

**PROPOSED REGULATION FOR
CONSUMER PRODUCTS
IN THE BAY AREA AIR QUALITY
MANAGEMENT DISTRICT**

**State of California
Air Resources Board**

Stationary Source Division

April 1990



ARB Staff Report

**PROPOSED REGULATION FOR CONSUMER PRODUCTS
IN THE BAY AREA AIR QUALITY MANAGEMENT DISTRICT**

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Air Resources Board**

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To be heard by the Air Resources Board on June 14, 1990 at

**Lincoln Plaza
Auditorium
400 P Street
Sacramento, CA**

**Air Resources Board
P.O. Box 2815
Sacramento, CA 95812**

This report has been prepared by the staff of the California Air Resources Board. Publication does not signify that the contents reflect the views and policies of the Air Resources Board, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

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I.

INTRODUCTION AND SUMMARY

A. OVERVIEW

On January 10, 1990, Judge Thelton E. Henderson of the United States District Court for the Northern District of California signed an order requiring the Bay Area Air Quality Management District (BAAQMD) or the Air Resources Board (ARB) to adopt, implement and enforce regulations designed to achieve emissions reductions from consumer products. The order was the result of the consolidated cases of Citizens For A Better Environment v. George Deukmejian and Sierra Club v. Metropolitan Transportation Commission, et al. The order requires that control measures be adopted by July 1, 1990 to achieve emission reductions in the BAAQMD of at least 1.0 ton per day by February 1, 1991 and 4.0 tons per day by February 1, 1993. The court order and brief background summary of the lawsuit are included in Appendix A.

On February 16, 1990, James D. Boyd, Executive Officer of the ARB and Milton Feldstein, the Air Pollution Control Officer of the BAAQMD, signed an agreement detailing responsibilities of the two agencies. This agreement is shown in Appendix B. Under the agreement the BAAQMD will be responsible for adoption and implementation of a regulation for aerosol paints that will achieve an emission reduction of at least 1.0 ton per day by February 1, 1991 and a "to be determined" emission reduction by February 1, 1993. The ARB will be responsible for adoption and implementation of a regulation to control volatile organic compound (VOC) emissions from other consumer products that will, in conjunction with the BAAQMD control measure on aerosol paints, achieve a total VOC emission reduction of at least 4.0 tons per day by February 1, 1993.

This staff report presents, for the Board's consideration, the staff's proposed regulation designed to achieve at least a 3 ton per day emission reduction in the BAAQMD by February 1, 1993. This report is a summary and analysis of the proposed regulation and the information considered by the staff in preparing this regulatory proposal to meet the requirements of the court order.

Pursuant to the California Clean Air Act the staff is also preparing a comprehensive regulatory proposal to reduce emissions from consumer products statewide. The statewide regulation is scheduled to be presented to the Board in October, 1990. If the statewide proposal would result in emissions reductions in the Bay Area which meet the requirements of the court order and satisfy the terms of the agreement with the BAAQMD, the staff intends to recommend that the statewide regulation supercede this Bay Area-only proposal. The staff believes that regulation of consumer products on a statewide basis is generally more cost-effective and enforceable than area-specific control measures. The staff also expects a statewide regulation to provide substantially more emissions reductions over time in the Bay Area than required by the court-order.

B. POLICY GOALS AND PROPOSED APPROACH

The staff has four principle policy goals in making this recommendation. They are:

1. full compliance with the court-ordered emissions reduction requirement;
2. meet the ARB's responsibilities per the Agreement with the BAAQMD;
3. maximize consistency with the statewide consumer product control measure scheduled for Board consideration in October 1990;
4. minimize impact on the consumer products market and on the product choices available to Bay Area consumers.

To comply fully with the court-order, the staff has proposed a regulation that achieves the necessary reductions, is enforceable and is within the Board's statutory authority. The regulation would be implemented fully if no subsequent action is taken to supercede it. The proposal would reduce emissions by three tons per day by February 1, 1993 as specified in the agreement with the BAAQMD.

The schedule established by the court-order does not allow for the collection of all data that the staff would like to have prior to making it's recommendation. Staff is continuing to acquire new information relevant to the statewide regulation, including data on the products recommended for control in this Bay Area-only proposal. If, by the time of the June hearing, data indicates that it would be more consistent with the developing statewide control measure to attain the court-ordered reductions in the Bay Area with limits on products other than those recommended by staff, the Board will be in a position to do so. By the June hearing date it may also be clear that other more effective or less costly limits than those proposed by the staff are appropriate.

C. SUMMARY OF THE REGULATION

The proposed regulation will reduce VOC emissions from consumer products in the Bay Area by establishing limits on the VOC content of selected consumer product categories. Proposed VOC limits for the following product categories are included in the regulation: air fresheners, engine degreasers, glass cleaners, hairsprays, oven cleaners, and windshield washer fluids. The regulation also contains several exemptions, including an exemption for organic compounds with very low vapor pressure. Also included is a provision requiring that the date of manufacture be shown on consumer products subject to the regulation. Four test methods are provided that may be used to determine the VOC content in consumer products.

Table 1 shows the estimated emissions and emission reductions for the categories of consumer products that staff recommends for control; for the Board adopted consumer product regulation for anti-perspirants and deodorants; and the aerosol paint regulation being developed by the BAAQMD.

Table 1
BAAQMD Consumer Products Estimated VOC
Emissions and Associated Emission Reductions
(Tons per Day)

A. Categories Recommended for Achieving the Needed Emissions Reductions

<u>Product Category</u>	<u>Emissions</u>	<u>Emission Reductions</u>
Air Fresheners	1.4	0.4
Cleaners		
Glass & Oven	1.0	0.5
Engine Degreasers	0.7	0.1
Hairspray	6.0	1.1
Windshield Washer Fluid	<u>5.2</u>	<u>1.2</u>
Sub-Totals	14.3	3.3

B. Additional Reductions Expected by 1993 from Other Consumer Products Regulations

<u>Product Category</u>	<u>Emissions</u>	<u>Emission Reductions</u>
Anti-Perspirant/ Deodorant Regulation* (Adopted by ARB November 1989)	1.1	0.2
BAAQMD Aerosol Paint Regulation**	<u>5.5</u>	<u>1.2</u>
Sub-Totals	<u>6.6</u>	<u>1.4</u>
Grand-Total	20.9	4.7

* Emission reduction effective 1/1/92

** Emissions reductions figures based on preliminary BAAQMD staff proposal.

The staff recommended categories in combination with the BAAQMD proposed aerosol paint regulation and the previously adopted anti-perspirants and deodorants regulation will potentially give VOC emission reductions of 4.7 tons per day. While these reductions are in excess of the 4 tons per day required by the court order, we feel it prudent to provide the additional reductions to account for uncertainties in the emission estimates and the uncertainties in enforcing an area specific consumer product regulation.

Significant economic impacts from the implementation of this regulation are not likely for large companies that market their products nationally since the regulation affects only the Bay Area. An analysis of the impact of the regulation on small businesses in California indicate that businesses engaged in retailing and wholesaling of consumer products would probably be able to absorb the costs associated with the regulation, and most small manufacturers would not be adversely affected if they choose to pass the costs on to the consumer.

The proposed regulation may have some impact on consumer choices. Performance characteristics of some products may change due to reformulation, and the use of different product forms and delivery systems. It is also possible that some manufacturers and suppliers may decide not to market certain products in the BAAQMD.

No adverse environmental impacts are expected from this proposed regulation.

D. RECOMMENDATION

We recommend that the Board comply with the requirements of the court order and adopt the proposed regulation (shown in Appendix C) for consumer products sold in the Bay Area Air Quality Management District.

II.

PROPOSED BAY AREA CONSUMER PRODUCTS REGULATION

A. STANDARDS

The proposed consumer products regulation is a "command and control" type regulation that sets VOC content limits for six different product categories. These limits are to become effective on January 1, 1993 within the Bay Area Air Quality Management District, which consists of the following counties: San Francisco, San Mateo, Santa Clara, Alameda, Contra Costa, Napa, Marin, and portions of Sonoma and Solano counties. The consumer product categories and the VOC limits for each category are shown in Table 2. Also, a provision is provided allowing an exemption for "innovative products" that can be shown to result in VOC emissions equal to or less than that of the applicable VOC limit specified in the regulation. The proposed regulation also contains a provision to prohibit the use of compounds with an ozone depleting potential of 0.00 in new products except where the compounds exist as impurities in the products. The impurity must be less than 0.01% by weight of the product to qualify for the exemption.

