclusion

Helene Curtis wants to be able to compete in the antiperspirant and deodorant markets in California. The current regulations are simply unfair. At the same time, the regulations promote the status quo and do not incentivise emissions reductions. Existing regulations do not achieve the maximum achievable emissions reductions technologically or

commercially feasible, as they are required to do under California law. For these reasons, we request that the ARB revise the antiperspirant and deodorant regulations at the earliest practicable date.

Very truly yours,

BJ Kirwan

Betty-Jane Kirwan
of LATHAM & WATKINS
Attorneys for Helene Curtis, Inc.

STATE OF CALIFORNIA
AIR RESOURCES BOARD

IN THE MATTER OF A PETITION BY:	)	DECISION GRANTING PETITION
	)	AND TAKING OTHER SPECIFIED
HELENE CURTIS, INC.	)	ACTIONS
	)	

Pursuant to Government Code section 11340.7, the Air Resources Board (ARB or Board) hereby responds to the petition of Helene Curtis, Inc. (Petition) requesting the Board to consider amendments to the regulation for reducing volatile organic compound emissions from antiperspirants and deodorants (the "antiperspirant and deodorant regulation"; Title 17, California Code of Regulations (CCR), sections 94500-94506.5).

The Petition, which was received by the ARB on January 28, 1994, requests the Board to amend the antiperspirant and deodorant regulation by repealing the "ethanol exemption" set forth in section 94503(d), Title 17, CCR. This exemption provides that the medium volatility organic compound (MVOC) standards specified in section 94502(a), Title 17, CCR, shall not apply to ethanol contained in existing products. "Existing product" is defined in part as any antiperspirant or deodorant formulation that was sold, supplied, offered for sale, or manufactured in California prior to January 1, 1990. The Petition further requests that, in addition to repealing the ethanol exemption, the Board also revise the currently specified MVOC standards.

The Petition argues that these actions should be taken because the regulation, as currently written, gives an unfair competitive advantage to companies that were selling ethanol-containing products prior to January 1, 1990, and can therefore utilize the ethanol exemption. After careful review of the petition, the Board agrees to schedule a public hearing by September 1995 to consider the adoption of amendments to the antiperspirant and deodorant regulation. Good cause exists for the Board to consider such amendments because it should be possible to restructure the regulation to modify or repeal the ethanol exemption, thereby leveling the playing field and achieving more equitable treatment for all manufacturers while minimizing any adverse emissions consequences.

Prior to the hearing, ARB staff will work with affected parties to develop a specific regulatory proposal which best accomplishes these goals. The specific approach and language proposed in these regulatory amendments will depend on the information learned by ARB staff during the development of the proposal. The proposal will be made available for a 45-day public comment period in late June or early July 1995, in accordance with the provisions of the Administrative Procedure Act (Government Code section 11340 et seq.). The Board's authority to take these actions is set forth in Health and Safety Code sections 39600, 39601, and 41712.

If you have any questions or wish to discuss this matter further, please contact Peter D. Venturini, Chief, Stationary Source Division, at (916) 445-0650, or Robert Jenne, Senior Staff Counsel, at (916) 322-3762. Interested persons may obtain copies of the Petition from the ARB upon request.

Date: 2/24/94

By: _____
James D. Boyd
Executive Officer

APPENDIX C:

PROPOSED AMENDMENTS TO THE VOC DEFINITION IN THE CONSUMER PRODUCTS REGULATION AND THE AEROSOL COATING REGULATION

Amend Subchapter 8.5, Article 2. Consumer Products, section 94508(a)(90), Title 17, California Code of Regulations, to read as follows:

~~(90) "Volatile Organic Compound (VOC)" means any compound containing at least one atom of carbon, except methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, 1,1,1-trichloroethane, methylene chloride, trichlorofluoromethane (CFC-11), dichlorodifluoromethane (CFC-12), chlorodifluoromethane (HCFC-22), trifluoromethane (HFC-23), 1,1,1 trichloro 2,2,2 trifluoroethane (CFC-113), 1-chloro 1,1 difluoro 2 chloro 2,2 difluoroethane (CFC-114), chloropentafluoroethane (CFC-115), 2,2-dichloro-1,1,1-trifluoroethane (HCFC-123), 1,1,1,2-tetrafluoroethane (HFC-134a), 1,1-dichloro-1 fluoroethane (HCFC-141b), 1-chloro-1,1-difluoroethane (HCFC-142b), 2-chloro-1,1,1,2-tetrafluoroethane (HCFC-124), pentafluoroethane (HFC-125), 1,1,2,2-tetrafluoroethane (HFC-134), 1,1,1-trifluoroethane (HFC-143a), 1,1-difluoroethane (HFC-152a), and the following classes of perfluorocarbons: (A) cyclic, branched, or linear, completely fluorinated alkanes; (B) cyclic, branched, or linear, completely fluorinated ethers with no unsaturations; (C) cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations; and (D) sulfur-containing perfluorocarbons with no unsaturations and with the sulfur bonds only to carbon and fluorine.~~

(90) "Volatile Organic Compound (VOC)" means any compound containing at least one atom of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, and exlcuding the following:

