

State of California
Air Resources Board

**Public Hearing to Consider the
Proposed Amendments to the
Antiperspirants and Deodorants Regulation;
Consumer Products Regulation;
Aerosol Coating Products Regulation;
Alternative Control Plan Regulation; the
Tables of Maximum Incremental Reactivity Values;
and Test Method 310**

Staff Report: Initial Statement of Reasons

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Table of Contents

Staff Report: Initial Statement of Reasons.....	1
EXECUTIVE SUMMARY	1
A. Authority to Regulate Consumer Products.....	1
B. Basis for the Proposed Amendments	2
C. Regulatory Development Process	3
D. Proposed Amendments.....	3
E. Environmental Impacts	7
F. Environmental Justice.....	7
G. Economic Impacts.....	8
H. Recommendation	9
I. INTRODUCTION AND BACKGROUND	11
A. Legal Background.....	11
B. Regulatory History	12
C. Program Intersects.....	16
D. Summary of Proposed Amendments.....	17
II. PROBLEM THAT THE PROPOSAL IS INTENDED TO ADDRESS.....	23
A. State and Federal Ozone Standards.....	23
B. Increasing Consumer Product Emissions	28
C. Unintended Consequences of Fragrance Exemption.....	29
D. Excess Public TAC Exposure	30
E. Regulatory Disincentive for Use of Compressed Gas Propellant	31
III. SUMMARY OF PROPOSED AMENDMENTS.....	33
A. Manual Aerosol Air Freshener	33
B. Hair Care Products	40
C. Personal Fragrance Product	57
D. Crawling Bug Insecticides (Aerosol)	65
E. Sunsetting the Two Percent Fragrance Exemption	69
F. Proposals to Improve Program Transparency, Clarity, and Effectiveness ..	77
IV. PURPOSE AND RATIONALE FOR EACH REGULATORY PROVISION ...	95
A. Antiperspirants and Deodorants Regulation	96
B. Consumer Products Regulation	101
C. Aerosol Coating Products Regulation	147
D. Alternative Control Plan Regulation	153
E. Tables of MIR Values	172
F. Method 310 Summary	174
V. AIR QUALITY.....	196
A. Emissions Inventory Methods	196
B. Consumer Products Emission Inventory	198
C. Emission Reductions.....	199
D. Ozone	201
E. Particulate Matter	202
VI. BENEFITS OF THE PROPOSED AMENDMENTS.....	205
A. Ozone Adversely Impacts Health	205
B. Indoor Air Quality Improvement.....	206
C. Other Benefits of the Regulatory Proposals.....	207

VII.	ENVIRONMENTAL ANALYSIS	209
A.	Introduction	209
B.	Prior Environmental Analysis	209
C.	Proposed Amendments	211
D.	Analysis	215
VIII.	ENVIRONMENTAL JUSTICE	220
IX.	ECONOMIC IMPACT ASSESSMENT	222
A.	Summary of Economic Impacts	223
B.	Major Regulations.....	224
C.	Regulatory Alternatives	225
D.	Costs of Compliance.....	225
E.	Impacts on California Businesses, Consumers, and State and Local Agencies.....	239
F.	Other Possible Economic Impacts of Regulatory Changes	243
G.	Mitigation of Potential Impacts	243
X.	EVALUATION OF REGULATORY ALTERNATIVES	245
XI.	JUSTIFICATION FOR ADOPTION OF REGULATIONS DIFFERENT FROM FEDERAL REGULATIONS CONTAINED IN THE CODE OF FEDERAL REGULATIONS	250
XII.	PUBLIC PROCESS FOR DEVELOPMENT OF PROPOSED ACTION	252
A.	2013-2015 Survey and Emission Inventory Update	252
B.	Development of Proposed Amendments.....	254
XIII.	REFERENCES	253
XIV.	APPENDICES	261

LIST OF ACRONYMS AND ABBREVIATIONS

ABS	Acrylonitrile Butadiene Styrene
ACP	Alternative Control Plan
AMP	2-Amino-2-methyl-1-propanol
AMR	Automotive and Maintenance Repair
AMR ATCM	Airborne Toxics Control Measure for Automotive Maintenance and Repair Activities
APA	Administrative Procedure Act
APCD	Air Pollution Control District
AP/DO	Antiperspirant/Deodorant
AQMD	Air Quality Management District
ATCM	Air Toxics Control Measure
CARB	California Air Resources Board
CA SNAP	California Significant New Alternatives Policy
CCAA	California Clean Air Act
CDPH	California Department of Public Health
CPVC	Chlorinated Polyvinyl Chloride
DME	Dimethyl Ether
DPR	Department of Pesticide Regulation
DTSC	Department of Toxic Substances Control
EDP/EDC/EDT	Eau De Parfum/Eau De Cologne/Eau De Toilette
EIC	Emission Inventory Code
FDA	Food and Drug Administration
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
GHG	Green House Gas
GWP	Global Warming Potential
HFC	Hydrofluorocarbon
HFC-134a	1,1,1,2-Tetrafluoroethane
HFC-152a	1,1-Difluoroethane
HFO	Hydrofluoroolefin
HFO-1233zd	1-Chloro-3,3,3-Trifluoropropene
HFO-1234y	2,3,3,3-Tetrafluoropropene
HSC	Health and Safety Code
HVOC	High Volatility Organic Compound
IPE	Innovative Product Exemption
LVP-VOC	Low Vapor Pressure Volatile Organic Compound
MIR	Maximum Incremental Reactivity
MLD	Monitoring and Laboratory Division
MMT CO ₂ e	Million Metric Tons of Carbon Dioxide Equivalents
MSDS	Material Safety Data Sheet
MVOC	Medium Volatility Organic Compound
NAAQS	National Ambient Air Quality Standard
NAICS	North American Industry Classification System
NIOSH	National Institute for Occupational Safety and Health
NO _x	Nitrogen Oxides
OEHHA	Office of Environmental Health Hazard Assessment
PCBTf	p-Chloro- α,α,α -trifluorotoluene

PCO	Pest Control Operator
PFP	Personal Fragrance Product
PM	Particulate Matter
PM _{2.5}	Particulate Matter of 2.5 microns
ppm	parts per million
PUC	Public Utilities Code
PVC	Polyvinyl Chloride
PWMIR	Product Weighted Maximum Incremental Reactivity
ROC	Reactive Organic Compounds
ROG	Reactive Organic Gas
QA/QC	Quality Assurance and Quality Control
SDS	Safety Data Sheet
SIP	State Implementation Plan
SWRCB	State Water Resources Control Board
TAC	Toxic Air Contaminant
TOG	Total Organic Gas
tpd	tons per day
trans-HFO-1234ze	trans-1,3,3,3-Tetrafluoropropene
U.S. EPA	United States Environmental Protection Agency
VMS	Volatile Methyl Siloxanes
VOC	Volatile Organic Compound

EXECUTIVE SUMMARY

In this rulemaking, California Air Resources Board (CARB or Board) staff is proposing amendments to the Antiperspirants and Deodorants Regulation, the Consumer Products Regulation, the Aerosol Coating Products Regulation, the Alternative Control Plan Regulation, the Tables of Maximum Incremental Reactivity (MIR) Values, and Test Method 310 (collectively, Proposed Amendments).

The 2016 State Strategy for the State Implementation Plan (2016 State SIP Strategy) requires CARB to develop measures to reduce volatile organic compounds (VOC) emissions from consumer products by 1-2 tons per day (tpd) by 2023 and by 4-5 tpd by 2031 in the South Coast Air Basin (South Coast), and by 8-10 tpd by 2031 Statewide. The Proposed Amendments would fulfill these emission reduction commitments as needed to help California attain federal ozone standards.

The Proposed Amendments would set or lower VOC standards for "Manual Aerosol Air Freshener," four categories of hair care products ("Hair Finishing Spray," "Dry Shampoo," "Hair Shine," and "Temporary Hair Color"), "Personal Fragrance Product," and aerosol "Crawling Bug Insecticide." In these same categories, staff is also proposing to prohibit the use of several chlorinated toxic air contaminants (TAC) and the use of compounds with a global warming potential (GWP) over 150.

The Proposed Amendments would also sunset a longstanding exemption for fragrance ingredients (the Two Percent Fragrance Exemption) for most consumer product categories. Additionally, the Proposed Amendments would encourage the development and sale of products using zero-emission compressed gas propellants, reduce excess VOC and TAC emissions from the sale of "Energized Electrical Cleaner" to automotive maintenance and repair facilities, and update other regulatory provisions to improve program transparency and effectiveness.

This Executive Summary, together with the Staff Report, is the Initial Statement of Reasons for this proposed rulemaking, required by the California Administrative Procedure Act. Appendix A contains the regulations, Tables of MIR Values, and Method 310. The proposed changes in Appendix A are shown in underline and ~~strikeout~~ format.

A. Authority to Regulate Consumer Products

Consumer products are defined as chemically formulated products used by household and institutional consumers. Examples include antiperspirants and deodorants, detergents, cleaning products, floor finishes, personal care products, lawn and garden products, adhesives, air fresheners, disinfectants, automotive maintenance products, paint thinners, insecticides, and aerosol coatings.

The Health and Safety Code (HSC) sections 41712 and 38500 et seq. give CARB authority to regulate consumer products to control VOC emissions, primarily as a ground-level ozone control strategy.

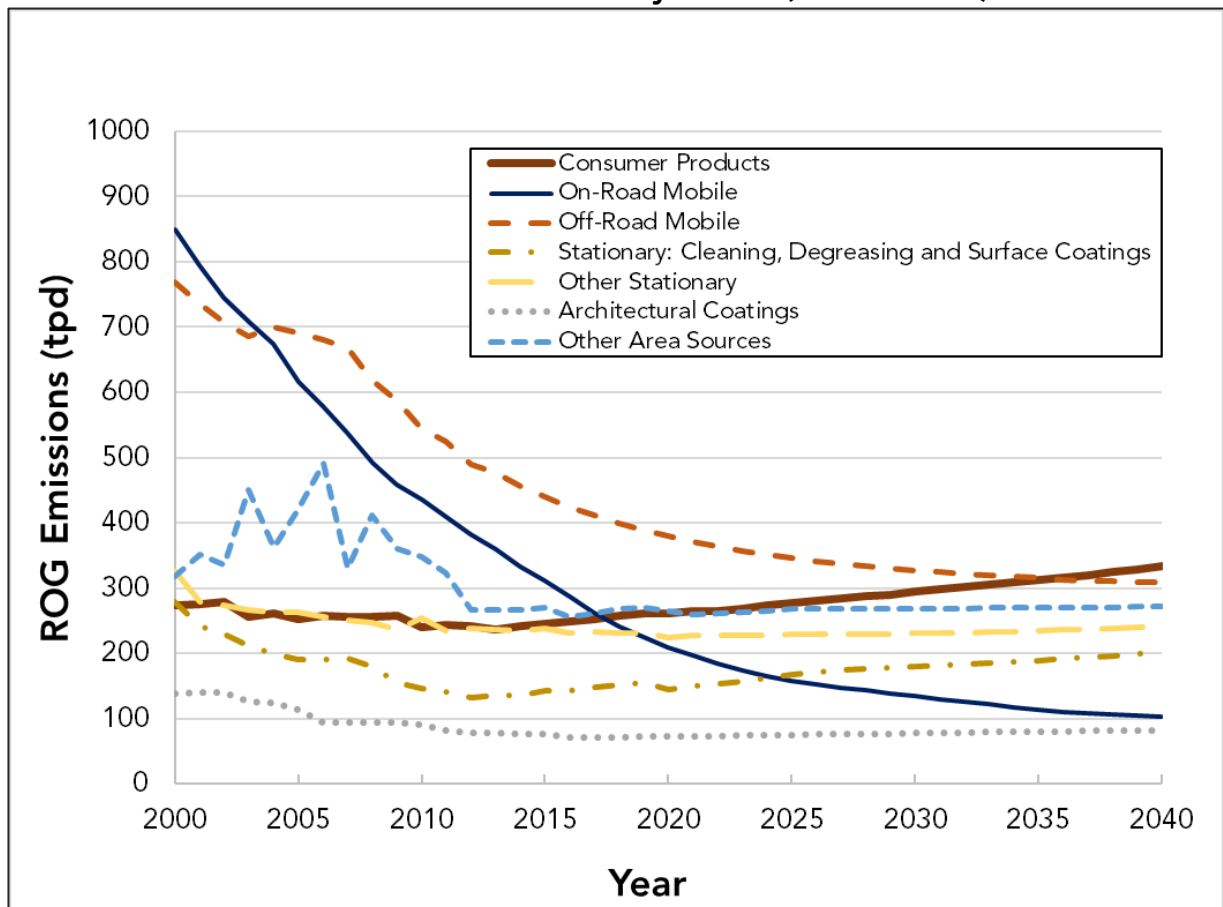
B. Basis for the Proposed Amendments

Most California residents continue to be exposed to pollutant concentrations that exceed health-based standards for ozone. Because VOCs are precursors to the formation of ground-level ozone, VOC emission reductions are necessary to expedite attainment of ambient air quality standards in California.

For more than thirty years, the Board has taken actions pertaining to the regulation of consumer products. Three regulations have set VOC limits for 129 consumer product categories. These three regulations have reduced VOC emissions by about 50 percent between 1990 and 2020 relative to uncontrolled levels.

Despite these existing regulations, consumer product emissions have increased over the past several years as California's population and associated consumer product usage continue to grow (see Figure ES-1, below). Without further action, consumer product reactive organic gas (ROG) emissions, which reflect VOC plus (less volatile) low vapor pressure VOC, will grow to over 300 tpd statewide by 2040, representing about 22 percent of statewide emissions. The categories for which more stringent standards are proposed in this rulemaking are responsible for about 34.5 tpd of ROG in 2020, of which 31.5 tpd is VOC.

**Figure ES-1:
California ROG Emissions by Sector (2000 – 2040)**



Source: CEPAM 2019SIP v1.02 (Summer Planning Inventory) (CEPAM, 2020)

CARB consumer product emission estimates are based upon mandatory CARB

surveys of consumer products sold in California in the 2013, 2014, and 2015 calendar year. These surveys generated comprehensive California sales and product ingredient information for over 400 categories of consumer products. In total, more than 1,500 product manufacturers and formulators participated in these surveys, providing CARB with product sales and chemical formulation for over one million products sold in California over this three-year period. Between June 2018 and April 2019, CARB staff published and solicited stakeholder feedback regarding these draft survey data summaries. While CARB staff characterized the emissions, reactivity, and ozone-forming potential of consumer product categories for all three years, the 2015 calendar year survey data (2015 Consumer Products Survey) provides the technical foundation for the Proposed Amendments.

2015 Consumer Products Survey data provided staff with detailed information regarding the formulations of consumer product categories proposed for regulation. These surveys were unprecedented in their scope, extent of data review, and opportunities for stakeholder feedback. Staff is confident that the 2015 Consumer Products Survey data adequately represents technologies available in the marketplace for the categories proposed for regulation, and that the data are adequate to support this proposal.

C. Regulatory Development Process

The public process to develop the Proposed Amendments began in June 2018 with the release of the initial draft consumer product survey data summaries for stakeholder review. Updated survey data summaries and other technical information was shared with stakeholders between June 2018 and publication of the updated final 2015 Consumer Products Survey data summaries on December 12, 2019.¹

Staff also held five public workshops in support of the Proposed Amendments, on April 12, 2019, November 7, 2019, April 14, 2020, July 28, 2020, and November 10, 2020. The first two workshops were held in person, by teleconference, and by webinar, while the second three workshops were held by teleconference and webinar only. CARB staff also held 22 topic-specific public work group meetings to elicit public feedback in identifying and refining our regulatory proposals.