B. INNOVATIVE PRODUCTS

The proposed regulation allows for compliance through the use of innovative products. These products may have a higher VOC content, but due to some characteristic of the product formulation, design, delivery system, or other factors, the use of the product will result in VOC emissions equal to or less than emissions from compliant products. A manufacturer could only qualify a product under this provision by demonstrating that the use of the product will result in less emissions than a similar product complying with the emission limits. The Executive Officer of the ARB would also have to find that the alternative limit is enforceable.

C. EXEMPTIONS

The proposed regulation exempts VOCs with vapor pressures less than a tenth of a millimeter of mercury (0.1 mm Hg) at 20 degrees Celsius, or with more than 12 carbon atoms if the vapor pressure is not known. The regulation also contains an exemption for fragrances and colorants up to a combined level of two percent by weight in a consumer product. Another exemption is provided for persons manufacturing consumer products for sale outside the BAAQMD.

D. ADMINISTRATIVE REQUIREMENTS

A requirement is included in the proposed regulation requiring manufacturers of consumer products subject to the regulation to display on the product container the date of manufacture or a code indicating this date. The labeling requirement is to be effective three months after the effective date of the regulation.

E. TEST METHODS

Four test methods are provided for use to determine the VOC content of consumer products.

Table 2

Proposed Consumer Product VOC Emission Standards

Percent Volatile Organic Compounds by Weight

<u>Product Category</u>	<u>Percent VOC</u>
Windshield Washer Fluid	23%
Hairspray	80%
Air Fresheners	35%
Engine Degreaser	50%
Oven Cleaner	10%
Glass Cleaner	10%

III.

PRODUCT CATEGORIES

A. DESCRIPTION OF THE CATEGORIES

Six product categories are being considered for regulation. A short description of each product and its use follows:

1. Air fresheners: Air fresheners are products available to consumers and used generally in the home, but can also be used in either commercial or institutional facilities. The purpose of this product is to mask odors, provide a specific desired scent, or to deodorize. Product forms include, but are not necessarily limited to, aerosol spray, liquid (wick), solid (stick or granular), and crystals. Aerosols are generally used in cases where an immediate scent distribution is desired. Solids and liquid forms are used to provide a constant level of scent over time. VOCs in air fresheners include the solvents used to dissolve the active ingredients and the propellants used in aerosol products to expel the product from the container. This category does not include products for use on the human body, or those that are marketed as disinfectants.
2. Engine degreasers: Engine degreasers are consumer products used to remove grease, grime, oil and other contaminants from the external surface of engines. Engine degreasers contain VOCs which are used as propellants and as solvents to dissolve the contaminants. Engine degreasers also contain detergents which emulsify the contaminants before they are rinsed away. Depending on the product, the spray is applied on either hot or cold engines. A 10 to 15 minute waiting period is required to allow the degreasing components to penetrate the contaminants. The contaminants are rinsed off with a high pressure water jet or regular garden hose. The engine is then started and allowed to idle for 10 to 15 minutes to assure drying. The process may be repeated if the engine is especially dirty.
3. Glass cleaners: Glass cleaners are specialty cleaning products designed primarily for cleaning surfaces made of glass. These cleaners are applied by spray and typically have a high water content with a certain

weight percent of isopropyl alcohol. VOCs are used in glass cleaners to dissolve grease and dirt. They may also be used to propel the product from a container in the case of an aerosol glass cleaner.

4. Hairspray: The primary function of a hairspray is to dispense droplets of a resin on and into a hair coiffure which will impart sufficient rigidity to the coiffure to retain the style for a period of time. When the hairspray is sprayed onto the hair, the more volatile components evaporate, leaving a resin which is uniformly distributed over the hair coiffure. This resin aids in retaining the desired shape given to the hair. The mechanism for how the hairspray works has been described as a type of "spot-weld" where the hairspray bonds the strands of hair together. Hairspray formulations will vary depending on the desired characteristics, intended function of the hairspray and the type of dispensing system utilized. The majority of hairsprays available in the Bay Area either are dispensed via an aerosol using hydrocarbon propellants or a mechanical pump. The VOCs used in hairspray formulations are used to dissolve the resin and other active ingredients. For aerosol packaging, VOCs are used to propel the product from the container.
5. Oven cleaners: Oven cleaners are specialty cleaning products designed to clean and to remove dried food deposits from oven walls. They may be used cold or be heat-activated. Oven cleaners are typically applied by spray on the oven walls. A foam is produced which acts on the deposits. Oven cleaners can be designed to work in a cold oven or to be heat activated. Oven cleaners typically contain an alkaline agent (sodium or ammonium hydroxide) and other ingredients such as surfactants, solvents, and holding agents which increase the cleaning power and hold the cleaning solution in place on vertical oven surfaces. VOCs such as butane and propane are typically used as the propellant and other VOCs may be used as solvents to help solvate the active ingredients and to provide grease cutting power. Non-aerosol forms of oven cleaners include pads made of synthetic abrasive containing a reservoir of strong alkali. Before use the reservoir is punctured, releasing the formulation.
6. Windshield washer fluid: Automotive windshield washer fluid is used in the windshield washer system of motor vehicles. The washer fluid is pumped from a storage reservoir in the vehicle's engine compartment and sprayed onto the windshield(s) to clean, wash or wet the glass. The liquid is usually an alcohol-water solution, with methanol as the most common alcohol used. The alcohol's primary purpose is to impart a freezing-point depression to the washer fluid, thereby giving anti-freeze protection to the washer fluid similar to that derived from the ethylene glycol or diethylene glycol solution found in the engine's cooling system. A secondary benefit from using alcohol results from the alcohol's solvency properties, which helps to remove debris from the windshield.

B. DEVELOPMENT OF EMISSION STANDARDS

In establishing the proposed VOC standards for each product category, staff took into consideration the requirements of the California Clean Air Act (CCAA), the need for emission reductions, the availability of complying products in the market place, and the availability of technology to meet the standards. Every attempt was made to develop standards which would not ban any particular product form. Whenever possible, staff used information on the VOC content of products in published literature as the basis for developing the proposed VOC standards.

One source of information used was EPA-450/2-89-008, "Compilation and Speciation of National Emissions Factors for Consumer/Commercial Solvent Use." Another document used to supplement the data in the EPA report was the report submitted by Pacific Environmental Services (PES) to the New York State Department of Environmental Conservation titled "Analysis of Regulatory Alternatives for Controlling Volatile Organic Compound (VOC) Emissions from Consumer and Commercial Products in the New York City Metropolitan Area (NYCMA), Volume I." Formulation data was also obtained from the following additional sources:

- (1) the report submitted to EPA by Science Applications International Corporation (SAIC) titled "Photochemically Reactive Organic Compound Emissions from Consumer and Commercial Products" (B/8340025-068a/#16),
- (2) generic product formulas suggested in Household and Personal Products Industry (HAPPI) Formularies,
- (3) product VOC content information obtained from the CARB Consumer Products VOC Survey (mailed to 2500 companies, manufacturers and individuals on February 9, 1990 and revised on March 6, 1990),
- (4) the combined telephone/market survey of currently available consumer products conducted by ARB staff in the fall of 1989, and
- (5) ARB staff workshops and discussions with industry representatives.

In developing the proposed regulation, staff included only those organic compounds which meet the following criteria: (1) VOCs which contain twelve (12) or less carbon atoms, if the vapor pressure is unknown, or (2) VOCs which have a vapor pressure equal to or greater than 0.10 mm Hg at 20 °C. Staff felt it appropriate to exempt these compounds, because compounds which have vapor pressures less than 0.1 mm Hg or contain more than 12 carbon atoms, in most cases have limited volatility and do not significantly contribute to the VOC emissions from consumer products. Examination of different organic compounds indicates that these cutoffs are reasonable. For example, N,N-diethyl-m-toluamide, which is the main active ingredient in most insect repellents, contains thirteen carbon atoms and is

considered to be nonvolatile. Diethylene glycol, which has a vapor pressure less than 0.1 mm Hg, is a polar liquid with a boiling point above 200 °C.