(1) methane,
methylene chloride (dichloromethane),
1,1,1-trichloroethane (methyl chloroform),
trichlorofluoromethane (CFC-11),
dichlorodifluoromethane (CFC-12),
1,1,2-trichloro-1,2,2-trifluoroethane (CFC-113),
1,2-dichloro-1,1,2,2-tetrafluoroethane (CFC-114),
chloropentafluoroethane (CFC-115),
chlorodifluoromethane (HCFC-22),
1,1,1-trifluoro-2,2-dichloroethane (HCFC-123),
1,1-dichloro-1-fluoroethane (HCFC-141b),
1-chloro-1,1-difluoroethane (HCFC-142b),
2-chloro-1,1,1,2-tetrafluoroethane (HCFC-124),
trifluoromethane (HFC-23),
1,1,2,2-tetrafluoroethane (HFC-134),
1,1,1,2-tetrafluoroethane (HFC-134a),

pentafluoroethane (HFC-125),
1,1,1-trifluoroethane (HFC-143a),
1,1-difluoroethane (HFC-152a),
cyclic, branched, or linear completely methylated siloxanes,
the following classes of perfluorocarbons:

(A) cyclic, branched, or linear, completely fluorinated alkanes;

(B) cyclic, branched, or linear, completely fluorinated ethers with no unsaturations;

(C) cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations; and

(D) sulfur-containing perfluorocarbons with no unsaturations and with the sulfur bonds to carbon and fluorine, and

(2) the following low-reactive organic compounds which have been exempted by the U.S. EPA:

parachlorobenzotrifluoride (1-chloro-4-trifluoromethyl benzene).

Amend Subchapter 8.5, Article 3. Aerosol Coating Products, section 94521(a)(62), Title 17, California Code of Regulations, to read as follows:

~~(62) "Volatile Organic Compound (VOC)" means any compound containing at least one atom of carbon, except methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, ammonium carbonate, 1,1,1-trichloroethane, methylene chloride, trichlorofluoromethane (CFC-11), dichlorodifluoromethane (CFC-12), chlorodifluoromethane (HCFC-22), trifluoromethane (HFC-23), 1,1,2-trichloro-1,2,2-trifluoroethane (CFC-113), 1-chloro-1,1-difluoro-2-chloro-2,2-difluoroethane (CFC-114), chloropentafluoroethane (CFC-115), 2,2-dichloro-1,1,1-trifluoroethane (HCFC-123), 1,1,1,2-tetrafluoroethane (HFC-134a), 1,1-dichloro-1-fluoroethane (HCFC-141b), 1-chloro-1,1-difluoroethane (HCFC-142b), 2-chloro-1,1,1,2-tetrafluoroethane (HCFC-124), pentafluoroethane (HFC-125), 1,1,2,2-tetrafluoroethane (HFC-134), 1,1,1-trifluoroethane (HFC-143a), 1,1-difluoroethane (HFC-152a), and the following classes of perfluorocarbons: (A) cyclic, branched, or linear, completely fluorinated alkanes; (B) cyclic, branched, or linear, completely fluorinated ethers with no unsaturations; (C) cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations; and (D) sulfur-containing perfluorocarbons with no unsaturations and with the sulfur bonds only to carbon and fluorine.~~

(62) "Volatile Organic Compound (VOC)" means any compound containing at least one atom of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, and exlcuding the following:

(1) methane,
methylene chloride (dichloromethane),
1,1,1-trichloroethane (methyl chloroform),
trichlorofluoromethane (CFC-11),
dichlorodifluoromethane (CFC-12),
1,1,2-trichloro-1,2,2-trifluoroethane (CFC-113),
1,2-dichloro-1,1,2,2-tetrafluoroethane (CFC-114),
chloropentafluoroethane (CFC-115),
chlorodifluoromethane (HCFC-22),
1,1,1-trifluoro-2,2-dichloroethane (HCFC-123),
1,1-dichloro-1-fluoroethane (HCFC-141b),
1-chloro-1,1-difluoroethane (HCFC-142b),
2-chloro-1,1,1,2-tetrafluoroethane (HCFC-124),
trifluoromethane (HFC-23),
1,1,2,2-tetrafluoroethane (HFC-134),
1,1,1,2-tetrafluoroethane (HFC-134a),
pentafluoroethane (HFC-125),
1,1,1-trifluoroethane (HFC-143a),
1,1-difluoroethane (HFC-152a),

cyclic, branched, or linear completely methylated siloxanes,
the following classes of perfluorocarbons:

(A) **cyclic, branched, or linear, completely fluorinated alkanes;**

(B) **cyclic, branched, or linear, completely fluorinated ethers with no unsaturations;**

(C) **cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations; and**

(D) **sulfur-containing perfluorocarbons with no unsaturations and with the sulfur bonds to carbon and fluorine, and**

(2) **the following low-reactive organic compounds which have been exempted by the U.S. EPA:**

parachlorobenzotrifluoride (1-chloro-4-trifluoromethyl benzene).

Note: The Air Resources Board adopted the Regulation for Reducing Volatile Organic Compound Emissions from Aerosol Coating Products (Article 3, Aerosol Coating Products, sections 94520-94528, Title 17, California Code of Regulations), at a public hearing held on March 23, 1995. The Aerosol Coating Regulation has not yet been submitted to the Office of Administrative Law for final approval, and has not yet become legally effective.