In addition to these public meetings, staff held numerous discussions with individual stakeholders and associations representing manufacturers and distributors of consumer products and fragrances, non-governmental organizations, and other interested parties.

D. Proposed Amendments

1. Proposed VOC Standards

¹ Updated 2015 Consumer Products Survey data was published in December 2019 to reflect more refined assessment of fragrance ingredient VOC content. (CARB, 2019)

All of the proposed VOC reduction strategies and associated VOC reductions are summarized in Table ES-1. Over half of the reductions achieved by 2023 accrue from the "Hair Finishing Spray" and "Dry Shampoo" categories, while over half of 2031 reductions 2031 derive from the "Personal Fragrance Product" category.

Table ES-1: Proposed VOC Emission Reduction Measures

Category	Existing VOC Standard	Proposed Tier 1 Standard	2023 VOC Reductions		Proposed Tier 2 Standard ¹	2031 VOC Reductions	
			Statewide	South Coast		Statewide	South Coast
Manual Aerosol Air Freshener ²	20%/30%	10%	1.07	0.45	5%	1.73	0.72
Hair Care Products:							
- Finishing Spray	55%	50%	0.94	0.39	50%	1.11	0.45
- Dry Shampoo	81% ³	55%	0.58	0.24		0.78	0.32
- Hair Shine	55%	NA	--	--		>0.01	>0.01
- Temp. Hair Color	55%	NA	--	--		0.02	0.01
Personal Fragrance Product ⁴	75%	70%	0.41	0.17	50%	5.05	2.07
Aerosol Crawling Bug Insecticide	15%	NA	--	--	8%	0.81	0.34
2% Fragrance Exemption	NA	NA			Sunset	0.30	0.12
		Total	3.00	1.25	Total	9.80	4.03

1 – Proposed Tier 2 standards apply between 2027 and 2031, depending upon the category.

2 – "Manual Aerosol Air Freshener" subcategories of "Concentrated Aerosol Air Freshener" and "Total Release Aerosol Air Freshener" subject to alternate standards described in Chapter III.

3 – Refers to "Dry Shampoo" sales-weighted VOC content, based upon 2015 Consumer Products Survey data. "Dry Shampoo" is not currently subject to a VOC content standard.

4 – Applicable proposed Tier 1 standard fragrance threshold is less than or equal to seven percent fragrance; applicable proposed Tier 2 standard fragrance threshold is less than or equal to 10 percent.

Staff's proposals for more stringent VOC standards, identified In Table ES-1, are summarized below.

Manual Aerosol Air Freshener: To achieve VOC reductions from manually-operated aerosol air fresheners, staff proposes to replace the regulated categories of "Single-Phase Aerosol Air Freshener" and "Double-Phase Aerosol Air Freshener" with "Manual Aerosol Air Freshener" and "Automatic Aerosol Air Freshener" categories. The "Automatic Aerosol Air Fresher" category, for which lower VOC standards were determined to be infeasible, would retain the existing 30 percent VOC standard, while the larger "Manual Aerosol Air Freshener" category would be subject to a 10 percent and then five percent VOC standard on January 1, 2023, and January 1, 2027, respectively. The niche subcategories of "Total Release Aerosol Air Freshener" and "Concentrated Aerosol Air Freshener," for which a five percent limit was determined to be infeasible, would be subject to more incremental standards.

Hair Care Products: Staff proposes VOC standards for the following existing hair care categories, as follows:

- “Dry Shampoo”: Adopt 55 percent and 50 percent VOC standards applicable on January 1, 2023, and January 1, 2029, respectively.
- “Hair Finishing Spray”: Reduce the applicable VOC standard from 55 percent to 50 percent on January 1, 2023.
- “Hair Shine” and “Temporary Hair Color”: Reduce the applicable VOC standards for both categories from 55 percent to 50 percent on January 1, 2029.

The proposed lower VOC standards for “Hair Shine” and “Temporary Hair Color” are designed to align with the VOC standards for “Hair Finishing Spray” and “Dry Shampoo.” If “Hair Shine” and “Temporary Hair Color” were subject to less stringent VOC standards than “Hair Finishing Spray” and “Dry Shampoo,” some manufactures would likely modify their product labels to meet the regulatory definition of “Hair Shine” or “Temporary Hair Color” rather than reformulate, defeating the objectives of the Proposed Amendments.

Personal Fragrance Product (PFP): The Proposed Amendments would reduce the applicable VOC standard for aerosol PFP and for PFP with less than or equal to seven percent fragrance from 75 to 70 percent on January 1, 2023. The applicable threshold for product fragrance content would increase to 10 percent, with a VOC standard of 50 percent by 2031. Staff is proposing that a technical assessment of the proposed 50 percent VOC standard be conducted by 2027 to evaluate the continued technical feasibility of the proposed 50 percent VOC standard across the diversity of “Personal Fragrance Product” types. Finally, the VOC standard for the less than one percent of products with a VOC content above 20 percent would increase from 65 to 75 percent, to streamline and simplify program implementation by maintaining a single fragrance threshold for the overall PFP category.

Crawling Bug Insecticide (aerosol): Staff proposes to lower the applicable VOC standard from 15 percent to eight percent as of January 1, 2030. A “Bed Bug Insecticide” category would be created and excluded from the “Crawling Bug Insecticide” category, and would retain a 15 percent VOC standard due to potential technical feasibility challenges. The proposed aerosol “Crawling Bug Insecticide” standard would become applicable on January 1, 2030 to allow adequate time for product development, testing, and approval by the United States Environmental Protection Agency (U.S. EPA), which includes demonstration of product safety and efficacy on the specified crawling bug type.

2. Sunset of the Two Percent Fragrance Exemption

Staff proposes to sunset the Two Percent Fragrance Exemption in 2031 for most product categories in Article 2. This exemption, originally adopted in 1991, allows up to two percent of fragrance ingredients in a product to be exempt from the product’s applicable VOC standard.

Nonaerosol general purpose cleaners and degreasers, all air freshener products, sanitizers, and disinfectants would retain a 0.25 percent fragrance exemption as of January 1, 2031. Beginning in 2023, monoterpene ingredients up to 0.25 percent

of a product weight in nonaerosol general purpose cleaners and degreasers would be eligible to be exempt from these categories' VOC standard.

This proposal would help meet several programmatic goals by encouraging transparency in fragrance ingredient usage, helping clarify program implementation, and simplifying program implementation, while addressing stakeholder concerns regarding exemption (and potential encouragement) of an ingredient which can negatively impact sensitive populations. Staff evaluation of its 2015 Consumer Products Survey data, and discussions with product manufacturers indicate that staff's proposal, as described above, is technically feasible.

3. Other Proposals to Improve Program Effectiveness

Staff worked closely with public stakeholders during the regulatory development process to identify proposed amendments to improve effectiveness. These proposals, highlighted in Table ES-2 and described in more detail in Chapters III and IV, would help to ensure the regulation's intended air quality and public health benefits continue to be achieved, encourage manufacturer innovation to develop lower-emission products, and reflect lessons learned since the last significant regulatory amendments in 2013.

Table ES-2: Summary of Proposed Amendments to Improve Program Effectiveness

Proposal	Summary
Compressed Gas Propellant Flexibility	Encourage development and sale of products using compressed gas propellant to replace 1,1-Difluoroethane (HFC-152a), which is a greenhouse gas, while also ensuring no increase in product ozone-forming potential.
"Energized Electrical Cleaner" Definition	Update the definition of "Energized Electrical Cleaner" to exclude products sold to automotive maintenance and repair facilities, and require automotive part and accessory stores maintain records of "Energized Electrical Cleaner" product sales for five years. Intended to address "off-label" product usage responsible for the majority of consumer product perchloroethylene and trichloroethylene emissions.
"Multi-Purpose Solvent" Definition	Provide narrow exemption to ensure denatured alcohol products needed to maintain certain public utility electrical equipment are not subject to "Multi-purpose Solvent" VOC standard. Negligible emission impact anticipated due to very low usage.
"Plastic Pipe Adhesive" Definition and VOC Standard	Create a new special purpose aerosol adhesive category and 60 percent VOC standard for products that bond certain types of plastic pipe, to address infeasibility in meeting existing 30 percent "Mist Spray Adhesive" VOC standard. Negligible emission impact anticipated due to very low sales.
Toxics and Green House Gas (GHG) Prohibitions	Prohibits perchloroethylene, trichloroethylene, methylene chloride, p-chloro- α -methylfluorotoluene (PCBTF), and chemical compounds with a GWP of greater than 150 in the seven categories proposed for lower VOC standards.
Alternative Control Plan (ACP) and Innovative Product Exemption (IPE)	Update ACP eligibility criteria to require products be a de minimis level below the applicable standard to generate ACP credit. Update IPE eligibility criteria to exclude products that demonstrate lower VOC via product combustion.

Proposal	Summary
Eligibility Criteria	
Table of MIR Values	Update the Table of MIR values used to implement the Aerosol Coating Products Regulation to add three substances with low reactivity. Addition of these MIR values may encourage development of less reactive aerosol coatings and multi-purpose lubricants.
Method 310 Updates	Corrections for clarity and consistency, to amend several reference test methods, and to revise equations to better reflect how CARB calculates VOC and reactive organic compound content.

E. Environmental Impacts

Based upon staff's analysis, we have determined that implementing the Proposed Amendments will have an overall beneficial impact on the environment because VOC emissions from consumer products will be reduced, helping to expedite attainment of federal ozone standards in the South Coast and other California non-attainment areas. A co-benefit of staff's proposal is the significant reduction in consumer product TAC emissions by amending the products in the "Energized Electrical Cleaner" category to exclude those sold to automotive maintenance and repair facilities.

Staff's analysis indicates that the Proposed Amendments could also result in a 0.039 MMTCO₂e annual increase in greenhouse gas emissions in 2031 in California, or 0.320 MMTCO₂e if we assume CARB-compliant products will be sold nationally (as is typical practice). This finding is based upon staff's belief that manufacturers may opt to use HFC-152a propellant, with a global warming potential of 124, as a substitute for hydrocarbon propellants in the "Hair Finishing Spray," "Dry Shampoo," and "Personal Fragrance Product" categories. However, staff's proposed Innovative Product Exemption provisions to encourage compressed gas propellant instead of HFC-152a in these three categories could ultimately result in GHG reductions that far exceed this potential GHG increase. In addition, the 2016 State SIP Strategy, which includes these Proposed Amendments, still provides an overall GHG benefit, as explained further in the environmental analysis in Chapter VII of this ISOR, with 0.320 MMTCO₂e representing 1.6 percent of the 20 MMTCO₂e GHG reductions achieved by the 2016 State SIP Strategy. The 2016 State SIP Strategy GHG benefits are quantified in the *Final Environmental Analysis for the Revised Proposed 2016 State Strategy for the State Implementation Plan* (CARB, 2017b) (Final EA). Thus, CARB has determined that no additional environmental analysis is required for the Proposed Amendments.

As previously mentioned, these Proposed Amendments contain regulatory flexibility provisions designed to encourage development and deployment of innovative zero-emission compressed gas propellant as a substitute for HFC-152a. Demonstrating the feasibility of compressed gas propellants in categories that currently utilize HFC-152a could facilitate future prohibition of this propellant, and enable consumer products to help California meet its carbon neutrality mandate by 2045 (California Executive Order B-55-18, 2018).

F. Environmental Justice

Staff has determined that the amendments proposed in this rulemaking are consistent with CARB's environmental justice policies. The Proposed Amendments would achieve about 1.25 tpd VOC reductions by 2023 and 4.03 tpd reductions by 2031 in the South Coast. The primary purpose of proposed new or lower VOC standards is to achieve timely attainment of health-based ozone standards in the South Coast. The South Coast is home to 67 percent of California's 2,007 census tracts identified as disadvantaged communities under California Senate Bill 535.² Use of certain TACs and compounds with high GWP would also be prohibited in the seven categories subject to lower VOC standards, which would protect health in these disadvantaged communities.

Many of the proposals are also designed to improve compliance with the consumer products program as a whole, to ensure that the VOC reductions and associated health benefits are actually achieved. One of these proposals would exclude from the definition of "Energized Electrical Cleaner" products sold to automotive maintenance and repair establishments. As described in Chapter III, this proposed measure would reduce emissions of perchloroethylene and trichloroethylene by 8.9 to 39.4 tons per year, with these reductions anticipated to occur at automotive maintenance and repair facilities. These emission reductions could result in reduced health risk from air toxics inhalation, particularly among those repairing or maintaining automobiles.

Perchloroethylene also has the potential to seep into groundwater and impact drinking water safety. An evaluation of California census tracts with perchloroethylene and trichloroethylene maximum contaminant levels (MCL) that exceed National Primary Drinking Water Regulations standards indicate that water concentrations of these two contaminants exceeding MCLs disproportionately occur in disadvantaged communities. As unintended sales and use of perchloroethylene and trichloroethylene declines due to the Proposed Amendments, staff anticipates that runoff from automobile maintenance and repair activities could also decline.

G. Economic Impacts

The economic impacts of the Proposed Amendments are summarized here. Our complete analysis of these impacts is contained in Chapter IX and Appendices D and E of this Staff Report.

1. Overall Cost

Staff has determined that the overall cost to comply with the Proposed Amendments is about \$18 million per year for fifteen years, or about \$268 million total.

²Disadvantaged communities are defined as the top 25 percent scoring areas (census tracts) from CalEnviroScreen 3.0, along with other areas with high amounts of pollution and low populations. More than half of all identified SB 535 disadvantaged community census tracts in the state are in Los Angeles County, with all four counties that comprise South Coast (Los Angeles, Orange, Riverside and San Bernardino) representing over 68 percent of California's disadvantaged communities. (CalEnviroScreen 3.0, 2018).

2. Cost Effectiveness

Staff also determined the “dollars spent per pound of VOC reduced,” or cost effectiveness (CE) of the Proposed Amendments. The CE of the Proposed Amendments has been calculated to be \$8,588 per ton of VOC reduced.

3. Impacts on California Businesses

Because our profitability analysis found that the Proposed Amendments would not significantly alter the average profitability of affected businesses, we do not expect a noticeable change in employment; business creation; elimination or expansion; and business competitiveness in California. We believe that affected businesses will pass on at least a portion of the compliance cost to consumers to maintain profitability. However, the proposed measures may impose economic hardship on some businesses with very little or no margin of profitability.

4. Cost to Consumers

As a result of this proposal, some products may cost more while others may cost less, depending upon the extent to which manufacturers pass along compliance costs. The Proposed Amendments’ potential product cost impact ranges from up to a \$0.23 cost per unit increase for “Dry Shampoo – Tier 1,” to up to a \$0.02 cost per unit savings for aerosol “Crawling Bug Insecticide” and “Manual Aerosol Air Freshener – Tier 1.” Overall, the sales-weighted average additional consumer cost for the seven categories proposed for more stringent VOC standards would be up to one cent per unit. Additional information regarding potential product cost changes for each of these individual categories can be found in Chapter IX.

The Proposed Amendments could also adversely affect consumers if they result in reduced performance of the products; however, this is unlikely to occur because there are already products on the market that meet proposed standards, businesses are unlikely to introduce new products that might harm brand loyalty, and the Board has provided flexibility in the existing regulation for businesses whose situation warrants an extension to their compliance dates.

5. Fiscal Impacts

Staff has determined that the Proposed Amendments will not create costs or savings, as defined in Government Code section 11346.5(a)(6), to any State agency or in federal funding to the State, costs or mandate to any local agency or school district whether or not reimbursable by the State pursuant to Part 7 (commencing with section 17500), Division 4, title 2 of the Government Code, or other non-discretionary savings to local agencies.