The proposed VOC standards were established at levels which are currently being marketed (as determined from the above sources of information) or at levels where the technology exists to produce complying products. We believe the proposed standards meet the requirements of the California Clean Air Act that consumer product regulations be "technologically and commercially feasible." (Health and Safety Code Section 41712)

The staff attempted to evaluate the effect of the proposal on manufacturers based on the market share of the products and product forms. However, the market share data available was minimal. A CARB Consumer Products VOC Survey was mailed on February 9, 1990 to provide this data with a requested deadline of March 31, 1990. Rather than respond directly to the survey, a number of manufacturers decided to supply their data to Heiden and Associates, a firm based in Washington, D.C., which has yet to submit the required data. Since their data have not been submitted as of the date of this report, the staff has not been able to consider the effect of the regulation on some sources in preparing this proposal.

C. PROPOSED EMISSION STANDARDS BY PRODUCT CATEGORY

The following are the justifications used by ARB staff to develop the proposed emission categories for the six product categories:

Product Category: Automotive Windshield Washer Fluid

Recommended Standard: 23% VOC by weight

Basis for Recommendation: For windshield washer fluids, the proposed VOC standard was based on the physical need for the current level of VOC found in fluids used in the Bay Area. Currently, VOC levels in premixed windshield washer fluids range between 23% and 35% by weight. Levels in concentrated fluids average approximately 80% VOC by weight. The primary purpose of the VOC in windshield washer fluids is to provide a freezing point depression (i.e. anti-freeze protection) for the fluid. In general, the higher the VOC (alcohol) content, the lower the freezing point of the fluid.

In developing the proposed standard, staff found that the mean minimum temperature in the Bay Area in January is 32° F. Also, the staff took into consideration that Lake Tahoe is a major recreation area for Bay Area residents with a mean minimum temperature in January of 6° F. The proposed standard of 23% VOC by weight will provide anti-freeze protection for the washer fluid to 0° F. This will not provide anti-freeze protection in all

circumstances. However, temperatures colder than 0°F tend to occur infrequently and to be of relatively short duration. Also, the need for the use of windshield washer fluid in the wintertime is normally not during the periods of intense cold, but rather, when temperatures are more moderate and mud and water exist on the road surface.

Product Category: Hairspray

Recommended Standard: 80% VOC by weight

Basis for Recommendation: The majority of hairspray formulations currently available contain on the average 96-99 percent VOC. (New York PES Report). However, there is technology that is currently available to reduce the VOC content of hairsprays. One way is by the addition of water to the formulation.

There are several advantages to using water as a solvent or co-solvent in hairspray formulations. Water is inexpensive, readily available, odorless, non-toxic and environmentally safe. It also reduces the flammability of the formulation and increases the drying time which allows more opportunity for the film to evenly spread over the hair. (A.H. Bronnsack)

Potential disadvantages of adding water include, corrosion in unlined metal containers, adverse effects on the spray pattern, longer drying times and poorer performance in the curl retention test. The major disadvantage appears to be the latter, commonly referred to in the industry as "curl droop." Curl droop is measured by the curl retention test, which tests the holding power of a hairspray by measuring the ability of a hairspray to maintain a set in a hair tress under stringent conditions of humidity and temperature. Water, in a hairspray formulation can increase the amount of curl droop that occurs when using a hairspray. (P.J. Petter)

The amount of water that can be used depends on the nature of the dispensing medium and the other components in the formulation. In hydrocarbon propelled aerosol systems water can be added up to 8-10% by weight with only modest effects on the hair coiffure. (M. A. Johnsen) Using dimethyl ether (DME) as a propellant in place of hydrocarbon propellants can be used to make water-based, non flammable systems (P.L. Layman). Staff are aware of one hairspray currently being marketed that uses DME as a propellant and has a VOC content of less than 40%. The presence of water in a hairspray formulation using DME as a propellant does not appear to affect curl droop as significantly as it would with hydrocarbon propellants. This is because of the azeotropic removal of water by the dissolved DME.

The type of valve system used can also affect the amount of water that can be used in a formulation. Since water increases the viscosity and surface tension of a solution, the spray produced by an ordinary aerosol valve will feel wetter than normal. By using an aquasol valve however, a finer, more dry spray can be produced. (A.H. Bronnsack)

We are proposing a standard of 80% for hairsprays sold in the Bay Area. Based on the information described above, we believe the technology is available to reduce the VOC content of hairspray formulations and that adequate time (2 years) is available for manufacturers to reformulate and test their products. In addition to lowering the VOC content by adding water, alternative delivery systems are available to manufactures to help meet the proposed limit. Conversations with industry representatives indicate that there is the potential for reducing VOC emissions from hairspray by using carbon dioxide (CO₂) as a propellant in place of the hydrocarbon propellants.

Product Category: Air Fresheners

Recommended Standard: 35% VOC by weight

Basis for Recommendation: The current average VOC content of air fresheners is estimated at approximately 50% VOC. The formulas we surveyed range in VOC content from 4% to 100%. The proposed 35% limit is currently met by products in each of the product forms (aerosol, liquid and solid). For those products that have VOC contents greater than the recommended standard we believe that the technology is available for manufacturers to reformulate their products over the next 2 years.

Formulation Data for Air Fresheners

Product Specific Formulations:

<u>Product</u>	<u>Form</u>	<u>Wt % VOC</u>	<u>Source</u>
Safeguard	aerosol	45 to 100	PES Report
Knight's Irish	aerosol	26 to 34	PES Report
Knight's French Vanilla	aerosol	26 to 32	PES Report
Royal	aerosol	37 to 47	PES Report
King Kullen	aerosol	37 to 47	PES Report
Waldbaum	aerosol	37 to 47	PES Report
White Rose	aerosol	37 to 47	PES Report
Gym-Fresh-Ner	aerosol	100	PES Report
Pascals	aerosol	78	PES Report
Pine Deodorant	liquid	13 to 14	PES Report
Compactor Deo	liquid	4	PES Report
Airwick Breeze	solid	5	PES Report
White Rose Solid	solid	65 to 100	PES Report
Mil-du-Gas	solid	92 to 100	PES Report

Product Category: Oven Cleaners

Recommended Standard: 10% VOC by weight

Basis for Recommendation: We estimate the current average VOC content of oven cleaners to be approximately 20 percent VOC. Formulation data that we were able to find in the literature and obtain from manufacturers show a VOC content range between 0% and 84% VOC by weight. Several products are currently available that comply with the proposed standard including one aerosol form. As described above, we feel that two years is adequate time for the remaining manufacturers to reformulate to the recommended 10% VOC standard.

Formulation Data for Oven Cleaners

Product Specific Formulations:

<u>Product</u>	<u>Form</u>	<u>Wt % VOC</u>	<u>Source</u>
Product A	Aerosol	7	Mfgr. Supplied
Product B	Aerosol	15-30	Mfgr. Supplied
Product C	Aerosol	19	Mfgr. Supplied
Product D	Aerosol	25	Mfgr. Supplied
Product E	Liquid	13	Mfgr. Supplied
Product F	Liquid	4	Mfgr. Supplied
Product G	Liquid	0	Mfgr. Supplied
Product H	Liquid	0	Mfgr. Supplied
Product I	Liquid	5	Mfgr. Supplied

Generic Product Formulations:

<u>Product</u>	<u>Wt % VOC</u>	<u>Source</u>
Formula A	10	SAIC Report
Formula B	7	SAIC Report
Formula C	84	SAIC Report
Formula D	25	SAIC Report
Formula E	7	1989-EPA-600-2/89-062
Formula F	15	"

Product Category: Glass Cleaners

Recommended Standard: 10% VOC by weight

Basis for Recommendation: Based on the information provided by industry, the VOC content ranged from 5% to 100% by weight. We estimate the average VOC to be approximately 20%. Industry supplied formulations show that there are several glass cleaner formulations that can meet the 10% VOC standard. Since most glass cleaners contain roughly 75% water, those

products with high VOC contents are most likely concentrates. Those manufacturers that do not have complying formulas will have two years to reformulate to meet the 10% standard by weight limit.

Formulation Data for Glass Cleaners

Product Specific Formulations:

<u>Product</u>	<u>Form</u>	<u>Wt % VOC</u>	<u>Source</u>
Product A	Aerosol	20	Mfgr. Supplied
Product B	Aerosol	12	Mfgr. Supplied
Product C	Aerosol	15	Mfgr. Supplied
Product D	Aerosol	100	Mfgr. Supplied
Product E	Aerosol	13	Mfgr. Supplied
Product F	Aerosol	19	Mfgr. Supplied
Product G	Aerosol	17	Mfgr. Supplied
Product H	Liquid	9	Mfgr. Supplied
Product I	Liquid	71	Mfgr. Supplied
Product J	Liquid	6	Mfgr. Supplied
Product K	Liquid	20	Mfgr. Supplied
Product L	Liquid	5	Mfgr. Supplied
Product M	Liquid	8	Mfgr. Supplied
Product N	Liquid	10	Mfgr. Supplied

Product Category: Engine Degreasers

Recommended Standard: 50% VOC by weight

Basis for Recommendation: Based on the tables given below, the VOC content for engine degreasers ranged from 11% to 100% by weight. The current average VOC content is approximately 60%. Four formulations can meet the proposed 50% by weight limit. Staff believes that the technology is available for manufacturers to meet the proposed limit.

Formulation Data for Engine Degreasers

Product Specific Formulations:

<u>Product</u>	<u>Form</u>	<u>Wt % VOC</u>	<u>Source</u>
Product A	Aerosol	84	Mfgr. Supplied
Product B	Aerosol	88	Mfgr. Supplied
Product C	Aerosol	47	Mfgr. Supplied
Product D	Aerosol	25	Mfgr. Supplied
Knight's Engine Degreaser	Aerosol	68	PES Report
Knight's Motor Wash	Aerosol	68	PES Report

Generic Product Formulations:

<u>Product</u>	<u>Form</u>	<u>Wt % VOC</u>	<u>Source</u>
Product A	Aerosol	98	SAIC Report
Product B	Aerosol	100	SAIC Report
Product C	Aerosol	100	SAIC Report
Product D	Aerosol	15	Aerosol Age, 2/86
Product E	Aerosol	11	Aerosol Age, 2/86

IV.

OPTIONS FOR COMPLIANCE WITH STANDARDS

Several methods are available to reduce VOC emissions from consumer products. The primary method, which is available to both aerosol and non-aerosol products, is reformulation to a lower VOC content. Reformulation techniques include replacement of VOC solvents with water or other non-VOC solvents and reductions in the solvent content, resulting in more concentrated products.

Another option available to both aerosol and non-aerosol products is a change in product form. For example, switching from an aerosol oven cleaner to a pad containing a liquid cleaner.

Options that focus on the VOC propellants used in aerosol products include: (1) switching to non-VOC propellants such as compressed gases and partially halogenated hydrocarbons; and (2) alternative packaging systems such as pump sprays and "barrier systems" described below.

Another option that may be available is increasing the transfer efficiency of consumer products. Higher transfer efficiency products apply a greater percentage of product to their intended target compared to the total amount applied. In other words, less product is wasted, resulting in less use and therefore less emissions.

A. REFORMULATION

For the purposes of this discussion, the reformulation of a product involves the elimination or reduction of the VOCs present in the product. This can be accomplished in two ways: (1) replacing VOCs with water and other environmentally safe solvents, and (2) reducing the amount of VOCs in a given volume of the product, resulting in a product with more concentrated active ingredients. Concentrating the active ingredients will reduce VOC emissions because less total product is required, thereby reducing the amount of VOC emitted for a given application.

Reducing the VOC content of some consumer products may require other product changes. For example, some possible modifications include: (1) the addition of a protective liner on the interior of product containers to inhibit corrosion on products with a high water content; (2) the use of a special valve to achieve the desired spray pattern when inert gas propellants are used; and (3) the use of different active ingredients which are compatible with alternative solvents.

Although reformulation is treated separately from other techniques for reducing VOC content, it generally accompanies most product changes. For example, switching to an alternative product form, a non-VOC propellant, or a "barrier" packaging system will almost always require reformulation of the product.

B. ALTERNATIVE PRODUCT FORMS

Individual consumer products are often available in different product forms, such as aerosol sprays, pump sprays, liquids, pastes, and solids. These product forms can vary considerably in VOC content, and emissions reductions can often be achieved by substituting one product form for another. Since the product form changes, a different technique may be necessary to apply the product.

C. NON-VOC PROPELLANTS

A control option available to aerosol products is the replacement of hydrocarbon propellants with non-VOC propellants such as compressed gases and partially halogenated hydrocarbons which include hydrofluorocarbons (HFC's) and hydrofluorochlorocarbons (HCFC's). HFC's are one class of partially halogenated hydrocarbons which do not contribute to stratospheric ozone depletion.

Compressed gases include nitrogen, carbon dioxide and nitrous oxide. These gases are labeled as "compressed gases" because they must be compressed to achieve sufficient pressure inside a product container to expel the product contents. With compressed gases, pressure changes within the product container as the product is used and the propellant is depleted. This pressure drop generally results in a coarse (wet) spray that is not acceptable for some products. However, in some cases this problem may be overcome with formulation changes and special valve and actuator design. There is also a packaging system on the market that is air pressurized by hand pumping and that can be pumped repeatedly whenever pressure drops below a satisfactory level. Several products are now successfully using compressed gas propellants.

Replacement of hydrocarbon propellants with compressed gas propellants may not always achieve reductions in VOC content equal to the propellant VOC content. This is because the hydrocarbon propellants used in consumer products often act concurrently as solvents. Thus, products that switch to compressed gas propellants may need to add extra solvent to replace the hydrocarbon propellant in the liquid phase.

In contrast to the compressed gas propellants, liquified gas propellants such as the hydrocarbon propellants and the partially halogenated hydrocarbons maintain an equilibrium of liquid and gas phases within the product. As the vapor phase propellant is depleted during application of the product, liquid propellant evaporates, replenishing the vapor phase. In this way the liquified gas propellants are able to maintain constant pressure within a product container.

The partially halogenated hydrocarbons are liquified gas propellants and consist of HFC's and HCFC's. Five of the HFC's and HCFC's are considered to be non-reactive organic compounds. Other HFC's and HCFC's are under consideration to be identified as non-reactive non-VOCs. Three of these compounds (HCFC-22, HCFC-142b, HFC-152a) are currently used in a number of aerosol products including personal care, insecticide, industrial, and automotive uses. Others, such as HFC-134a, HCFC-123, HCFC-124, and HCFC-141b, are currently under development and testing as non-CFC refrigerants and blowing agents, and may also prove to be acceptable propellants. The HCFC's, however, are ozone depleting compounds and are not potential substitute propellants for consumer products. This leaves only the HFC's as substitute propellants.

D. ALTERNATIVE PACKAGING

Another means of reducing VOC emissions from aerosols is the use of delivery systems that use non-VOC propellants or no propellant at all. However, as with the use of compressed gas propellants, removal of the hydrocarbon propellant may require that extra solvent be added to the new product to replace the solvent properties of the hydrocarbon propellant in liquid form.

Systems that use no propellant include pump sprays and barrier package systems. Pump sprays have been used for years in a wide variety of consumer products including hairspray, car care products, household cleaners and pet sprays. Pump sprays are not currently able to deliver foams or very fine (dry) sprays. Pumps also are not used for products that cannot be exposed to air.

In a "barrier" packaging system, the product is isolated by a barrier. In one currently available system, the package is self pressurized and relies on the pressure exerted by a rubber sleeve on a bladder containing the product to disperse the product through the valve nozzle. This type of packaging system can be used in a number of consumer products, especially viscous (thick) products.

Other types of barrier systems that use non-VOC propellants include piston-type systems and a system that generates its own propellant. In piston systems, the product and propellant are separated by a piston. The product is on one side of the piston with the propellant on the other. Piston systems are used mainly with viscous products.

There are packaging systems available that self-generate carbon dioxide in a bag that expands, forcing the product out. This system is used in air fresheners, pet sprays, shaving gel, insecticides, and other products.

E. HIGHER TRANSFER EFFICIENCY

The previously described approaches to reducing emissions generally involve reducing the amount of VOC in the product. In this approach, the design of the delivery system is changed to improve the transfer efficiency of various consumer products. Products with higher transfer efficiency deliver more product to their intended target for a given amount of product used. Since less product is wasted, less product is used, resulting in less emissions. One way to improve the transfer efficiency is to use a spray valve that has less overspray or a smaller spray pattern.