H. Recommendation

Staff recommends that the Board adopt these Proposed Amendments to the Antiperspirants and Deodorants Regulation, the Consumer Products Regulation, the Aerosol Coating Products Regulation, the Alternative Control Plan Regulation for Consumer Products and Aerosol Coating Products, Tables of Maximum

Incremental Reactivity Values, and Test Method 310.

I. Introduction and Background

In this rulemaking, California Air Resources Board (CARB or Board) staff is proposing amendments to the Antiperspirants and Deodorants, Consumer Products, Alternative Control Plan for Consumer Products, Aerosol Coatings Regulations, Tables of Maximum Incremental Reactivity Values, and Test Method 310.

Consumer products contain VOC that are released into the air when the products are used. VOCs are precursors to the formation of ground-level ozone and secondary particulate matter, which negatively affect public health and air quality. The Proposed Amendments are designed to reduce the emission of VOCs from the use of consumer products, and thus improve air quality and public health in California. As a byproduct, the Proposed Amendments would also reduce TACs, further improving air quality and public health in the State.

To achieve these goals, the Proposed Amendments lower VOC standards for existing categories of consumer products, and add VOC standards for some new categories of products, and clarify a number of definitions. The Proposed Amendments also add three additional compounds to the Tables of Maximum Incremental Reactivity Values to allow their use in categories subject to reactivity standards, and update Test Method 310.

A. Legal Background

To date, the Board has taken numerous actions to fulfill its legislative mandates pertaining to the regulation of consumer products. The rest of this section provides an overview of CARB's authority to regulate consumer products, a synopsis of the relevant regulations CARB has adopted to date, and a summary of the CARB consumer products program.

1. State Authorizing Legislation

As part of the State's effort to reduce air pollution, in 1988, the Legislature added Health and Safety Code section 41712, which requires CARB to adopt regulations to achieve the maximum feasible reduction in volatile organic compound emissions from consumer products by the earliest practicable date. Consumer products are defined as chemically formulated products used by household and institutional consumers (Health & Saf. Code, § 41712, subd. (a)(1).) Examples include antiperspirants and deodorants, detergents, cleaning products, floor finishes, personal care products, lawn and garden products, adhesives, air fresheners, disinfectants, automotive maintenance products, paint thinners, insecticides, and aerosol coatings.

Prior to adopting regulations under section 41712, the Board must determine that adequate data exist to establish that the regulations are necessary to attain State and federal ambient air quality standards, and commercial and technological

feasibility of the regulations must also be demonstrated. The regulations adopted must not eliminate any product form, and recommendations from health professionals must be considered when developing VOC control measures for health benefit products.

CARB is also authorized to address TACs and GHG emissions from consumer products (HSC sections 38500 et seq. and HSC sections 39650 et seq., respectively), as needed to meet California's air quality mandates, including the protection of public health.

2. Existing Consumer Products Regulations

CARB currently has three regulations that set VOC standards or Product Weighted Maximum Incremental Reactivity (PWMIR) limits for nearly 150 consumer product categories, and a voluntary regulation—the Alternative Control Plan—that provides compliance flexibility to companies. These regulations resulted in the reduction of VOC emissions by about 50 percent compared to 1990 levels. By 2030, existing prohibitions on the use of ingredients with higher global warming potential values will provide reductions of approximately 0.24 million metric tons of carbon dioxide equivalents (MMT CO₂e) per year in California, or approximately 2 MMT CO₂e if compliant products are sold nationally. These adopted regulations have also reduced public exposure to TACs by prohibiting the use of certain chlorinated compounds in 83 categories and have reduced total TAC by over 13 tons per day.

The four consumer product regulations are codified in California Code of Regulations, title 17, sections 94500 to 94555 as follows:

- Antiperspirants and Deodorants (sections 94500-94506.5);
- Consumer Products (sections 94507-94517);
- Aerosol Coating Products (sections 94520-94528); and
- Alternative Control Plan (sections 94540-94555).

Tables of MIR Values implement the Aerosol Coating Products Regulation and the Alternate Compliance Option for Multi-purpose Lubricant products. These values are codified in sections 94700 and 94701. (All future references to particular sections are to those in California Code of Regulations, title 17, unless otherwise noted.)

CARB Test Method 310 "Determination of Volatile Organic Compounds (VOC) in Consumer Products and Reactive Organic Compounds (ROC) in Aerosol Coating Products" sets forth a process to determine compliance with various regulatory provisions and is incorporated by reference in sections 94506, 94515, and 94526.

B. Regulatory History

California has adopted many necessary VOC standards for over 100 different consumer product categories to date, and 13 states, the District of Columbia, and the U.S. EPA subsequently adopted some of CARB's VOC standards for certain

categories. This section reviews the history of CARB's adoption of consumer products regulations.

1. Antiperspirants and Deodorants Regulation

CARB regulation of consumer products began in 1989, with the Board's adoption of the Antiperspirants and Deodorants Regulation. The Board established standards in this regulation based on the vapor pressure of VOCs. The Antiperspirants and Deodorants Regulation has been amended several times; the most recent amendments became effective on January 1, 2015. Antiperspirants and deodorants are regulated using mass-based standards.

2. Consumer Products Regulation

The general Consumer Products Regulation was adopted in 1990, and has been amended numerous times since then, most recently in 2018. To date, VOC standards are in place for 145 product categories under this regulation. The Consumer Products Regulation primarily regulated consumer products using mass-based VOC content standards. However, in 2018, CARB added an alternate compliance option for Multi-purpose Lubricant products that allows compliance to be determined based on a reactivity standard.

The Consumer Products Regulation also includes a flexibility provision whereby CARB may exempt "innovative products" from the VOC standards in section 94509(a) if the manufacturer demonstrates by clear and convincing evidence that, due to some characteristics of the product formulation, design, delivery systems, or other factors, the use of the product will result in fewer VOC emissions compared to representative complying products.

The Consumer Products Regulation also includes provisions for exempt VOCs, low vapor pressure VOCs (LVP-VOCs), and fragrance, which exclude certain ingredients from being counted toward a product's total VOC content. These provisions are summarized below.

a. Exempt VOCs

Exempt VOCs have been determined to have negligible photochemical reactivity. Therefore, exempt compounds are specifically excluded from the definition of VOC in section 94508(a), and are not included in the VOC calculation when assessing compliance of a product with its VOC standard. Note, for emission inventory purposes, exempt VOCs are considered total organic gas (TOG), but not ROG.

b. LVP-VOCs

The VOC limits in the Consumer Products Regulation do not apply to LVP-VOCs. LVP-VOCs volatilize more slowly than VOCs at typical ambient conditions, and are therefore less likely to participate in photochemical reactions to form ozone. The extent to which a LVP-VOC will contribute to ozone formation is dependent on a number of factors, including the likelihood that the LVP-VOC will go down the

drain or combust, rather than evaporate, which depends on the type of product in which the LVP-VOC is used. Notwithstanding the above, being constituents of both ROG and TOG, LVP-VOCs are included in the consumer products ROG and TOG emission inventories.

c. Fragrance

For most product categories, fragrances up to a combined level of two percent by weight contained in any consumer product are currently not included in the calculation of the VOC content of a product. This exemption is referred to as the Two Percent Fragrance Exemption. Additionally, the existing Consumer Products Regulation provides an exemption for air fresheners that are comprised entirely of fragrance and non-VOCs, and for fragrances that are used in "Personal Fragrance Product."

d. Greenhouse Gases

Since 2010, CARB has prohibited the use of compounds, primarily hydrofluorocarbons (HFC), with GWP values greater than 150 in consumer products. Currently, CARB prohibits the use of constituents with GWP values greater than 150 in 19 product categories. Based on 2015 Consumer Products Survey data, HFC-152a, with a GWP of 124, is the primary HFC compound currently being utilized in consumer products. However, 1,1,1,2-Tetrafluoroethane (HFC-134a) propellant (with a GWP of 1,430) is still used in some product categories due to infeasibility of lower GWP alternatives.

e. Toxics

CARB identifies and monitors the use of TACs in consumer products, is committed to reducing public exposure to toxic compounds used in consumer products, and is required to identify and control TACs under Health and Safety Code sections 39650 et seq. HSC section 39655 defines a TAC as "...an air pollutant which may pose a hazard to human health." Moreover, in accordance with section 39666, for TACs for which no safe exposure threshold has been established, CARB is required to "...reduce emissions to the lowest level achievable through application of best available control technology or a more effective control method." Thus, CARB evaluates and addresses potential impacts to health from TACs in its regulatory proposals.

Several chemicals used in consumer products are known to have serious public health impacts, or otherwise adversely impact the environment. To that end, CARB has prohibited the use of the three chlorinated solvent TACs: perchloroethylene, methylene chloride, and trichloroethylene in numerous product categories, because these compounds are potential carcinogens with no safe exposure threshold. CARB first prohibited these chlorinated solvent TACs in CARB's 2000 Airborne Toxics Control Measure (ATCM) for Emissions of Chlorinated Toxic Air Contaminants from Automotive Maintenance and Repair Activities, which prohibited use of these chlorinated solvents from "Brake Cleaners," "Carburetor or Fuel Injection Air Intake Cleaners," "Engine Degreasers," and "General Purpose

Degreasers," all of which are intended for use in automotive maintenance or repair activities. CARB also prohibited the use of the potential human carcinogen para-dichlorobenzene, which had been used in air fresheners and in toilet/urinal deodorant blocks.

3. Aerosol Coating Products Regulation

CARB adopted the Aerosol Coating Products Regulation in 1995, and amended it several times since then. In 1995, CARB adopted mass-based VOC standards for six "General Coating" categories and 29 "Specialty Coating" categories, the commercial and technological feasibility of which CARB addressed in 1998 Amendments. In 2000, the regulation was amended to establish reactivity limits based on the MIR scale. The reactivity limits for the general categories became effective June 1, 2002, and the limits for the specialty categories became effective January 1, 2003. Minor amendments in 2004 and 2006 clarified exemptions and test methods, respectively, in the regulation. The Aerosol Coating Products Regulation was last amended in 2013; these amendments set new or lower reactivity limits for 16 aerosol coating product categories.

4. Tables of MIR Values

CARB first adopted Tables of MIR Values in 2000, along with amendments to the Aerosol Coating Products Regulation. The Tables of MIR Values are used to determine the reactivity content of aerosol coatings, and for the alternate compliance option for Multi-purpose Lubricant products. Amendments to these tables were adopted in 2004 and 2010 to reflect updated science.

5. Alternative Control Plan Regulation

An Alternative Control Plan offers product manufacturers an alternative to comply with the VOC standards in the Table of Standards in section 94509(a) of the Consumer Products Regulation. Section 94542(a)(6) of the ACP Regulation defines an ACP as "any emissions averaging program approved by the Executive Officer pursuant to the provisions of this article". Additionally, section 94542(a)(1) defines ACP emissions as, "the sum of VOC emissions from every ACP product subject to an Executive Order approving an ACP, during the compliance period specified in the Executive Order."

Under existing regulations, the manufacturer of two noncomplying products would have to reformulate both products to comply with each individual VOC standard. However, under the ACP Regulation, the manufacturer can retain the current formulation of the first product and reformulate the second product below its VOC standard. An ACP allows manufacturers to average the emissions from ACP products above and below the applicable VOC standards, as long as the overall emissions of its ACP products are less than or equal to the emissions that would have occurred had all the ACP products complied with the VOC standards. To take advantage of the ACP Regulation, manufacturers must submit an application to CARB that includes the VOC content of the products the manufacturer proposes to include in its plan, a method of verifying the sales of each product in the plan, and other information necessary to track overall emissions.

6. CARB Test Method 310

CARB adopted “CARB Test Method 310: Determination of Volatile Organic Compounds in Consumer Products and Reactive Organic Compounds in Aerosol Coating Products” (Method 310) in 1997. Method 310 sets forth the analytical procedures and applicable test methods to analyze consumer products for compliance with the Antiperspirants and Deodorants, Consumer Products, and Aerosol Coating Products Regulations. Method 310 has been amended several times since 1997.

C. Program Intersects

The consumer products program intersects with other CARB programs, as well as with State and federal regulatory programs. The following programs intersect with CARB’s consumer products program:

- Other CARB Programs – GHG programs to implement the CARB HFC regulation and California Cooling Act (Senate Bill 1013) that prohibit use of high global warming potential propellants in most consumer product categories (FINAL Regulation Order-CaSNAP, 2019; Senate Bill 1013, 2018) and Air Toxic Control Measures, such as the ATCM for Emissions of Chlorinated Toxic Air Contaminants from Automotive Maintenance and Repair Activities; (CARB, 2000b)
- Local California Air Pollution Control Districts (APCD) and Air Quality Management Districts (AQMD) (districts) – District rules and facility use permits limit how consumer products can be used at permitted facilities.
- California Department of Toxic Substances Control (DTSC) – DTSC’s Safer Consumer Products Program promotes the use of safer chemicals in consumer products.
- California Department of Pesticide Regulation (DPR) – Insecticide products that are sold in California must be registered with the California Department of Pesticide Regulation and, in accordance with the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), with the United States Environmental Protection Agency;
- California Office of Environmental Health Hazard Assessment (OEHHA) – As California’s health risk agency, OEHHA determines risk exposure values for ingredients used in consumer products;
- California State Water Resources Control Board (SWRCB) – CARB works with the SWRCB to identify ingredients used in consumer products that might have an adverse aquatic impact;
- United States Food and Drug Administration (FDA) – The FDA has overlapping jurisdiction over the safety and efficacy of a number of consumer products, such as fragrance materials and cosmetics;
- United States Environmental Protection Agency – U.S. EPA has implemented a national consumer products regulation since 1998. However, the national consumer products regulation is less effective than the California Consumer Products Regulation, as its standards are less stringent and apply to fewer categories than the CARB regulation; and

- Other State and National Jurisdictions – CARB provides guidance to other states and jurisdictions that adopt or emulate CARB consumer product regulations. To date, 17 other states and the District of Columbia, representing over 40 percent of the national population, have adopted CARB consumer product regulations to achieve VOC reductions beyond those achieved by federal standards. In 2019, Canada proposed adoption of a consumer product regulation based on CARB’s 2013 Consumer Product Regulation (Canada Gazette, 2019).

D. Summary of Proposed Amendments

1. Regulatory Development Process

The Proposed Amendments are the culmination of a seven-year public process by CARB to identify the most promising, technically-sound strategies to effectively help California meet its air quality challenges. These include three phases of regulatory development: 1) development and conducting of the three-year survey; evaluation and publication of 2013 through 2015 Consumer and Commercial Products Survey data; 2) evaluation of potential regulatory strategies based upon the survey data; and 3) development and refinement of Proposed Amendments. These are three elements of the public rule development process are described below.

a. 2015 Consumer Products Survey Data

In Spring of 2014, CARB began the most comprehensive survey conducted to date, collecting detailed sales and ingredient information for over 400 categories of consumer products sold in California in 2013, 2014, and 2015. In total, more than 1,500 product manufacturers and formulators participated in this effort, providing CARB with product sales and chemical formulation for over one million products sold in California over this three-year period. Between June 2018 and April 2019, CARB staff published and solicited stakeholder feedback regarding these draft survey data summaries. The resulting survey data summarizing the emissions, reactivity, and ozone-forming potential of consumer products sold in California provides the technical foundation for the Proposed Amendments. While CARB staff characterized the emissions, reactivity, and ozone-forming potential of consumer product categories for all three years, the 2015 survey data provides the technical foundation for the Proposed Amendments. More information regarding development of the 2015 Consumer Products Survey data can be found in Chapter V: Air Quality.

b. Evaluation of Potential Regulatory Strategies

Between the Spring and Fall of 2019, CARB held thirteen public work group meetings and workshops to evaluate the 47 consumer product categories responsible for the greatest VOC emissions and ozone-forming potential, as identified from the 2015 Consumer Products Survey.

c. Development and Refinement of Proposed Amendments

Between Summer 2019 and Winter 2020, CARB staff held fourteen additional public work group meetings and workshops to identify and refine proposed VOC reduction strategies for specific consumer product categories, and to develop other proposed regulatory updates to improve program effectiveness and clarity.