V.

REGULATION IMPACTS

A. ENVIRONMENTAL IMPACTS

The main environmental impact from this proposed regulation is a decrease in tropospheric ozone pollution due to decreased VOC emissions from consumer products. Emissions reductions from the six product categories proposed for control account for an estimated 3.3 tons per day in the BAAQMD. The contributions from each of these categories are shown in Table 3.

Emission reductions were calculated as follows: (1) The current average VOC content (% by weight) was estimated based on available formulation data and market share data where available, (2) the average VOC reduction (% by weight) was calculated based on the average VOC content and the proposed VOC standard, (3) the average VOC reduction was multiplied by the estimated VOC emissions to get the emission reduction. As shown in Table 4, the total estimated emission reductions is expected to be greater than the 3 tons per day required by the court order to provide a margin to account for uncertainties in the emission estimates.

We expect no adverse environmental impacts as a result of the proposed regulation. Because the proposed regulation prohibits any increase in use of compounds identified to contribute to upper ozone depletion, the regulation would have no anticipated impacts in those areas. Also, there are no anticipated impacts on global warming.

B. ECONOMIC IMPACTS

Economic impacts from the implementation of this regulation could be felt by formulators of consumer products, packagers of consumer products, suppliers of chemicals and product packaging, wholesale, and retail distributors, retail outlets and others. Since most of these industries are national in nature, the impact from the regulation is not expected to be large. The main impact is expected to be on small businesses such as local aerosol fillers and product manufacturers that produce products sold primarily in California.

Table 3

Estimated VOC Emission Reductions from the Regulation

<u>Product Category</u>	<u>Current Average VOC Percent*</u>	<u>Proposed Standard Percent</u>	<u>Percent Reduction</u>	<u>Emissions Tons/Day**</u>	<u>Reductions Tons/Day</u>
Air Fresheners	50	35	30	1.4	0.4
Cleaners*** Glass and Oven	20	10	50	1.0	0.5
Engine Degreasers	63	50	21	0.7	0.1
Hairspray	98	80	18	6.0	1.1
Windshield Washer Fluid	30	23	23	<u>5.2</u>	<u>1.2</u>
Total				14.3	3.3

* Average VOC estimated in Section III, (B).

** Emissions estimates based on 1983 ARB Emissions Inventory updated by population to 1989.

*** Emissions from oven, glass, and general purpose cleaners were estimated at 1.9 tons per day. It was assumed that all-purpose cleaners make up half of these emissions and glass and oven cleaners make up the other half.

1. Impacts on Small Businesses

We evaluated the impact of the proposed regulation on small businesses in the BAAQMD and throughout California to determine if small businesses would experience significant adverse economic impacts. Based on a comparison of the return on owner's equity (ROE) before and after costs associated with the proposed regulation, we concluded that small businesses engaged in retailing and wholesaling of consumer products would probably be able to absorb the costs of the proposed regulation and most small manufacturers would probably not be adversely affected by the regulation, if they choose to pass the cost on to the consumer.

2. Cost-Effectiveness

Using cost data from the Pacific Environmental Services (PES) Report for the New York City Metropolitan Area, we estimated the cost impacts and cost effectiveness expected for manufacturers, upstream suppliers and consumers of the following product categories: (1) hairspray (aerosols and pump sprays) and (2) air fresheners (aerosols only). In addition, we also estimated the cost impacts for windshield washer fluids using data obtained from the retail product shelf survey.

The PES report contained costs for new equipment and other costs associated with reformulating products to New York's proposed VOC standards. ARB staff applied a proportional factor to these costs to take into account the Bay Area's share of the national market for these products. Using the same or similar assumptions that were used in the PES report, ARB staff then divided cost by the expected emission reductions for the Bay Area to get the cost effectiveness for the four product categories. The estimated cost-effectiveness for the four categories are presented in Table 4.

The values shown in Table 4 represent the overall cost-effectiveness of the regulation as applied to the four categories. This overall cost-effectiveness incorporates the impacts that manufacturers, upstream material suppliers (e.g. valves, solvents, cans), and consumers are expected to encounter due to reformulation of the products. Cost impacts to the distribution system were not estimated since it was assumed that, because of the variety of products distributed in the system, any changes in the flow of products into the market would not significantly affect much of the distribution system. In all the product categories evaluated, we assumed that the manufacturer and upstream materials suppliers would pass on to the consumer any costs incurred due to the regulation, although manufacturers may absorb some or all of the costs in order to maintain their market share.

There are several relevant trends and conclusions that can be extracted from Table 4. First, assuming cost impacts for these products are reasonably representative of the impacts for the other product categories affected by the regulation, we expect the cost-effectiveness for most of the affected products to be below \$1.00 per pound of VOC reduced. This cost-effectiveness value appears favorable when compared to the cost-effectiveness of other VOC control measures currently existing in the Bay Area and California. Naturally, there will be products for which this

general conclusion may not be true. For example, reformulation of windshield washer fluids is not expected to adversely affect the manufacturers and may even result in a net savings for consumers because of the lower amounts of VOC.

Several caveats need to be stated so that the limitations of the estimated cost-effectiveness can be recognized. First, the cost figures used in the estimates were based on data in the PES report, which in turn were based on CSMA data submitted for the CARB deodorant/anti-perspirant regulation. PES assumed that equipment replacement and new equipment costs for deodorants/anti-perspirants and the four product categories reviewed would be similar. This assumption needs to be evaluated in more detail to verify its correctness since there may be significant differences in the equipment needed for reformulating the product categories we reviewed. In reporting equipment replacement costs for national product markets, CSMA overstated the actual equipment costs for California since the new equipment would also be used to make lower VOC products for the other forty-nine states. It was not known whether PES took this discrepancy into account when they determined the equipment cost data for New York.

There are other assumptions that may need further investigation. For example, we assumed that the market share for the products in New York would be equivalent to those in California. For example, it was assumed that the percentage of the general purpose cleaners market in New York comprised of aerosols would be the same in California. This assumption is generally reasonable but may be incorrect for some of the product categories. In addition, we assumed that equipment costs presented in the PES report were proportional to the amount of product produced but not to the degree of reformulation necessary to comply with the proposed VOC levels. PES cost data were relevant to costs needed to achieve New York's proposed VOC levels. Since our proposed VOC levels differ significantly from the ones proposed by New York in two of the four product categories reviewed, the actual cost impacts that manufacturers may encounter may also be significantly different. Finally, it must be noted that any cost-effectiveness figures determined for the Bay Area will probably overstate the actual cost impacts. Since any new equipment that is installed by industry will probably be used to manufacture products for the rest of California and the nation, any new or upgraded equipment costs will likely be absorbed to a certain degree into the national market, thereby reducing the actual cost impacts.

Table 4 Estimated Cost Impacts Due To Reformulation

<u>Product Category</u>	<u>Cost-Effectiveness \$/lb VOC reduced</u>
Hairspray (Aerosols)	0.60
Hairspray (Pumps)	0.40
Windshield Washer Fluid*	-1.80 to 0.20
Air Fresheners (Aerosols)	0.22

* It is assumed that little or no impact to manufacturers from reformulating washer fluid. Supplier impact was unknown since no information on supplier markup was available. Consumer impact was based on retail price survey of seven products available in California. Cost savings (negative cost-effectiveness) is expected to occur since the methanol content of washer fluids will be reduced.

C. SOCIETAL

The proposed regulation may have an impact on consumer's choice of products. Performance characteristics for products may change due to reformulation, changes in delivery systems and alternative product forms. Consumers would have to adjust to these product changes. This may result in a change in usage patterns. For example, a consumer may use different formulations of windshield washer fluid depending on the climate of a particular region.

Manufacturers and suppliers may decide that it would be more cost effective not to market certain products in the Bay Area rather than reformulate. If this occurs, the resultant unavailability of certain products may force consumers to switch brands. There exists the possibility that some consumers may choose to use products purchased outside the BAAQMD. We recognize that importation of non-complying products will decrease the emissions reductions possible from consumer product regulations. However, the extent of this activity cannot be predicted since it would depend on a number of factors including: (1) the loyalty consumers have to certain individual products; (2) the performance of complying products; (3) the availability of certain products or product forms; and (4) the distance a given consumer must travel to purchase a non-complying product.