More information regarding this regulatory development process, which included five public workshops and 22 public work group meetings, can be found in Chapter XI.

2. Proposed Amendment of VOC Standards

The primary purpose of the Proposed Amendments is to achieve additional VOC reductions that offset emission growth in the sector and help attain federal ozone standards, particularly in the South Coast. The Proposed Amendments include the following:

Manual Aerosol Air Freshener: To achieve VOC reductions from manually-operated aerosol air fresheners, staff proposes to replace the regulated categories of "Single-Phase Aerosol Air Freshener" and "Double-Phase Aerosol Air Freshener" with "Manual Aerosol Air Freshener" and "Automatic Aerosol Air Freshener" categories. The "Automatic Aerosol Air Freshener" category, for which lower VOC standards were determined to be infeasible, would retain the existing 30 percent by weight VOC standard, while the larger "Manual Aerosol Air Freshener" category would be subject to 10 percent and then five percent by weight VOC standards on January 1, 2023, and January 1, 2027, respectively.³

Hair Care Products: Staff proposes to adopt or reduce VOC standards for the following existing hair care categories, as follows:

- "Hair Finishing Spray": Reduce the applicable VOC standard from 55 percent to 50 percent by weight on January 1, 2023.
- "Dry Shampoo": Adopt 55 percent and 50 percent by weight VOC standards applicable on January 1, 2023 and January 1, 2029, respectively.
- "Hair Shine" and "Temporary Hair Color": Reduce the applicable VOC standards for both categories from 55 percent to 50 percent by January 1, 2029.

While proposed lower VOC standards for "Hair Shine" and "Temporary Hair Color" categories would not alone achieve significant emission reductions, they do achieve reductions as part of the overall package. This is because these categories' VOC standards are necessary to ensure anticipated VOC reductions from hair care products. If VOC standards for the "Hair Shine" and "Temporary Hair Color" categories were to remain at 55 percent, "Hair Finishing Spray" and "Dry Shampoo" products could be relabeled as "Hair Shine" or "Temporary Hair Color"

³ "Manual Aerosol Air Freshener" subcategories of "Total Release Aerosol Air Freshener" and "Concentrated Aerosol Air Freshener", which are responsible for very low category sales, would be subject to less stringent standards.

products rather than reformulate to the 50 percent VOC standard, in which case the anticipated VOC reductions from "Hair Finishing Spray" and "Dry Shampoo" would not be achieved.

Personal Fragrance Product: The Proposed Amendments would reduce the applicable VOC standard for aerosol PFP and PFP with less than or equal to seven percent fragrance from 75 to 70 percent by weight on January 1, 2023. The applicable threshold for product fragrance content would increase to 10 percent, with a VOC standard of 50 percent by weight by 2031. Staff plan to conduct a technology assessment of the continued feasibility of the proposed 50 percent by weight VOC standard and would identify and adopt alternate strategies from this and/or other categories for achieving equivalent VOC reductions by 2031 if necessary. Finally, the VOC standard for the less than one percent of products with a VOC content above 20 percent would increase from 65 to 75 percent to streamline and simplify program implementation by maintaining a single fragrance threshold for the overall PFP category.

Crawling Bug Insecticide (Aerosol form): Staff proposes to lower the applicable VOC standard from 15 percent to eight percent by weight as of January 1, 2030. Due to potential technical feasibility challenges, "Bed Bug Insecticide" would be excluded from this category and retain a 15 percent by weight VOC standard for aerosol product form.

Sunset of the Two Percent Fragrance Exemption: Staff proposes to sunset the longstanding Two Percent Fragrance Exemption. This proposal would promote transparency and equity, clarity, and help address growing public health concerns associated with exposure to fragrance ingredients. Staff's proposal to allow an exemption for 0.25 percent by weight of monoterpene ingredients for nonaerosol General Purpose Cleaners and nonaerosol General Purpose Degreasers would also create additional flexibility for these categories with very low VOC standards.

All of the proposed VOC reduction strategies and associated VOC reductions are summarized in Table I-1.

Table I-1: Proposed VOC Emission Reduction Measures

Category	Existing VOC Standard	Proposed Tier 1 Standard	2023 VOC Reductions		Proposed Tier 2 Standard ¹	2031 VOC Reductions	
			Statewide	South Coast		Statewide	South Coast
Manual Aerosol Air Freshener ²	20%/30%	10%	1.07	0.45	5%	1.73	0.72
Hair Care Products: - Finishing Spray - Dry Shampoo - Hair Shine - Temporary Color	55% 81% ³ 55% 55%	50% 55% NA NA	0.94 0.58	0.39 0.24	50%	1.11 0.78 >0.01 0.02	0.45 0.32 >0.01 0.01
Personal Fragrance Product ⁴	75%	70%	0.41	0.17	50%	5.05	2.07
Aerosol Crawling Bug Insecticide	15%	15%	NA	NA	8%	0.81	0.34
Two Percent Fragrance Exemption	NA				Sunset	0.30	0.12
Total			3.00	1.25	Total	9.80	4.03

1 – Proposed Tier 2 standards apply between 2027 and 2031, depending upon the category.

2 – "Manual Aerosol Air Freshener" subcategories of "Concentrated Aerosol Air Freshener" and "Total Release Aerosol Air Freshener" subject to alternate standards described in Chapter III.

3 – Refers to "Dry Shampoo" sales-weighted VOC content, based upon 2015 Consumer Products Survey data. "Dry Shampoo" is not currently subject to a VOC content standard.

4 – Applicable proposed Tier 1 standard fragrance threshold is less than or equal to seven percent fragrance; applicable proposed Tier 2 standard fragrance threshold is less than or equal to 10 percent.

Staff also proposes to prohibit use of perchloroethylene, trichloroethylene, methylene chloride, and PCBTF in the seven categories identified in Table I-1, to ensure compliance with proposed VOC standards is achieved in a manner that protects public health. CARB has identified perchloroethylene, trichloroethylene, and methylene chloride as toxic air contaminants under California's Toxic Air Contaminant Identification and Control Program (Health and Safety Code section 39650 et. seq.), and all four substances are identified on California's Proposition 65 list as chemicals "known to the state to cause cancer." As a by-product, this prohibition will have the added benefit of reducing the potential use and public health impacts of TACs in these categories.

3. Proposed Amendments to Improve Program Effectiveness

This section describes proposed provisions that reflect lessons learned since the last significant regulatory amendments in 2013, and encourage product innovation.

4. Definition of "Energized Electrical Cleaner"

"Energized Electrical Cleaner" is intended to be used solely for the safe cleaning or degreasing of electrical equipment where a residual current exists. Significant

quantities of “Energized Electrical Equipment” continue to be sold to automotive maintenance and repair facilities, despite CARB’s prohibition of the use of “Energized Electrical Cleaner” on motor vehicles, and despite the fact that they are not needed for automotive maintenance or repair. “Energized Electrical Cleaner” is comprised of 90 percent TACs, specifically perchloroethylene and trichloroethylene, so their use outside of required contexts unnecessarily exposes users to TACs that adversely affect their health. “Energized Electrical Cleaner” also typically has higher VOC content than typical automotive product cleaners and degreasers. Use of “Energized Electrical Cleaner” instead of these traditional products therefore may result in excess VOC emissions. Staff is therefore proposing to update the definition of “Energized Electrical Cleaner” to exclude products sold to automotive maintenance and repair facilities, to reduce VOC emissions, and curtail off-label use of this product and associated TAC exposure.

5. Alternative Control Plan and Innovative Product Exemption Eligibility Criteria

The Proposed Amendments would update Alternative Control Plan eligibility criteria to prohibit emission reduction credits from being generated by products less than a specified minimum threshold below the applicable VOC standard, and would update Innovative Product Exemption (IPE) eligibility criteria to exclude products that demonstrate a reduction in VOC based upon product combustion. Both of these proposals are intended to ensure ACP and IPE provisions continue to generate real air quality and public health benefits, while continuing to encourage innovation and provide regulatory compliance flexibility.

6. IPE Eligibility Criteria for Products with Compressed Gas Propellant

The potential air quality, climate, and health or environmental benefits of compressed gas propellant relative to HFC-152a or other chemically formulated propellants make it an excellent propellant choice from an air quality and public health perspective. However, existing methods for determining product compliance with the applicable VOC standards (based upon ingredient weight) may make manufacturers less likely to utilize compressed gas propellants due to their very low weight relative to other exempt propellants, such as HFC-152a, which is a GHG. Therefore, the Proposed Amendments also include amendments to IPE eligibility criteria to encourage product manufacturers to develop and market innovative products that utilize compressed air, carbon dioxide, or nitrogen propellants.

7. Tables of Maximum Incremental Reactivity Values

Staff is proposing to add the following additional reactive organic compounds to the Tables of Maximum Incremental Reactivity Values, MIR Values for Compounds (title 17, CCR, section 94700), so that they can be used in aerosol coating products, as specified in section 94522; and in “Multi-purpose Lubricant” products qualified for an alternate compliance option, as specified in section 94509:

- 1-Chloro-3,3,3-Trifluoropropene (HFO-1233zd)
- Alkane Mixed - Minimally 90% C13 and higher carbon number
- Diethyl Carbonate

Addition of MIR values for these three low-reactive substances would provide manufacturers additional flexibility to use these low-reactive substances, and could encourage development of less reactive aerosol coatings and multi-purpose lubricants, reducing ozone formation.

8. Plastic Pipe Adhesive

CARB staff is proposing to create a new special purpose aerosol adhesive category and VOC standard for plastic pipe labeled exclusively to bond segments of acrylonitrile butadiene styrene (ABS), polyvinyl chloride (PVC), or chlorinated polyvinyl chloride (CPVC) together. The current proposal would set a standard of 60 percent by weight VOC and exclude them from the “Mist Spray Adhesive” category.

9. Exclusion of Denatured Alcohol Products Used to Maintain Electrical Equipment Owned by Public Utilities from the “Multi-purpose Solvent” Definition

CARB staff is proposing to create a narrow exclusion from the definition of “Multi-purpose Solvent” for denatured alcohol products used to maintain electrical equipment owned by public utilities, as defined by §216 of the Public Utilities Code (PUC). Some public utilities have requested this narrow exemption for denatured alcohol products that are specified by utility equipment manufacturers as the sole method of maintaining specialized electrical equipment. The exclusion would exempt these products from the VOC standards for the “Multi-purpose Solvent” category.

10. Method 310 Updates

CARB staff is proposing amendments to Method 310 to make updates for clarity and consistency, to remove and add several reference test methods, and to revise equations to better reflect how CARB staff calculates VOC and reactive organic compounds.

II. Problem that the Proposal is Intended to Address

The majority of California residents continue to be exposed to air pollutant concentrations that exceed federal health-based national ambient air quality standards (NAAQS) for ozone. ROG emissions from consumer products are known to contribute to the formation of ground-level ozone. Furthermore, ROG emissions from consumer products have overtaken those from light-duty passenger vehicles in the South Coast and Statewide, and are projected to grow in the years ahead as California's population and associated consumer product usage increase. Thus, additional consumer product emission reductions are needed to reduce ambient ozone levels in the South Coast and in other areas of the State, to help attain the federal NAAQS and State air quality standards.

A. State and Federal Ozone Standards

Ozone pollution harms people's health, damages agricultural crops, forests, ornamental and native plants, and creates the haze that reduces visibility. National and State ambient air quality standards have been established for ozone to protect California's population from the harmful effects of ozone. An ambient air quality standard sets limits on the level of an air pollutant in the outdoor (ambient) air that each air basin within a State is legally obligated to meet under federal law. The level of each air pollutant, averaged over a specific period of time, is set based on science showing what ambient level protects the health of our communities, including the health of the most sensitive groups.

Both CARB and U.S. EPA are authorized to set ambient air quality standards for California. To protect public health, California and U.S. EPA have set ambient air quality standards for ozone and other criteria pollutants. Table II-1 below shows the current State and national ambient air quality standards for ozone. The VOC reductions achieved by the Proposed Amendments are needed to expedite attainment of both California and national health-based ambient ozone standards.

Table II-1: Ambient Air Quality Standards for Ozone

Averaging Time	State Standard	National Standard
1 hour	0.09 ppm	0.12 ppm
8 hours	0.070 ppm	0.070 ppm
		0.075 ppm
		0.08 ppm

1. Attainment of State Ozone Standard

The California Clean Air Act (CCAA) of 1988 has as its fundamental goal the attainment of State ambient air quality standards for ozone in all areas of California by the earliest practicable date. As required by the CCAA, CARB has designated areas of California to be in "attainment" or "nonattainment" for the State ozone standards.

Figure II-1, below, shows the counties designated as being in nonattainment (or nonattainment transitional, which is a subcategory of nonattainment) for the State ozone standard. As shown, unhealthy levels of ozone are not limited to urban areas, but can be found in nearly every county in California. This figure clearly indicates the extent of the ozone problem in California.

Figure II-1: Area Designations for State Ambient Air Quality Standard for Ozone



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Air Quality Planning and Science Division, CARB

2. Attainment of Federal Ozone Standards

Much of California is also designated as being in nonattainment by U.S. EPA for the national ozone standards. Figure II-2 below shows these nonattainment areas and their classifications.

Figure II-2: Area Designations/Classifications for the 0.070 part per million National 8-hour Ozone Standard



Areas with ozone concentrations marginally above the ozone standard are given the classification "marginal." Those areas with higher than marginal ozone concentrations are classified as "moderate," "serious," or "severe," and the classification of "extreme" is given to those areas furthest from attainment. Attainment dates are set based on the severity of the ozone challenge faced by an area, with later attainment deadlines for areas with higher ozone concentrations.

The federal Clean Air Act requires U.S. EPA to adopt air quality standards, and requires states to adopt a State Implementation Plan (SIP) and submit it to U.S. EPA for approval. SIPs must demonstrate how a nonattainment area will meet the standards set by U.S. EPA for each air pollutant by the required attainment deadline, also set by U.S. EPA. SIPs must identify both the magnitude of reductions needed and the actions necessary to achieve those reductions. SIPs must contain enforceable commitments to achieve the level of emission reductions necessary to meet federal air quality standards, as defined by the attainment demonstration.⁴

The responsibility for developing and implementing a SIP is shared between CARB and local air districts in the State, and CARB plays multiple roles in the SIP development and approval process. Under State law, CARB is responsible for controlling emissions from consumer products, among other things. Local air districts do not regulate consumer products. Because they are ozone precursors, reducing VOC emissions is necessary to attain the national ambient air quality standards for ozone. In 1994, emission reductions from CARB's consumer products program became part of the California SIP to meet the federal standard for ozone.

The 2016 State SIP Strategy continues California's approach to attaining the federal ozone standard of 0.075 ppm averaged over eight hours (CARB, 2017a). In the 2016 State SIP Strategy, CARB staff committed to bringing the Board regulatory proposals in the 2020-2021 timeframe which would reduce consumer product VOC emissions by 1-2 tons per day in the South Coast Air Basin (South Coast) by 2023, and by 4-5 tons per day in the South Coast by 2031. The amendments proposed in this rulemaking are intended to, and will, fulfill this SIP commitment for VOC reductions from consumer products in the populous South Coast. These VOC emission reductions will also aid attainment in other California nonattainment regions.

3. Attainment of Ozone Standards in the South Coast Air Basin

California has made significant progress in improving air quality through existing State and local air district control programs. However, the South Coast Air Basin continues to face the biggest challenge in attaining ozone standards in the nation. Figure II-3 and Figure II-4, below, illustrate the progress that has occurred since 1990 in the South Coast. In 1990, the entire South Coast region violated the current 8-hour ozone standard of 70 ppb. As of 2019, ozone concentrations in the South Coast have declined 42 percent, and 32 percent of the population there now lives in communities that meet the standard. Nonetheless, South Coast still has the highest ozone levels in the nation.

⁴ Code of Federal Regulations (CFR) title 40, Chapter I, Part 52, Subpart F, section 52.220 sets forth all of the items which are included in the approved California SIP.

Figure II-3: South Coast Ozone Levels, 1990

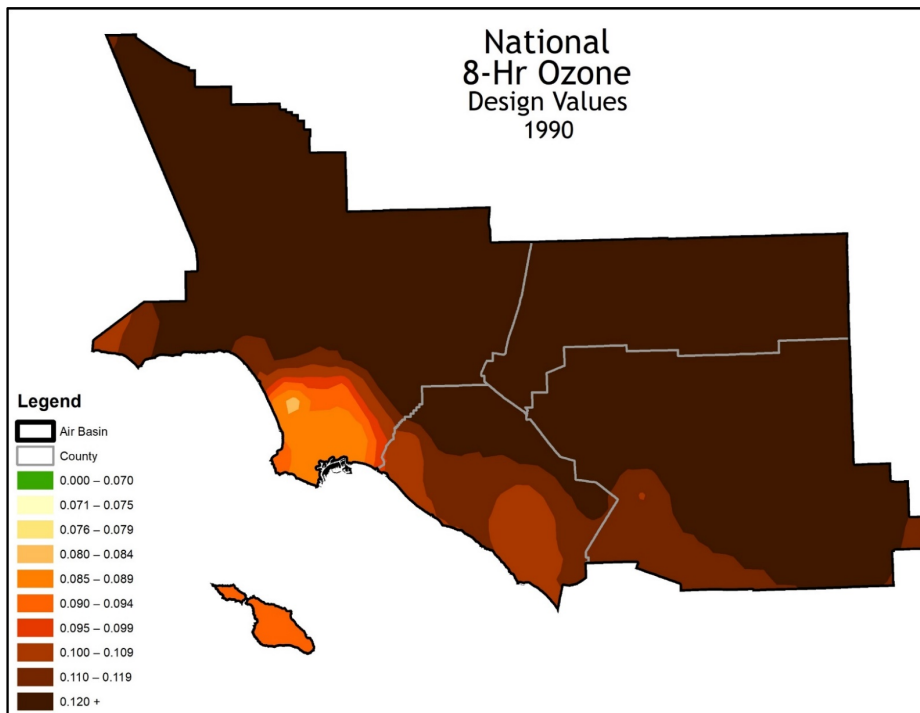
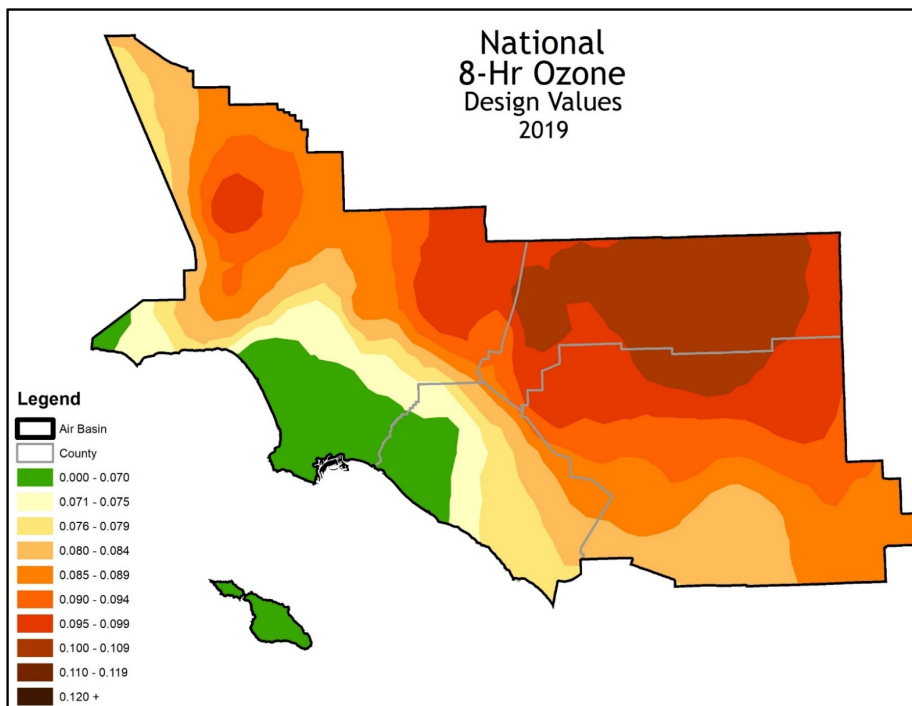


Figure II-4: South Coast Ozone Levels, 2019



The current ozone levels experienced in the South Coast Air Basin, represented by “design values,” are still well above the national ambient air quality standards, and the South Coast is classified as an “extreme” nonattainment area for ozone.

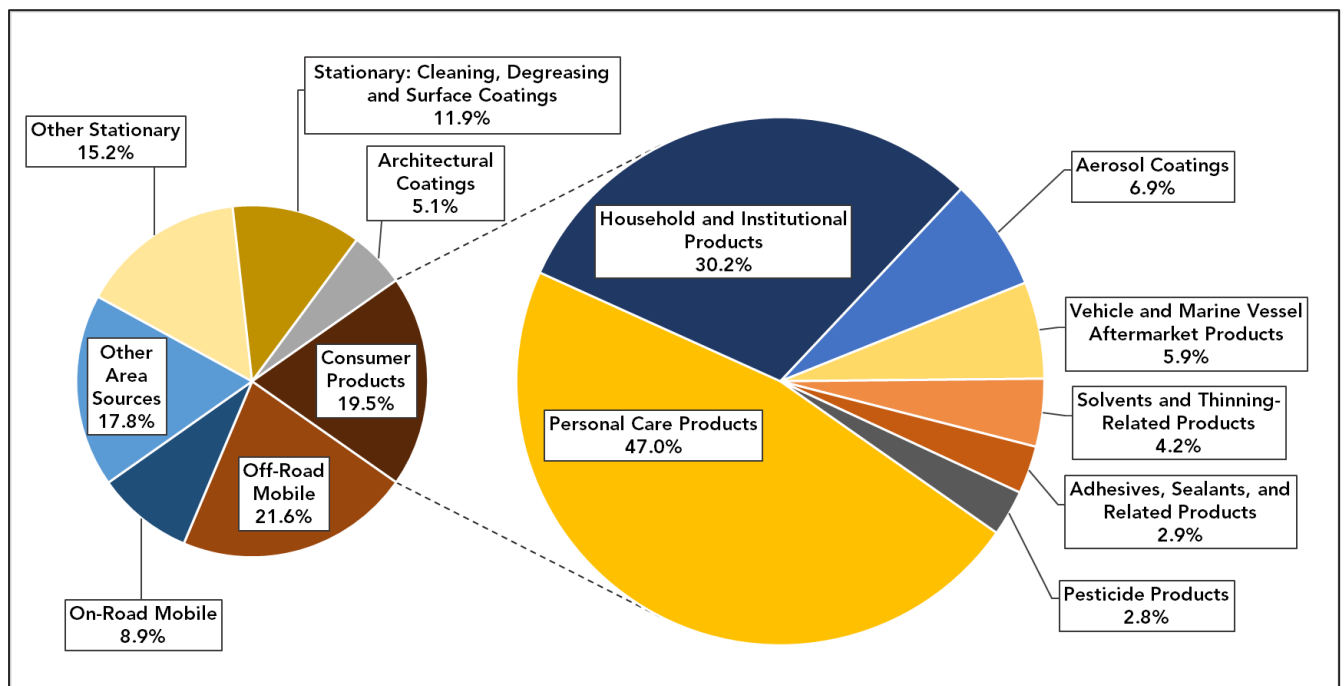
Significant further reductions of ozone precursor emissions are needed in the South Coast. An ozone precursor control strategy that targeted oxides of nitrogen (NOx)

reductions alone could enable South Coast to attain the 0.08 ppm and 0.075 ppm ozone standards by 2023 and 2031, respectively, while a control strategy relying on VOC (or ROG) alone could not. Therefore, South Coast ozone attainment plans rely heavily on NOx reductions. In keeping with federal requirements that attainment plans provide for expeditious attainment of air quality standard for ozone, these ozone attainment plans also aim for VOC reductions because concurrent VOC reductions can yield lower ozone sooner. Reductions in VOC could be achieved from sources that emit both NOx and VOC, such as motor vehicles, as well as from sources emitting VOC only, such as consumer products. The South Coast attainment plans would achieve VOC reductions from both emission source types. Consumer product emission reductions will similarly yield improvements in ozone levels in many areas of California.

B. Increasing Consumer Product Emissions

The Consumer Products Emission Inventory further underscores the prominence of ROG emissions from consumer products when compared to other ROG emission sources. As shown in Figure II-5, ROG emissions from consumer products are projected to account for about 20 percent of the total Statewide ROG emissions by 2030

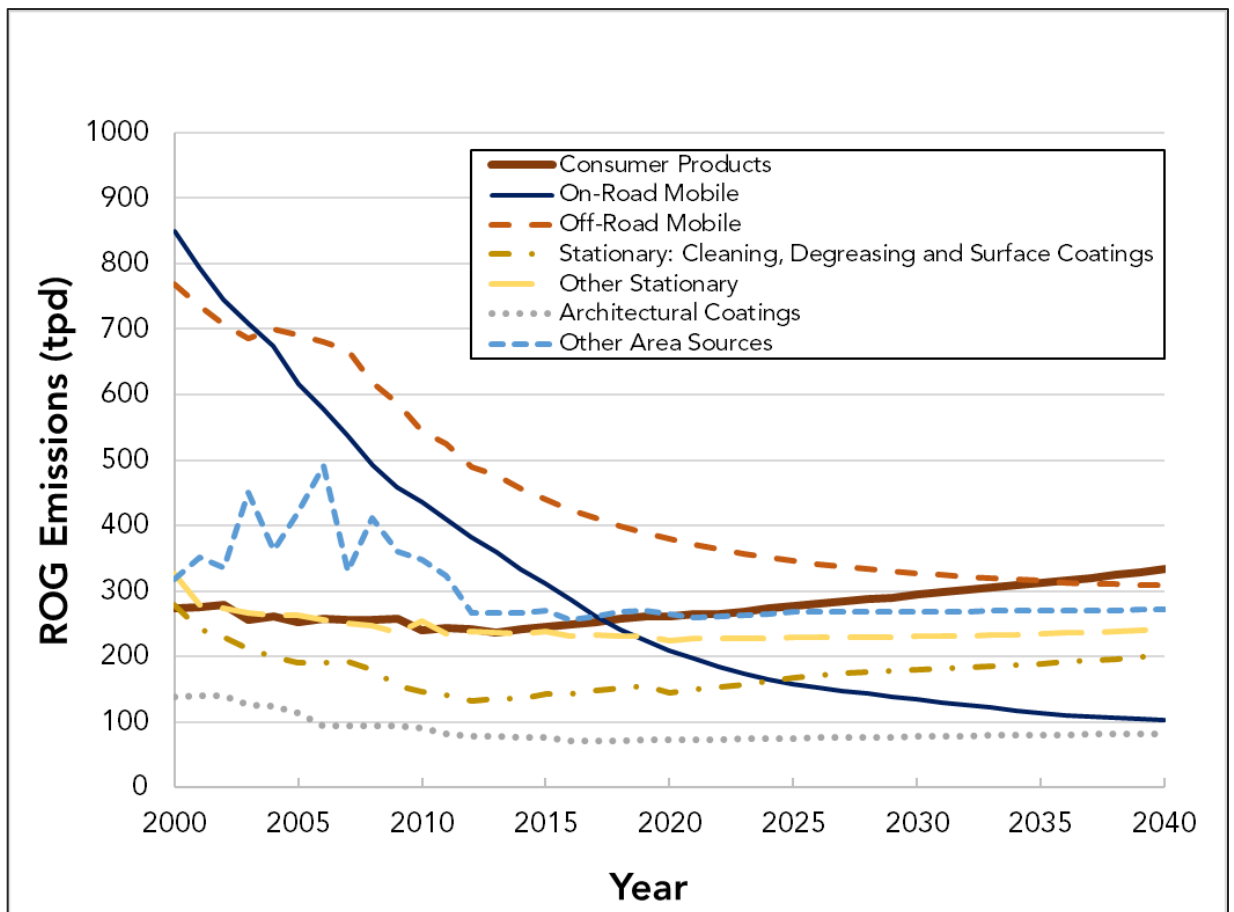
Figure II-5: Top ROG Emission Sources Statewide in 2030



Source: CEPAM 2019 SIP v1.02 (Summer Planning Inventory)

Figure II-6, below, shows the increasing prominence of consumer product ROG emissions relative to other emission sources. While consumer product emissions decreased in past decades due to adoption and implementation of CARB VOC standards, emission reductions from light-duty vehicles have outpaced those from consumer products. Consumer products' share of California ROG emissions are projected to increase from less than ten percent of statewide ROG in 2000, to 22 percent of statewide ROG by 2040.

Figure II-6: California ROG Emissions by Sector (2000 – 2040)



Source: CEPAM 2019SIP v1.02 (Summer Planning Inventory)(CEPAM, 2020)

C. Unintended Consequences of Fragrance Exemption

Consumer Products Regulation section 94510(c) specifies that, with the exception of "Pressurized Gas Duster," products in all consumer product categories are granted an exemption from their applicable VOC standard for up to two percent by weight of fragrance. This "Two Percent Fragrance Exemption" allows a product to exceed its applicable VOC standard by up to two percent (assuming the fragrance is 100 percent VOC) if that two percent of ingredients in excess of the standard meets the definition of a fragrance. For example, a product subject to a 50 percent by weight VOC standard could have VOC ingredients that total 50 percent of the

product contents by weight, plus up to an additional two percent of VOC if that VOC meets the definition of fragrance.

The Two Percent Fragrance Exemption enables consumer product manufacturers to ignore the properties of fragrance they purchase from third-party vendors; since CARB exempts up to two percent of fragrance from VOC standard compliance determinations, manufacturers need not investigate fragrance ingredients. Thus, eliminating this exemption could encourage greater transparency around fragrance ingredients as product manufacturers request VOC content information from fragrance vendors to ensure their products – including fragrance – are formulated to meet the applicable VOC standard. Increased disclosure and consideration of fragrance ingredients is consistent with the spirit of the California Fragrance and Flavor Right to Know Act (Senate Bill 574, 2019), which requires manufacturers of cosmetic products to report fragrance ingredients in their products that are deemed toxic according to any of a set of specified lists published by regulatory authorities, with some exceptions for trade secrets, and requires the California Department of Public Health (CDPH) to publish the reported data (Senate Bill 574, 2019).

This exemption also poses program implementation challenges. CARB staff and product manufacturers have had numerous discussions over the years regarding whether a particular ingredient meets the regulatory definition of “fragrance,” which depends on the purpose of an ingredient (i.e., to be a fragrance, an ingredient’s “sole purpose” must be to “impart an odor or scent, or to counteract a malodor”). Disagreement regarding the intent of a product ingredient can result in reduced clarity regarding whether that ingredient is eligible for the fragrance exemption, and can impact whether a product is compliant with the applicable VOC standard.

This longstanding exemption also poses challenges for CARB laboratory staff when determining product compliance with applicable consumer product VOC standards. The exemption requires CARB laboratory staff to identify and quantify hundreds of possible fragrance ingredients for the purpose of excluding them from a product’s allowable VOC content. The need to identify and quantify hundreds of at times exotic ingredients for the purposes of exclusion from applicable VOC standards therefore poses significant program implementation and enforcement challenges.