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APPENDIX A

Court Order

FILED

JAN 10 1990

RICHARD W. WIENING
CLERK, U.S. DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA

IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF CALIFORNIA

CITIZENS FOR A BETTER
ENVIRONMENT, et al.,

Plaintiffs,

v.

NO. CS9-2044 TEH

GEORGE GEORGEJIAN,

Defendants.

SIERRA CLUB,

Plaintiff,

v.

NO. CS9-2064 TEH

METROPOLITAN TRANSPORTATION
COMMISSION, et al.,

(Consolidated Cases)

Defendants.

ORDER RE CONSUMER SOLVENTS

On September 19, 1989, this Court ordered the Bay Area Air Quality Management District ("District") and/or the Air Resources Board ("ARB") to adopt, by June 1, 1990, control measures designed to achieve at least the target emission reductions described in the 1982 Bay Area Air Quality Plan ("1982 Plan") for (a) pesticides, (b) reciprocating engines.

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1 and (c) consumer solvents. The Court reserved determination
2 of implementation dates for the above measures to give the
3 parties an opportunity to informally resolve this issue.
4 September 19, 1989 Order at 1-2. When no agreement was
5 reached, the parties submitted detailed statements and
6 declarations supporting their respective positions.

7 The Court appreciates that the important issues raised
8 by this action deserve expeditious treatment. However,
9 because of delays occasioned by the earthquake, and a heavy
10 docket, this Order will address only the consumer solvent
11 category. The Court expects that orders concerning pesticides
12 and reciprocating engines will issue shortly. An opinion
13 addressing those matters ruled on, or taken under submission,
14 on September 19, 1989, will also follow.

15
16 DISCUSSION

17 We begin with the premise that once the Environmental
18 Protection Agency (EPA) approved the 1982 Bay Area Plan, the
19 pertinent state and local agencies were under a mandatory duty
20 to carry out its provisions. . . Friends of the Earth v. Carey,
21 535 F.2d 165, 169 (2nd Cir. 1976), cert. denied, 434 U.S. 902
22 (1977). Equally clear is the proposition that the Court's
23 function, at this juncture, is not to rebalance costs and
24 benefits considered in devising the 1982 Plan, American Lung
25 Ass'n v. Kean, 26 E.R.C. 1865, 1870 (D. N.J. 1987), or to
26 assess the wisdom of its requirements. Rather, once a

1 violation of the 1982 Plan has been demonstrated, the Court
2 has the singular role of enforcing the Plan to the extent
3 possible. Friends of the Earth, 535 F.2d at 173 ("Once a
4 citizen suit to enforce an EPA-approved state implementation
5 plan has been properly commenced, the district court is
6 obligated, upon a showing that the state has violated the
7 plan, to issue appropriate orders for its enforcement.")

8 The 1982 Plan called for a 4.0 ton per day reduction in
9 emissions from consumer solvents. 1982 Plan, Table F-3. The
10 Plan's "schedule for action" specifies 1985 as the year for
11 both adoption and initial implementation of appropriate
12 regulation to achieve this reduction. *Id.*² Five years after
13 this mandatory date has passed, the Bay Area has still not
14 adopted, much less begun to implement, control measures
15 designed to reduce consumer solvent emissions by 4.0 ton per
16 day.

17 Plainly, it is impossible for this Court to order exact
18 compliance with the 1982 Plan, given that the 1985 date for
19 adoption and initial implementation has long past. Thus, it
20 is the Court's task to devise a new schedule that will result
21 in the promised 4.0 ton per day emission reduction at the

22
23 ¹ Consumer solvents include such products as air
24 fresheners, deodorants, disinfectants, aerosol paints,
25 household cleaners, and hairspray. When used, they release
26 reactive organic compounds or ozone precursors into the air.

27 ² Initial implementation was to achieve a 1 ton per day
28 reduction. Full implementation (of the 4 ton per day
reduction) was to occur by 1987. 1982 Plan at A-6.

earliest feasible time or as "expeditiously as practicable." American Lung Ass'n, 26 E.R.C. at 1567, 1570, 1572. As Judge Ackerman observed, "[t]he will of Congress, as embodied in the [Clean Air Act], demands nothing more. But it certainly insists on nothing less." Id. at 1572.

The ARB, which has assumed responsibility for adopting rules for consumer solvents, except for aerosol paints,³ proposes an adoption date of July 1991 and an outside implementation date of July 1993. While the ARB represents that under this schedule it will ultimately reduce emissions by at least 8.0, rather than 4.0, tons per day, it offers no interim strategies for reducing emissions prior to 1993. Terris Decl. at 13; Donohue Decl. The District offers a similar schedule for adoption and implementation of an aerosol paint rule.⁴

The ARB explains that the prolonged schedule is necessary because, based on past experience, at least 24 months is required to do the necessary background development and research to draft an effective rule... And given that the

³ The District has assumed responsibility for enacting an aerosol paint rule.

⁴ The District proposes an adoption date of June 30, 1991, an initial implementation date of July 1, 1993, and a final implementation date of July 1, 1996. This schedule assumes that the ARB will decide to enact a generic state-wide rule, which would enable the District to benefit from the background data developed by the ARB. If the ARB decides to proceed instead on a product by product basis, the District proposes an adoption date of December 1991, an initial implementation date of January 1994, and a final implementation date of January 1997.

1 ARB was only statutorily directed to investigate consumer
2 solvents in January 1988, research in this area is still in
3 the initial stages. The District contends it needs a similar
4 amount of time to draft an aerosol paint rule, although its
5 responsibility for consumer solvent rules dates back to the
6 1982 Plan, 1982 Plan at A-8, and Table F-3. Once adopted, the
7 ARB states that more testing and study will be necessary,
8 including perhaps some extensive testing on animals, before
9 such rules could actually be implemented.

10 Both the ARB and the District contend that embarking on
11 the above long range strategy of developing technology-forcing
12 regulations is the only feasible means of complying with the
13 1982 Plan with respect to consumer solvents. However, this
14 view is clearly contradicted by the record before the Court.

15 According to Daniel Donohue, Manager of the Solvents
16 Control Section of the Criteria Pollutants Branch of the
17 Stationary Source Division of the ARB, a ban of certain
18 consumer products would achieve reductions as high as four
19 tons per day by 1993. Donohue Decl. at ¶ 22. It is also
20 apparent that banning of selected products has been assessed
21 as a viable and technically feasible means of attaining
22 emission reductions from consumer solvents. A 1987 study
23 prepared for EPA, for example, found that:

24 [B]anning is probably the most effective control
25 strategy to implement for [air fresheners and
26 household pesticide consumer solvent products].
27 [They] are not considered to be essential for life
28 and non-[smog precursor chemicals] containing
substitute products exist for the majority of the

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product types.⁵ Also, banning might serve as an impetus for industry to essentially invoke other control strategies such as reformulation, change in application method, and development or market "push" of substitute products.

May Decl., Exh. A, p.1. The study concluded that banning just these two products in the New York City metropolitan area alone would reduce emissions at least 11 tons per day. Id. see also, "Analysis of Regulatory Alternatives for Controlling Volatile Organic Compound (VOC) Emissions From Consumer and Commercial Products in the New York City Metropolitan Area," Draft Report, August 1989 (discussing banning as feasible strategy), May Decl., Exh. B.

Neither the ARB nor the District provide the Court with any convincing evidence or reason as to why selective banning is not a feasible strategy, particularly given the existence

⁵ Alternative products for categories of consumer solvents which account for significant emissions include:

a. Pesticides: Combat Ant Control Systems, Combat Roach Control Bait Systems, Raid Ant Traps, Johnson's No Roach, d-Con Roach Traps, Black Flag Roach Motel, d-Con Extract, Enforcer Flea Kill for Carpets, Eaton's 4 the Roach, Bug Zapper, Texize no-Pest Strip, Copper-Brite Roach Proof, Citronella candle/incense, Flypaper, and Flyswatter. ...

b. Air Fresheners: Airwick stick-ups, Remuzit Adjustable, Twice as Fresh Two Way Air Freshener, Airwick Breeze Room and Vacuum Freshener, Airwick Magic Mushroom, Love-My-Carpet Rug and Room Deodorizer, Pine Sol Spray Cleaner, Remuzit Roommate, Forest Fresh Air Freshener, Earth Scents Fragrance Sticks and Cones, and Candle-Lite Scented Candles.

c. Hairsprays: Pump spray bottles are widely available; mousses (non-aerosol, and non-gump) have significantly less chemical precursors; substituting water for alcohol could also result in significant reductions.