Chapter III provides additional discussion regarding policy considerations that have informed staff’s recommended elimination of this exemption for most consumer product categories.

D. Excess Public TAC Exposure

“Energized Electrical Cleaner” is comprised, on average, of 90 percent perchloroethylene and trichloroethylene. These two compounds, identified as TACs by CARB, enable “Energized Electrical Cleaner” to safely clean or degrease electrical equipment where residual electrical current exists. This product is not necessary for the safe maintenance or repair of automobiles, and is not intended for use in automotive maintenance and repair (AMR) facilities, because of the public

health impacts, and CARB requires product labels to indicate that the product is “not to be used for motorized vehicle maintenance, or their parts.” In addition, CARB’s Airborne Toxics Control Measure for Automotive Maintenance and Repair Activities (AMR ATCM) prohibits the use of perchloroethylene, methylene chloride, and trichloroethylene in products designed for use in AMR facilities, which include the product categories “Automotive Brake Cleaner,” “Carburetor & Choke Cleaner,” “Engine Degreaser,” and “General Purpose Degreaser (automotive use).” However, CARB data indicates that significant product sales to AMR facilities continue to occur, resulting in potential adverse public health impacts from exposure to TACs. In addition, the sale of “Energized Electrical Cleaner” for automotive maintenance and repair results in excess VOC emissions, as the category has higher VOC content than traditional automotive cleaners and degreasers. Thus, CARB needs to discourage sales of “Energized Electrical Cleaner” for automotive maintenance and repair to protect public health, consistent with the goals of the AMR ATCM, while achieving the maximum feasible VOC reductions.

The Proposed Amendments also include provisions to prohibit use of perchloroethylene, trichloroethylene, methylene chloride, and p-chloro- α,α -trifluorotoluene in the seven categories proposed for lower VOC standards. Perchloroethylene, trichloroethylene, and methylene chloride have been identified as toxic air contaminants under California’s Toxic Air Contaminant Identification and Control Program (Health and Safety Code section 39650 et. seq.), while all four substances are listed on California’s Proposition 65 list as chemicals “known to the state to cause cancer.” The proposed targeted prohibition of these four compounds in the proposed seven product categories is intended to avoid public health impacts, particularly to California’s children, elderly, and other vulnerable populations, of the proposals to lower VOC emissions from consumer products, while ensuring the feasibility of compliance with new or lower VOC standard proposals in this rulemaking.

E. Regulatory Disincentive for Use of Compressed Gas Propellant

Existing methods for determining product compliance with the applicable VOC standards (based upon ingredient weight) may make manufacturers less likely to utilize compressed air, carbon dioxide, or nitrogen propellants, due to their low density relative to other exempt propellants. This creates a disincentive to develop product formulations utilizing this “zero-emission” propellant, which also has no ozone-forming potential, no toxicity, and virtually no global warming potential.⁵ Hydrocarbon propellants, on the other hand, do contribute to ozone formation, and the other propellant with the lowest ozone forming potential, HFC-152a, is a greenhouse gas. The Proposed Amendments provide a regulatory compliance pathway within the Consumer Product Regulation that encourages manufacturers to develop and market products with compressed gas propellant so California can continue to reduce VOC and GHG emissions as California’s population and consumer product usage continues to grow. Replacement of HFC-152a with compressed gas propellants is consistent with California Executive Order B-55-18,

⁵ Carbon dioxide has a global warming potential of one, while air and nitrogen have global warming potential values of zero.

which calls for California to achieve carbon neutrality by 2045 (California Executive Order B-55-18, 2018).

III. Summary of Proposed Amendments

This chapter describes staff proposal for each of the seven categories proposed for new or lower VOC standards: "Manual Aerosol Air Freshener," four hair care product categories, "Personal Fragrance Product" and aerosol "Crawling Bug Insecticide," as well as sunsetting the Two Percent Fragrance Exemption. This chapter also includes discussion of staff proposals to improve program transparency, clarity, and effectiveness, including amending the definition of "Energized Electrical Cleaner," updates to ACP and IPE eligibility criteria, and other programmatic updates.

A. Manual Aerosol Air Freshener

1. Category Description

Air fresheners include a diversity of product types labeled to mask odors or freshen, clean, scent, or deodorize the air, including liquids, semisolids, solids, wicks, wipes, diffusers, powders, crystals, and aerosol or pump sprays. Aerosol air fresheners utilize a pressurized spray system that dispenses liquid product ingredients by means of a propellant, and are packaged in a disposable aerosol container. The product is discharged as a jet of fine droplets and gases. Product actuation can be initiated manually by the consumer, or by an automated dispenser through motion activation or a timer.

Aerosol air freshener products are currently divided into two single-purpose air freshening subcategories, with different VOC standards for each. Unlike most consumer product categories, where different standards were adopted based on the dispensing form, staff found it necessary to further differentiate the aerosol form of "Air Freshener" based on the miscibility of the liquid phases of the product and product use instructions. "Double Phase Aerosol Air Fresheners" are aerosol air freshener products with the liquid contents in two or more distinct phases that require the product container to be shaken before use to mix the phases. "Single Phase Aerosol Air Fresheners" are aerosol air freshener products with the liquid contents in a single homogeneous phase that is not required to be shaken before use. Currently, "Double Phase Aerosol Air Fresheners" are subject to a 20 percent by weight VOC content standard, and "Single Phase Aerosol Air Fresheners" are subject to a 30 percent by weight VOC content standard.

Data gathered in response to the 2015 Consumer Products Survey showed that 50 companies reported 152 product formulations in the two categories, with 34.15 tons of product sold per day, resulting in 4.22 tons of VOC emissions from this category per day. Combined, these categories are the seventh-highest contributor of VOC emissions from consumer products, responsible for over 2.8 percent of total consumer product VOC emissions (CARB, 2019).

Table III-1: Aerosol Air Freshener Products*

Aerosol Air Freshener Category	Number of Companies	Number of Product Formulations	Category Sales (tpd)	Sales-weighted Average VOC (Wt. %)	Adjusted VOC Emissions (tpd)**
Double Phase	15	36	10.51	19.14	2.01
Single Phase	35	116	23.64	9.33	2.21

* Based on 2015 Consumer Products Survey data (CARB, 2019)

** 2015 Consumer Products Survey data emissions adjusted for complete market coverage.

2. Regulatory History

VOC standards for aerosol air freshener products were adopted under “Phase I” of the Consumer Products Regulation, in October 1990, and were subsequently lowered twice more, most recently in 2009. Table III-2 summarizes these regulations and applicable VOC standards.

Table III-2: Aerosol Air Freshener Products VOC Standards and Effective Dates

Aerosol Air Freshener Category	VOC Standard	Regulation Effective Date	Standard Effective Date
Double Phase	30%	10/21/1991	1/1/1993
	25%	11/19/2000	12/31/2004
	20%	10/20/2010	12/31/2012
Single Phase	70%	10/21/1991	1/1/1993
	30%	10/21/1991	1/1/1996

The “Single Phase Aerosol Air Freshener” and “Double Phase Aerosol Air Freshener” subcategories were first identified as part of the “Phase I” rulemaking of the Consumer Products Regulation. In 1990, double phase products made up 78 percent of the VOC emissions from aerosol air fresheners (CARB, 1990a), and single phase products made up the remaining 22 percent. “Single Phase Aerosol Air Fresheners” were required to meet a two-stage VOC standard of 70 and 30 percent by weight by January 1, 1993, and January 1, 1996, respectively. “Double Phase Aerosol Air Fresheners” were required to meet a VOC standard of 30 percent by weight, which became effective on January 1, 1993.

In October 1999, as part of CARB’s adoption of “Midterm Measures II,” the provisions applicable to “Double Phase Aerosol Air Freshener” products were amended, setting a new VOC standard of 25 percent by weight, effective December 31, 2004. During this time, “Double Phase Aerosol Air Fresheners” were responsible for 95 percent of the VOC emissions from aerosol air fresheners, with the remaining five percent coming from single phase products (CARB, 1999).

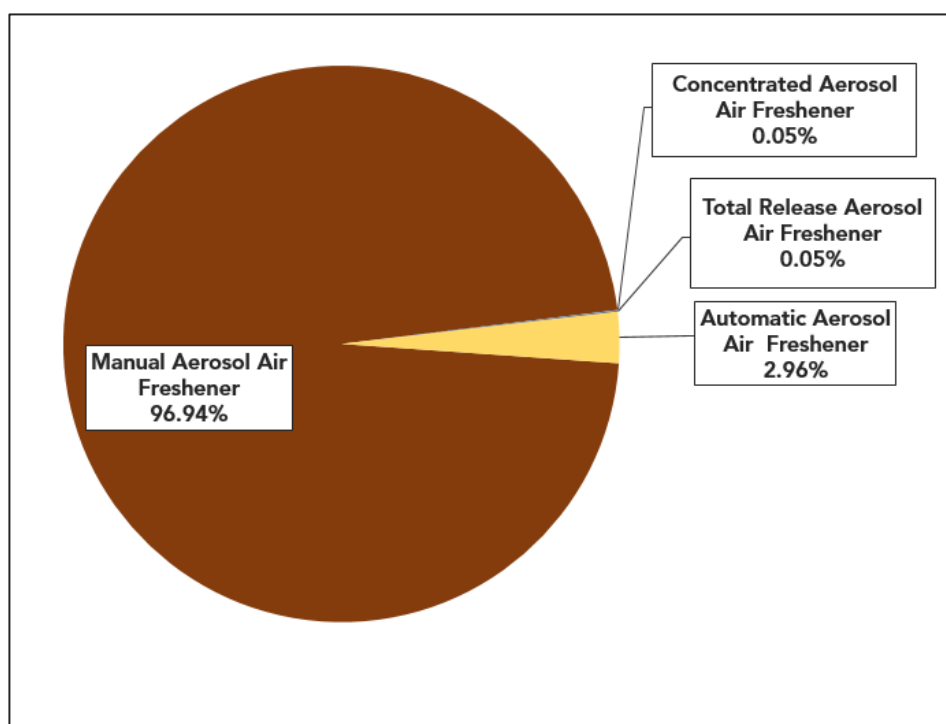
In August 2009, CARB adopted a lower VOC standard of 20 percent by weight, effective December 31, 2012, for “Double Phase Aerosol Air Freshener”. At the time, these products were responsible for 97 percent of the VOC emissions from aerosol air fresheners, with the remaining three percent coming from single phase products (CARB, 2009).

3. New Categories and Definitions

A review of results from the 2015 Consumer Products Survey show that the types of products in the single phase and double phase categories have changed significantly since the previous rulemakings. Most notably, new low-VOC single-phase aerosol air freshener products have captured significant market share in the category, with “Double Phase Aerosol Air Freshener” now contributing less than half of the total VOC emissions from aerosol air fresheners. Due to this innovation and consumer acceptance, staff is proposing to combine the separate single- and double-phase categories into a new “Manual Aerosol Air Freshener” category, with a VOC standard within the feasibility range of the single-phase products (i.e., 10 percent by weight by 2023 and five percent by weight by 2027).

During the review of survey results, staff also identified three other distinct types of products within the “Single Phase Aerosol Air Freshener” subcategory. These include automatic spray products and two niche types of single phase manually-actuated spray products: concentrated aerosol and total release aerosol air fresheners. The automatic and niche products represent a minor portion of the market share of aerosol air fresheners, as shown in Figure III-1. Staff is proposing to create three additional aerosol air freshener categories, and VOC standards for each.

Figure III-1: Aerosol Air Freshener Market Share

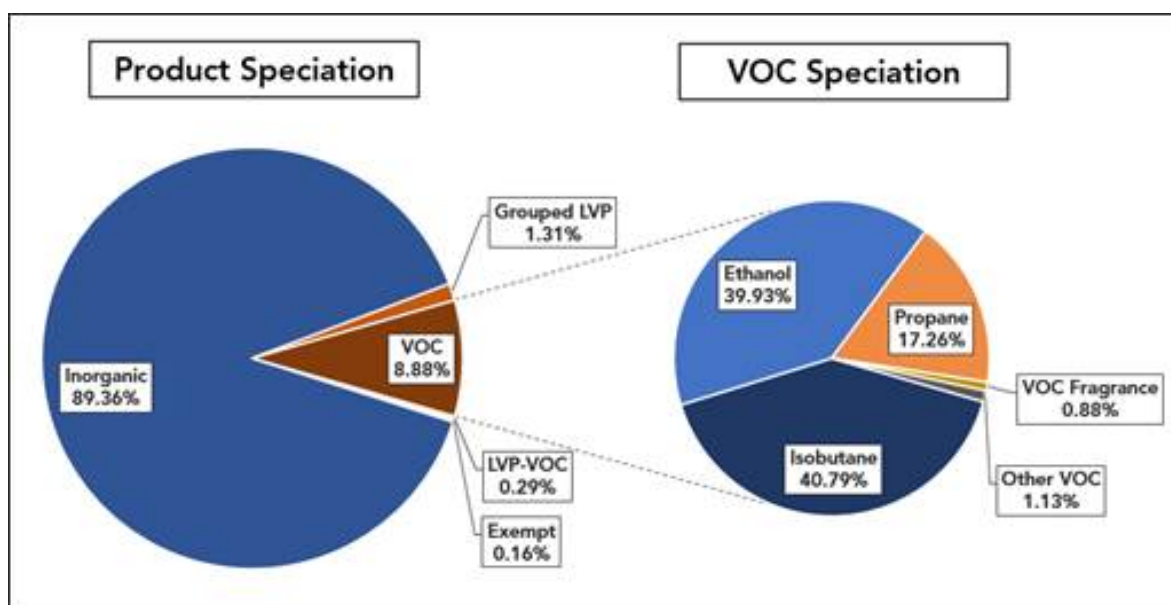


Manual Aerosol Air Freshener

“Manual Aerosol Air Freshener” products comprise the largest share of the “Aerosol Air Freshener” category, and include products that are currently classified as “Single Phase Aerosol Air Freshener” and “Double Phase Aerosol Air Freshener” products that are sprayed manually by depressing the actuator, without the assistance of an automatic actuator device. “Manual Aerosol Air Freshener” would not include “Dual Purpose Air Freshener/Disinfectant”, “Automatic Aerosol Air Freshener”, “Total Release Aerosol Air Freshener”, or “Concentrated Aerosol Air Freshener.”

Figure III-2 shows speciation and VOC speciation for “Manual Aerosol Air Freshener.” As shown, the majority of VOC emissions come from propellant, while a much smaller portion is comprised of fragrance.

Figure III-2: Manual Aerosol Air Freshener Speciation

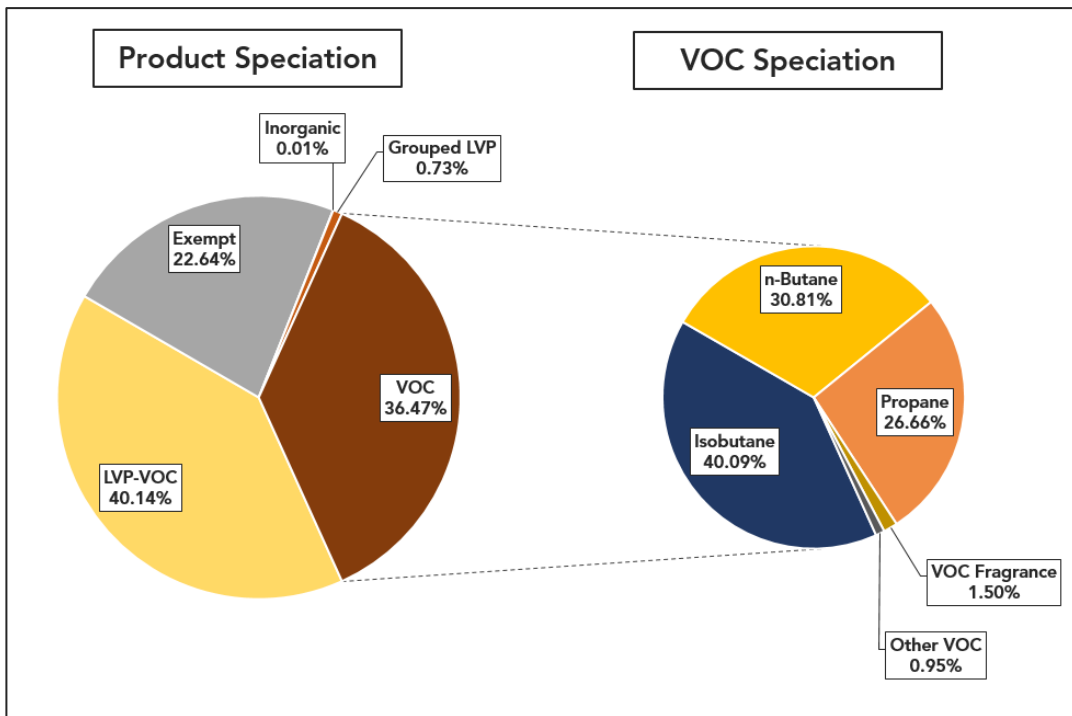


Automatic Aerosol Air Freshener

“Automatic Aerosol Air Freshener” products have a higher VOC content than “Manual Aerosol Air Freshener,” due to an increased amount of fragrance and propellant, and utilize an automatic device for dispensing product. These products are sprayed with the assistance of an automatic spray actuator device that dispenses at a predetermined time or under specific conditions.

Figure III-3 shows the speciation and VOC speciation for “Automatic Aerosol Air Freshener.” As shown, these consumer products’ VOC emissions come primarily from hydrocarbon propellants.

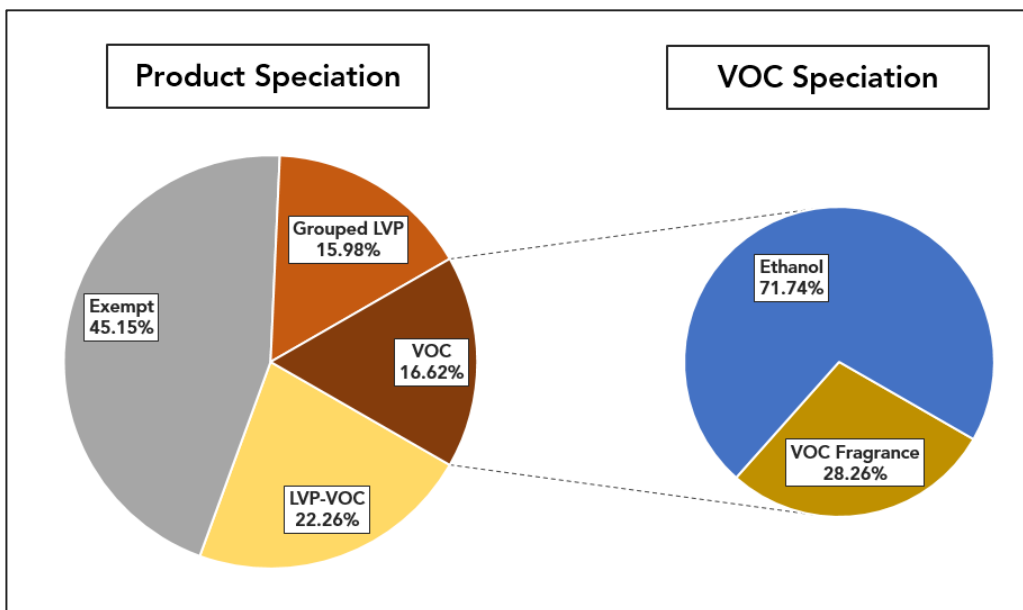
Figure III-3: Automatic Aerosol Air Freshener Speciation



Concentrated Aerosol Air Freshener

“Concentrated Aerosol Air Freshener” products are high-fragrance products, containing at least 15 percent fragrance, and use metered dose, manual actuators. Figure III-4 provides speciation and VOC speciation information for the “Concentrated Aerosol Air Freshener” subcategory. As shown, the majority of the VOC emissions in this subcategory come from ethanol. Concentrated Aerosol Air Fresheners are niche products that are primarily used in one room, and are less than 0.05 percent of the overall “Aerosol Air Freshener” category.

Figure III-4: Concentrated Aerosol Air Freshener Speciation



Total Release Aerosol Air Freshener

Total Release Aerosol Air Fresheners are niche, onetime-use products, dispensing all or most of their content in a single use, and releasing no more than five weight ounces of content. Figure III-5 provides speciation and VOC speciation information for the "Total Release Aerosol Air Freshener" category. As shown, the majority of VOC emissions in this category come from ethanol.

Figure III-5: Total Release Aerosol Air Freshener Product and VOC Speciation

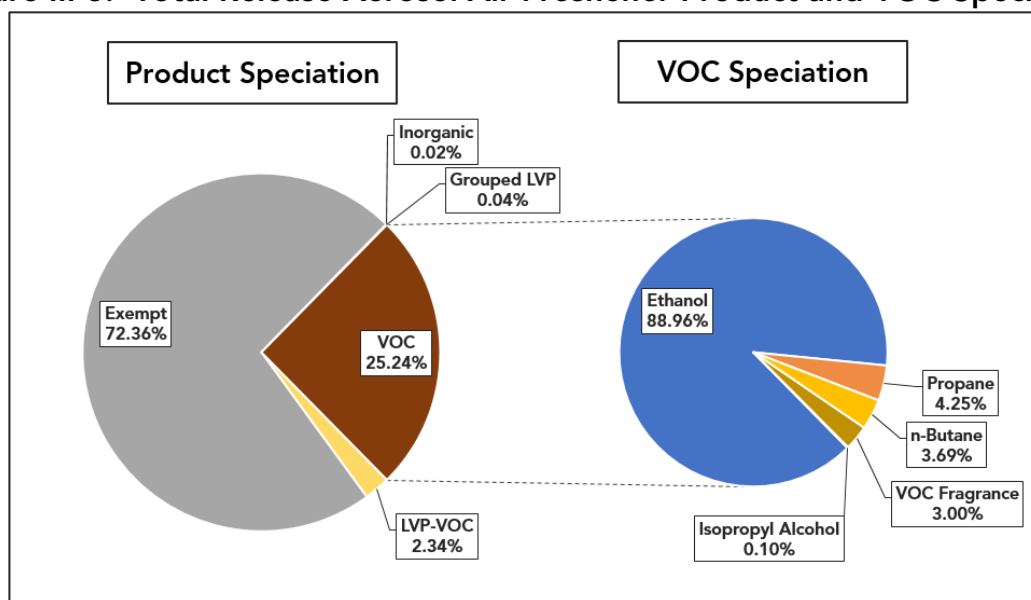


Figure III-6 shows current and proposed categorization for aerosol air fresheners.

Figure III-6: Current and Proposed Aerosol Air Freshener Categorizations

Current Aerosol Air Freshener Subcategories (VOC Standard)
<ul style="list-style-type: none"> • Single Phase Aerosol Air Freshener (30%) • Double Phase Aerosol Air Freshener (20%) • Dual Purpose Air Freshener/Disinfectant Aerosol (60%)
Proposed Aerosol Air Freshener Subcategories (Proposed VOC Standard)
<ul style="list-style-type: none"> • Manual Aerosol Air Freshener (10%, 5%) • Automatic Aerosol Air Freshener (30%) • Total Release Aerosol Air Freshener (25%) • Concentrated Aerosol Air Freshener (15%, 10%) • Dual Purpose Air Freshener/Disinfectant Aerosol (60%) (No proposed changes)

4. Proposed VOC Standard and Reformulation Strategies

Staff’s evaluation of the 2015 Consumer Products Survey data indicates that “Single Phase Aerosol Air Fresheners” are diverse in product type and formulation, and that CARB’s current categorical structure for defining aerosol air fresheners does not accurately reflect the products being sold in the market. Staff’s proposal would update the regulation to reflect the diversity of current aerosol air freshener product types by reassigning them into new, more appropriate subcategories, and placing them into the “Aerosol Air Freshener” category.

Currently, there is no distinction in the regulation between manually- or automatically-dispensed aerosol products. The proposed regulatory changes would establish that distinction, while eliminating the distinction between the “Double Phase Aerosol Air Freshener” and “Single Phase Aerosol Air Freshener” subcategories, and acknowledging the changing market for these products as seen in the 2015 Consumer Products Survey results.

The “Manual Aerosol Air Freshener” subcategory would exclude single-phase aerosol air fresheners that utilize an automatic device to dispense product, as well as total release, concentrated, and dual-purpose/disinfecting air freshener products. Staff is proposing two tiers of VOC standards for the “Manual Aerosol Air Freshener” category. Proposed VOC Standards, complying products and market share, and adjusted emission reductions are presented in Table III-3 below.

Table III-3: Manual Aerosol Air Freshener Proposal*

Proposed Aerosol Air Freshener Subcategory	Proposed VOC Standard (Wt. %)	Proposed Effective Date	Complying Product Formulations**	Complying Market Share (%)***	Emission Reductions (tons/day)
Manual	10	1/1/2023	20	73	1.07
	5	1/1/2027	12	22	1.73
Total Release	25	1/1/2023	2	50	<0.01
Concentrated	15	1/1/2023	1	50	<0.01
	10	1/1/2027	0	0	<0.01

* Based on 2015 Consumer Products Survey data (CARB, 2019)

** Product-formulations with minor fragrance variations are treated as one product-formulation.

*** Based on mass of products sold.

As shown in Table III-3, the 10 percent VOC standard would result in a reduction of 1.07 tpd of VOC emissions, while the five percent VOC standard would result in a reduction of 1.73 tpd of VOC emission reductions.

Staff believes there are two potential reformulation pathways for “Manual Aerosol Air Freshener” products that currently do not meet the proposed 10 percent and five percent by weight VOC standards. For products currently employing compressed gas propellant technology, reformulation options would be limited to replacement of liquid VOC constituents such as ethanol with a non-VOC constituent like water. Potential reformulation pathways for products utilizing high-VOC liquefied petroleum gas propellant blends would be to switch to an exempt liquefied gas propellant, like HFC-152a, or transition to compressed gas propellant,

such as nitrogen. Some "Single Phase Aerosol Air Freshener" manufacturers have already invested in a compressed gas propellant manufacturing capability to make low VOC aerosol air fresheners, and staff expects industry will continue to employ that capability to comply with the proposed standards.

For the "Automatic Aerosol Air Freshener" subcategory, staff is proposing to maintain the VOC standard at 30 percent by weight, which is currently in place for the "Single Phase Aerosol Air Freshener" subcategory. Reformulation would not be required for these products at this time.

"Total Release Aerosol Air Freshener" products are one-time-use products. Staff is proposing a VOC standard of 25 percent by weight, to be effective by 2025. A reformulation option would be to reduce hydrocarbon propellant for these products. Additional reformulation pathways may include modifications and adjustments to the surfactant ingredients, the valve/spray nozzle systems, or a combination of both (CARB, 2019).

For "Concentrated Aerosol Air Freshener" products, staff is proposing a VOC standard of 15 percent by weight, to be effective by 2023, and 10 percent by weight, to be in effective by 2027. Reformulation options include reducing hydrocarbon propellant, fragrance, or a combination of both, for these products. Additional reformulation pathways may include modifications and adjustments to the surfactant ingredients, the valve/spray nozzle systems, or a combination of both (CARB, 2019).

These reformulation options were used to develop the example of complying product formulation presented in Appendix D. The appendix contains generic examples of complying and noncomplying formulations for the "Air Freshener" product subcategories and other product categories described in this chapter.

Staff's proposed changes apply specifically to all aerosol forms of air freshener, with the exception of the "Dual Purpose/Disinfectant" air freshener subcategory.

B. Hair Care Products

This section described staff proposals for four categories of Hair Care Products. Three of these categories – "Hair Finishing Spray," "Hair Shine," and "Temporary Hair Color" – are currently subject to the same VOC content standard of 55 percent. Staff is proposing to set VOC content standards for "Dry Shampoo" for the first time, in recognition of increasing product sales and associated VOC emissions. Proposed VOC standards for "Hair Finishing Spray" and "Dry Shampoo" are responsible for more than half of the VOC reductions achieved by the Proposed Amendments in the South Coast and Statewide in 2023. As described below, staff is proposing to align VOC standards for these four categories by 2029 to ensure anticipated VOC reductions from these hair care categories are achieved.

1. Hair Finishing Spray

a. Category Description

“Hair Finishing Spray” products are consumer products designed to dispense droplets of resin (film forming polymer) on and into the hair coiffure (hair style) to enable users to keep their finished hair style in place and resistant to changes in the weather or atmospheric humidity. Hair finishing sprays are applied to hair once styling is complete. “Hair Styling Product” also can be labeled to hold the hair, but these products are not used to finish the completed hair style. “Hair Finishing Spray” products are packaged in aerosol or pump spray form. This category also includes products containing color, glitter, or sparkles that make hair finishing claims.

“Hair Finishing Spray” products are used in private homes and in commercial establishments such as hair salons. “Hair Finishing Spray” products are sold in department, drug, and grocery stores, as well as beauty supply outlets, beauty salons, and on the internet.

Typical ingredients in “Hair Finishing Spray” formulations include resins, solvents, propellants (aerosol form only), neutralizers, co-solvents, plasticizers, and other additives. Resins act as the key holding ingredient in all “Hair Finishing Spray” products. The holding of the hair is carried out by electric resistance welding of one hair to another. The product is sprayed on the hair in the form of droplets, and the volatile nature of the droplets allows them to dry rapidly and create an invisible bond to the hair around it. Hence, the resin must have good adherent strength. Its adhesive quality must be such that it can be readily removed by shampooing (i.e., be water soluble). There are many types of resins used in today’s “Hair Finishing Spray” formulations, including octylacrylamide, acrylates, vinyl neodecanoate copolymer, and butylaminoethyl methyl acrylate copolymer (CARB, 2019).

Solvents are used to carry the film (resin) onto the hair, and then evaporate to leave the film behind. Ethanol is the primary solvent used in “Hair Finishing Spray” formulations. Other solvents used include isopropyl alcohol, propylene glycol, glycol ethers, and water.

Aerosol “Hair Finishing Spray” products also contain propellant, the purpose of which is to deliver the active ingredients from the product package to the hair. Common propellants used are a blend of hydrocarbons, such as butanes and propane, dimethyl ether (DME), or HFC-152a, a VOC-exempt propellant. DME can be used in formulating water-based hair finishing sprays, which are becoming increasingly popular, and is also highly compatible with hydrocarbon propellant blends. Products primarily using hydrocarbon propellants or HFC-152a typically contain a limited amount of water, since they are not readily soluble in a hydroalcoholic system.

Since most hair fixative resins contain carboxyl groups, neutralizers are a major component in “Hair Finishing Spray” formulations. The neutralizer acts to adjust the solubility of the resin in both the alcohol vehicle and for shampoo removal. Some examples of neutralizers are morpholine, 2-amino-2-methyl-1-propanol (AMP), and 2-amino-2-ethyl-1,3-propanediol.

Plasticizers are added to modify hardness and the degree of flexibility of the resin film. Some commonly used plasticizers are dimethyl phthalate, diethyl phthalate, and acetyl triethyl citrate. Siloxanes and oils are added to provide shine to the hair. Examples of these commonly-used ingredients are decamethylcyclopentasiloxane and argan oil. The speciation and VOC speciation for both “Hair Finishing Spray” product forms—pump sprays and aerosols—are shown in the figures below.