(May Decl., ¶ 9, and Exh. A (footnote not in original)).

11 of a number of non-polluting product alternatives. Milton
21 Feldstein, Air Pollution Control Officer for the District,
31 opines that a "large percentage" of Bay Area residents will
41 travel to Stockton, Modesto, Hollister, Salinas, Sacramento,
51 Healdsburg or elsewhere twice a year to stock up on aerosol
61 air fresheners or other polluting consumer solvents. Feldstein
71 Decl. at ¶ 23. This seems unlikely, particularly given the
81 non-essential nature of the products and the existence of non-
91 polluting alternatives for at least some products. see n.5.
101 supra. Defendants have provided no evidence which even
111 suggests, much less demonstrates, that Bay Area consumers
121 would so sabotage a selective banning rule as to render it an
131 unfeasible method of control.⁶ Nor do any of the other
141 assorted objections raised by the ARB and the District come
151 close to demonstrating a lack of feasibility.⁷

161 Plaintiffs also point to other potential strategies for

171 _____
181 ⁶ Any noncompliance can also be reduced by consumer
191 education of the environmental harm cause by banned products.
201 See May Decl., Exh A., p. i.

211 ⁷ For example, the ARB contends that development of a
221 Bay Area product ban would detract from their other statewide
231 efforts. However, the Clean Air Act requires states to
241 provide adequate personnel and funding to carry out its duties
251 under an EPA approved plan. 42 U.S.C. §§ 7410(a)(2)(E),
261 7502(7). See, Friends of the Earth v. Carey, 552 F.2d 25, 15
271 (2nd Cir. 1977), cert. denied, 414 U.S. 902 (1977) (City can
281 not escape obligations voluntarily undertaken on grounds that
the plan failed to ensure that the state would have necessary
personnel and resources to implement plan).

The ARB also points out that air pollution is worse in
other parts of California than the San Francisco Bay region.
This fact is irrelevant to defendants' obligation to fully
implement the 1962 Plan.

1 inventorying consumer solvent products⁵ and little to nothing
2 has been done to develop specific rules.⁶ Had the District
3 embarked on its "preferred path" in 1982, the Court would have
4 no need to be involved in this matter today. However, the
5 District can not ignore its obligations under the 1982 Plan,
6 with respect to consumer solvents, for the better part of
7 seven years and then expect approval of a schedule that
8 further delays full compliance for perhaps some 12 years
9 beyond the 1987 deadline for final implementation. Defendants
10 are not entitled, at this juncture, to impose the continued
11 risks of unclean air upon the public because of policy
12 preferences, when feasible alternatives for earlier compliance
13 are available. This, of course, is not to suggest that

14
15 ⁵ Sections 110(a)(2)(F)(iii) and 172 (b)(4) of the Clean
16 Air Act, 42 U.S.C. §§ 7410(a)(2)(F)(iii) and 7502(b)(4)
17 require a "comprehensive, accurate, current inventory of
actual emissions from all sources . . . which is revised and
resubmitted as frequently as may be necessary. . . ."

18 ⁶ See Feldstein Decl. at ¶ 7 ("The District currently
19 has very little information on the emissions of precursor
20 organic compounds from consumer aerosol spray paints");
Guthrie Decl. at ¶ 4 ("there has been no significant technical
21 work performed by the [statewide Technical Research Group]
during the last five years. Before that, there was no
technical work performed.")

22 The 1982 Plan, however, specifically contemplated
investigation of an aerosol paint rule, which it was
23 estimated, could alone achieve a 4.5 ton per day reduction:

24 A communication from ARB states the technology
25 regarding aerosol paint cans is evolving towards
75% control, and should be available by 1987.
26 This technology could provide a 4.5 ton/day
reduction in organic emissions from this product
line alone.

27 1982 Plan at A-8.

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Defendants should not vigorously pursue their proffered long term strategy for reducing emissions from consumer solvents. However, in light of this Court's obligation to enforce the 1982 Plan, and defendants' failure to demonstrate the infeasibility of shorter term strategies, interim measures must also be adopted on a schedule consistent with the spirit of the 1982 Plan.

Accordingly, and good cause appearing, it is HEREBY ORDERED that the Bay Area Air Quality Management District of the Air Resources Board shall adopt, implement, and enforce control measures for consumer solvents that are designed to achieve a 4.0 ton per day reduction in emissions according to the following schedule¹⁰:

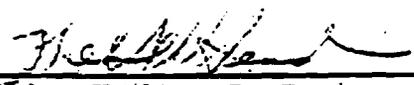
1. Adoption by July 1, 1990;¹¹

2. Initial implementation of emission reductions of at least 1 ton per day by February 1, 1991;

3. Full implementation by February 1, 1993.

IT IS SO ORDERED.

DATED: 1/19/90


Judge Thelton E. Henderson,
United States District Court.

¹⁰ On November 9, 1989, the ARB adopted a regulation concerning antiperspirant and deodorant products. Terris Decl. ¶ 4, and Exh. 6. Anticipated emission reductions for the San Francisco Bay Area resulting from this rule may be considered in determining compliance with this schedule.

¹¹ Although this Court's September 19, 1989 Order specified a June 1, 1990 adoption date, the Court has extended this date to account for its brief delay in issuing this decision.

Background Summary

In June 1990, Citizens for Better Environment and the Sierra Club, in two separate actions, served the Air Resources Board with copies of complaints for declaratory and injunctive relief under Section 304 of the Clean Air Act. The respective complaints are entitled Citizens for A Better Environment and Jean Siri v. George Deukmejian, California Air Resources Board, Metropolitan Transportation Commission, Association of Bay Area Governments, and Bay Area Air Quality Management District and Sierra Club v. Metropolitan Transportation Commission, et al. (U.S. District Court, Northern District of California).

In the complaints, the Plaintiffs alleged that the state and regional agencies have failed to comply with the State Implementation Plan for the Bay Area (the 1982 Air Quality Plan) for the implementation, maintenance, and enforcement of the National Ambient Air Quality Standards (NAAQS) for ozone and carbon monoxide. Liability of the ARB rests upon provisions of the Health and Safety Code which require the agency to assure that the Bay Area Air Quality Management District (BAAQMD) has adopted and is implementing a plan to attain and maintain the NAAQS, or in the alternative, to adopt and implement specified control measures contained in the 1982 Plan.

On September 19, 1989, following a hearing on the plaintiffs' Motions for Summary Judgment, the court ordered the BAAQMD and the ARB to adopt, implement, and enforce control measures for large commercial bakeries (adopted by the District on September 20, 1989), pesticides, reciprocating engines, and consumer products. The court directed counsel for plaintiffs, the District, and the ARB to meet and confer to attempt to agree upon final implementation dates for the above rules. The parties were further directed to submit to the court a stipulation on any agreement subsequently reached or, in the alternative, a statement that no agreement had been reached. The parties failed to reach an agreement and they respectively submitted their positions on implementation dates with supporting declarations to the court on or about November 22, 1989.

On January 10, 1990, the court issued its Order Re: Consumer Products. In the Order, the court directed the ARB and the BAAQMD to adopt by July 1, 1990 control measures designed to achieve volatile organic compound (VOC) emission reductions of at

least 1.0 ton per day by February 1991 and a total of 4.0 tons per day by February 1993. The court in establishing the above adoption and implementation schedule expressly rejected the ARB's proposed schedule, and all supporting arguments, for a general aerosol regulation that would have achieved emission reductions of approximately 8.0 tons per day by 1999.

On March 5, 1990, the Court issued an Opinion and Order, wherein it addressed the issue of standing and liability of the BAAQMD and the ARB for failing to adopt and implement contingency measures for stationary sources. The Court held that although the plaintiffs had standing to file suit in this regard the state agencies had not violated the Clean Air Act because they had adopted some, if not all, contingency measures after 1982.

APPENDIX B

Agreement Between BAAQMD and ARB

AGREEMENT

On January 10, 1990, Judge Thelton E. Henderson of the United States District Court for the Northern District of California signed an Order Re Consumer Solvents in the consolidated cases of Citizens For A Better Environment v. George Deukmejian and Sierra Club v. Metropolitan Transportation Commission, et al., Case Nos. C89-2044 TEH and C89-2064 TEH. In its Order, the court ordered that the Bay Area Air Quality Management District (BAAQMD) or the Air Resources Board (ARB) shall adopt, implement, and enforce control measures for consumer solvents that are designed to achieve emission reductions of at least 1.0 ton per day by February 1, 1991 and 4.0 tons per day by February 1, 1993.

In an effort to comply in good faith with the Order, the BAAQMD and the ARB agree as follows:

1. The BAAQMD will be responsible for adoption and implementation of a measure to control VOC emissions from aerosol paints that will achieve an emission reduction of 1.0 ton per day by February 1, 1991 and a "to be determined" emission reduction by February 1, 1993;

2. The ARB will be responsible for adoption and implementation of measures to control VOC emissions from all consumer products other than aerosol paints that will, in conjunction with the BAAQMD control measure on aerosol paints, achieve a total emission reduction of at least 4.0 tons per day by February 1, 1993;

3. Representatives of the BAAQMD and the ARB will meet and determine, by no later than February 15, 1990, the anticipated total tons per day reduction in VOC emissions that can be achieved by the BAAQMD's aerosol paint regulation by February 1, 1993, for use in paragraph 1., above.

DATED: February 16, 1990

CALIFORNIA AIR RESOURCES BOARD

By: 
James D. Boyd
Executive Officer

DATED: 2/16/90

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

By: 
Milton Feldstein
Air Pollution Control Officer

APPENDIX C

PROPOSED REGULATION

BAAQMD DRAFT REGULATION

PROPOSED

**REGULATION FOR REDUCING VOLATILE ORGANIC COMPOUND
EMISSIONS FROM CONSUMER PRODUCTS IN THE BAY AREA AIR QUALITY
MANAGEMENT DISTRICT**

Adopt New Article 3, Consumer Products in the Bay Area Air Quality Management District, Sections 94520-94527, Title 17, California Code of Regulations, to read as follows:

Article 3. Consumer Products in the Bay Area Air Quality Management District

94520. Applicability.

Except as provided in Section 94523, this article shall apply to any person who sells, supplies, offers for sale, or manufactures consumer products in the Bay Area Air Quality Management District.

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

94521. Definitions.

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

- (1) Air Freshener means any consumer product including, but not limited to, sprays, wicks, powders, and crystals, designed for the purpose of masking odors, providing a scent, or deodorizing. "Air freshener" does not include personal bodily hygiene products, or products that function primarily as disinfectants or cleaning products.
- (2) Automotive Windshield Washer Fluid means any liquid designed for use in a motor vehicle windshield washer fluid system for the purpose of cleaning, washing, or wetting the windshield(s). "Automotive windshield washer fluid" does not include any fluid which exists in a new motor vehicle at the time the vehicle is manufactured or sold to an ultimate purchaser.
- (3) Consumer Product means a chemically formulated product used by household, commercial, and institutional consumers, including, but not limited to, detergents; cleaning compounds; polishes; floor finishes; cosmetics; personal care products; home, lawn, and garden products; disinfectants; sanitizers; and automotive specialty products but do not include paint, furniture coatings, or architectural coatings.

- (4) Engine Degreaser means a consumer product designed to remove grease, grime, oil and other contaminants from the external surfaces of engines.
- (5) Executive Officer means the Executive Officer of the Air Resources Board, or his or her delegate.
- (6) Glass Cleaner means a specialty cleaning product designed primarily for cleaning surfaces made of glass.
- (7) Hairspray means a consumer product designed primarily for the purpose of dispensing droplets of a resin on and into a hair coiffure which will impart sufficient rigidity to the coiffure to establish or retain the style for a period of time.
- (8) Manufacturer means any person or business entity that produces a consumer product for sale in California.
- (9) Oven Cleaner means any specialty cleaning product designed to clean and to remove dried food deposits from oven walls.
- (10) Volatile Organic Compound 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), chlorodifluoro-methane (HCFC-22), trifluoromethane (HFC-23), trichlorotrifluoroethane (CFC-113), dichlorotetra-fluoroethane (CFC-115), dichlorotrifluoroethane (HCFC-123), tetrafluoroethane (HFC-134a), dichlorofluoroethane (HCFC-141b), and chlorodifluoroethane (HCFC-142b).

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

94522. Standards for Consumer Products

- (a) Except as provided in Section 94523, after January 1, 1993 no person shall sell, supply, offer for sale, or manufacture for sale in the Bay Area Air Quality Management District any consumer product which, at the time of sale or manufacture, contains volatile organic compounds in excess of the limits specified in the following Table of Standards. For consumer products for which the label, packaging, or accompanying literature specifically recommends dilution prior to use, the limits specified in the Table of Standards shall only apply to the product after the minimum recommended dilution has taken place.

Table of Standards

Percent Volatile Organic Compounds by Weight

<u>Product Category</u>	<u>Percent VOC</u>
Automotive Windshield Washer Fluid	23%
Hairspray	80%
Air Fresheners	35%
Engine Degreaser	50%
Oven Cleaner	10%
Glass Cleaner	10%

- (b) Effective January 1, 1993, no person shall sell, supply, offer for sale, or manufacture for use in the BAAQMD any consumer product subject to the standards in 94522 (a) which contains any ozone-depleting compound regulated by the U.S. Environmental Protection Agency (EPA) under its final rule "Protection of Stratospheric Ozone" (Published at 53 Federal Register (FR) 30566-30602 (August 12, 1988) or with an ozone-depleting potential of greater than 0.00 as listed in the appendix entitled "AFEAS Report" of the United Nation's Environmental Panel Integrated Report "Scientific Assessment of Stratospheric Ozone: 1989". Before using any halogenated compound as a replacement for a VOC in any consumer products whose ozone-depleting potential is not addressed in the AFEAS Report, the manufacturer or user of that compound must determine the compound's ozone-depleting potential using one of the full atmospheric models described in the AFEAS Report, or any other method determined by the Executive Officer to give equivalent results. This requirement does not apply to any product formulations introduced to the market prior to "the adoption date of this regulation", or to any ozone-depleting compounds that may be present as an impurity in a consumer product ingredient in an amount equal to or less than 0.01% by weight.

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

94523. Exemptions

- (a) This article shall not apply to any person who manufactures consumer products in the Bay Area Air Quality Management District for shipment or use outside of the Bay Area Air Quality Management District.
- (b) The requirements of Section 94522 shall not apply to fragrances and colorants up to a combined level of 2 percent by weight contained in any consumer product.
- (c) The requirements of Section 94522 shall not apply to any volatile organic compound which either:
 - (1) has a vapor pressure of less than 0.1 mm Hg at 20 degrees Centigrade, or
 - (2) consists of more than 12 carbon atoms, if the vapor pressure is unknown.

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

94524. Innovative Products.

The Executive Officer may exempt a consumer product from the requirements of Section 94522 if a manufacturer demonstrates by clear and convincing evidence that, due to some characteristic of the product formulation, design, delivery system, or other factors, the use of the product will result in volatile organic compound emissions equal to or less than emissions from consumer products of the same product category which meet the volatile organic compound limits specified in Section 94522. An exemption granted by the Executive Officer pursuant to this subdivision may specify such terms and condition that are necessary to insure that emissions from the product will be equal to or less than emissions from consumer products of the same product category and that such emission reductions can be enforced.

94525. Administrative Requirements

Labeling. No later than 90 days after the effective date of this article, each manufacturer of a consumer product subject to this article shall clearly display on each consumer product container 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. For manufacturers who already have a code in use on the effective date of this article, an explanation of the code must be filed with the Executive Officer within 90 days of the effective date.

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

Section 94526. Test Methods

- (a) Testing to determine the volatile organic compound content of a consumer product, or to determine compliance with the requirements of this article, shall be performed using one or more of the following methods: (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.
- (b) The results of tests conducted by manufacturers or others to determine the volatile organic compound content of consumer products shall be subject to verification by the Executive Officer. In determining compliance with the requirements of this article, the results of tests conducted by the Executive Officer to determine the volatile organic compound content of consumer products shall take precedence over the results of tests conducted by others to determine the volatile organic compound content.

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

94527. Severability.

Each part of this article shall be deemed severable, and in the event that any part of this article is held to be invalid, the remainder of this article shall continue in full force and effect.

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