Figure III-7: Nonaerosol Hair Finishing Spray Speciation

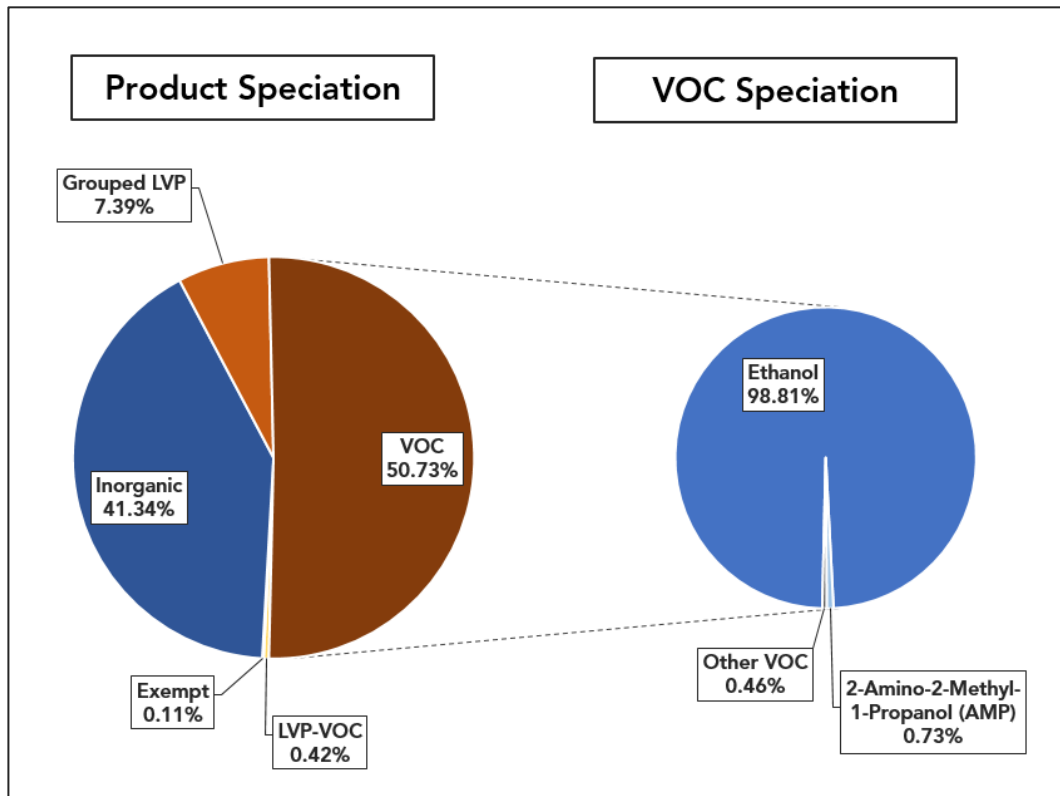
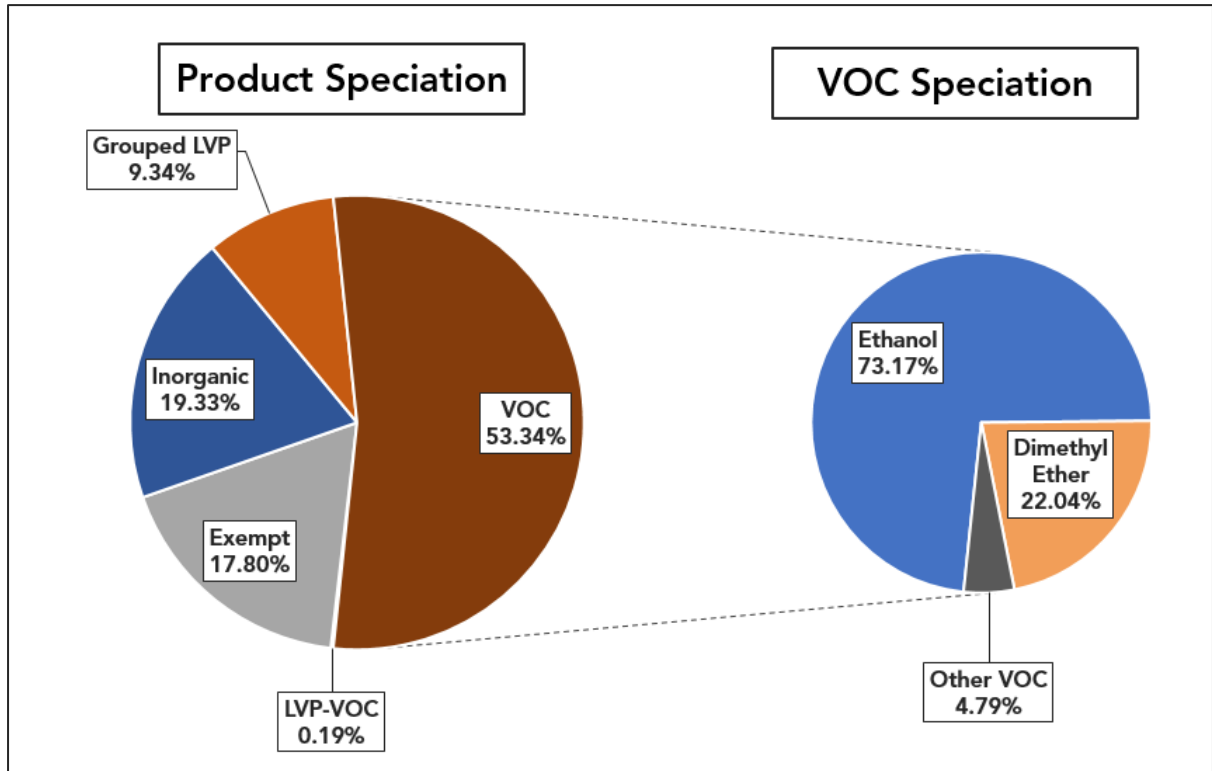


Figure III-8: Aerosol Hair Finishing Spray Speciation



In response to the 2015 Consumer Products Survey, 85 companies reported 484 product formulations in this category, resulting in 21.7 tons of product sold and 11.6 tons of VOC emissions per day. The market shares for aerosol and pump sprays are 80 percent and 20 percent, respectively. Aerosol “Hair Finishing Spray” VOC emissions are 7.9 tons per day, and pump spray “Hair Finishing Spray” VOC emissions are 3.7 tons per day. The “Hair Finishing Spray” category is the third highest consumer product VOC contributor, responsible for over five percent of total consumer product VOC emissions (CARB, 2019).

The number of manufacturers and products, sales, average VOC content, and VOC emissions from “Hair Finishing Spray” products, based on the 2015 Consumer Products Survey data, are presented in aggregate in the table below.

Table III-4: Hair Finishing Spray Products*

Number of Companies	Number of Product Formulations	Category Sales (tpd)	Sales-weighted Average VOC (Wt.%)	VOC Emissions (tpd)**
85	484	21.67	53.08	11.55

* Based on 2015 Consumer Products Survey data (CARB, 2019)

** 2015 Consumer Products Survey data emissions adjusted for complete market coverage.

b. Regulatory History

CARB has lowered the VOC standards applicable to “Hair Finishing Spray”

(previously called "Hair Spray") twice prior to this rulemaking. In October 1990, CARB adopted VOC standards for 16 categories, including the "Hair Finishing Spray" category, as part of the comprehensive consumer products regulation known as "Phase I." The 80 percent by weight VOC standard became effective on January 1, 1993, and the current 55 percent by weight VOC standard was proposed to become effective on January 1, 1998 (CARB, 1990a).

The second-tier VOC standard for "Hair Finishing Spray" proved to be more challenging for companies to meet than was originally anticipated. As a result, CARB postponed the effective date of the 55 percent by weight VOC standard from January 1, 1998, to June 1, 1999 (CARB, 1997a).

Being California's largest single source of consumer product VOC emissions in 1990, at 46 tpd, the emission reductions realized from adopting these VOC standards for "Hair Finishing Spray" products was significant. Statewide, the 80 percent by weight VOC standard resulted in a VOC emissions reduction of 7.2 tons per day, and the 55 percent by weight VOC standard resulted in an additional 14 tons per day of VOC reductions. Both tiers of VOC standards have been federally enforceable as part of the State Implementation Plan since the consumer products regulation was approved as a SIP revision in early 1995 (CARB, 1997a).

In 2013, the "Hair Finishing Spray" definition was modified and the category name was changed from "Hair Spray" to "Hair Finishing Spray" to further clarify that the product is to be used to finish styled hair (CARB, 2013).

c. Proposed VOC Standard and Reformulation Strategies

Staff is proposing a 50 percent by weight VOC standard for the "Hair Finishing Spray" product category, with a proposed effective date of January 1, 2023. The 50 percent standard would result in a VOC reduction of 0.94 tons per day by 2023, and 1.11 tons per day by 2031.

Staff is also proposing to modify the category definition to provide clarity that "Hair Finishing Spray" must be labeled to be sprayed on finished hair after the hair is styled, to distinguish the "Hair Finishing Spray" category from the "Hair Styling Product" category.

Staff's review of hair care product labels shows there can be an overlap in label claims between "Hair Finishing Spray" products and other hair care products due to some similarities in functionality. Some hair finishing sprays contain color and glitter in their formulations. According to product directions, some temporary hair colors are applied to finished hair. "Hair Finishing Spray" products also claim to provide a shine to hair, which is a "Hair Shine" category claim. To create a better public understanding of, and to avoid confusion that results in VOC emission reduction losses between hair care product categories, staff is proposing to align the VOC standards for "Hair Finishing Spray," "Dry Shampoo," "Temporary Hair Color," and "Hair Shine" product categories.

Table III-5: Hair Finishing Spray Proposal*

Proposed VOC Standard Wt. %	Proposed Effective Date	Complying Product Formulations	Complying Market Share**	Emission Reductions (tons/day) ***
50	1/1/2023	122	11%	0.94

* Based on 2015 Consumer Products Survey data (CARB, 2019)

** Based on mass of products sold.

*** 2015 Consumer Products Survey data emissions adjusted for complete market coverage.

Currently, aerosol is the prominent form of the “Hair Finishing Spray” category. Reformulation options that can be used by manufacturers to meet the proposed VOC standard include a reduction in the propellant and ethanol used. The exempt propellant HFC-152a can be used to substitute for the hydrocarbon propellant. Increased use of water is another likely reformulation option to meet the proposed lower VOC standard. Reformulation options that can be used to meet the proposed VOC standard for the pump spray products include reducing the level of ethanol and substituting it with water.

2. Hair Shine

a. Category Description

Hair shine products are consumer products labeled for the primary purpose of creating a shine when applied to the hair. "Hair Shine" products do not include "Hair Finishing Spray," "Hair Mousse," "Hair Styling Product," or products whose primary purpose is to condition or hold the hair.

Hair shine products are marketed for all hair types. Depending on product delivery system and form, hair shines are usually either sprayed directly onto the hair or applied to the palm of the hand and then distributed throughout the hair. These products coat the hair strands, smoothing the hair cuticle, to provide maximum light reflecting potential. "Hair shine" products may also offer heat protection, and may contain sunscreen or conditioners to help detangle, moisturize, or repair the hair.

Hair shine products are used both at home and in commercial establishments such as hair styling salons. They are sold in discount, department, drug, and grocery stores, at beauty salons and beauty supply stores, and on the Internet.

"Hair Shine" is available in a variety of forms, including liquids, pump sprays, aerosols, and semisolids. As shown in Table III-6, 229 hair shine product formulations were sold in California in 2015 by 93 companies, with total category sales of 1.52 tons per day. Of these total sales, nonaerosol hair shines made up 1.36 tons of sales per day, and aerosol hair shines made up 0.16 tons per day, with combined VOC emissions from all forms reported at 0.17 tons per day. The sales-weighted average VOC content was about eight percent by weight for the nonaerosol products, and about 40 percent by weight for aerosol products (CARB, 2019).

Table III-6: Hair Shine Products*

Product Form	Number of Companies	Number of Product-Formulations	Category Sales (tpd)	Sales-weighted Average VOC (Wt. %)**	Adjusted VOC Emissions (tpd)**
Nonaerosol	82	187	1.36	7.73	0.11
Aerosol	30	42	0.16	40.47	0.06
Total	93	229	1.52	11.07	0.17

* Based on 2015 Consumer Products Survey data (CARB, 2019)

** Survey emissions adjusted for complete market coverage.

"Hair Shine" formulations contain additives, such as mineral or plant oils, or volatile methyl siloxanes (VMS) to add a sheen. Aerosol and nonaerosol hair shine products also contain solvents that are used to carry the active ingredients onto the hair strands, which then evaporate leaving behind a thin coating of oil or VMS. The predominant solvent in both aerosol and nonaerosol formulations is ethanol. In addition to additives and solvents, aerosol "Hair Shine" formulations contain propellant, and are very similar to aerosol "Hair Finishing Spray" formulations.

Hydrocarbon propellants in aerosol formulations are typically a liquefied mixture of isobutane, propane and n-butane, or HFC-152a, as reported in some of the formulations.

Product and VOC speciation for aerosol and nonaerosol "Hair Shine" products are shown in Figures III-9 and III-10, respectively.

Figure III-9: Aerosol Hair Shine Speciation

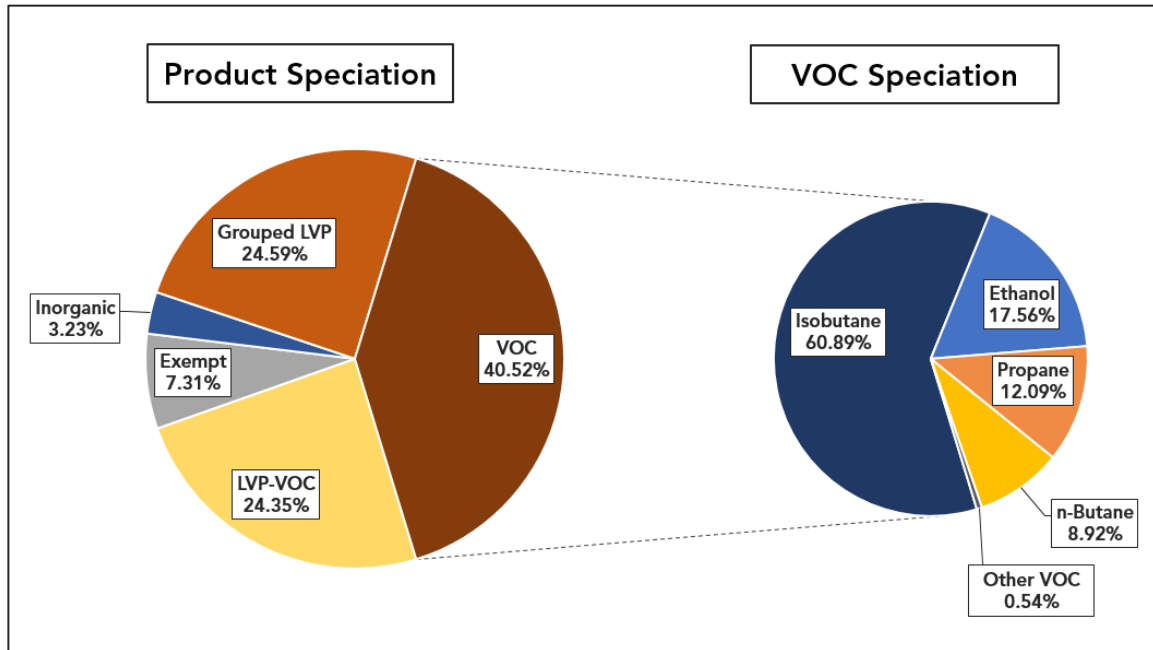
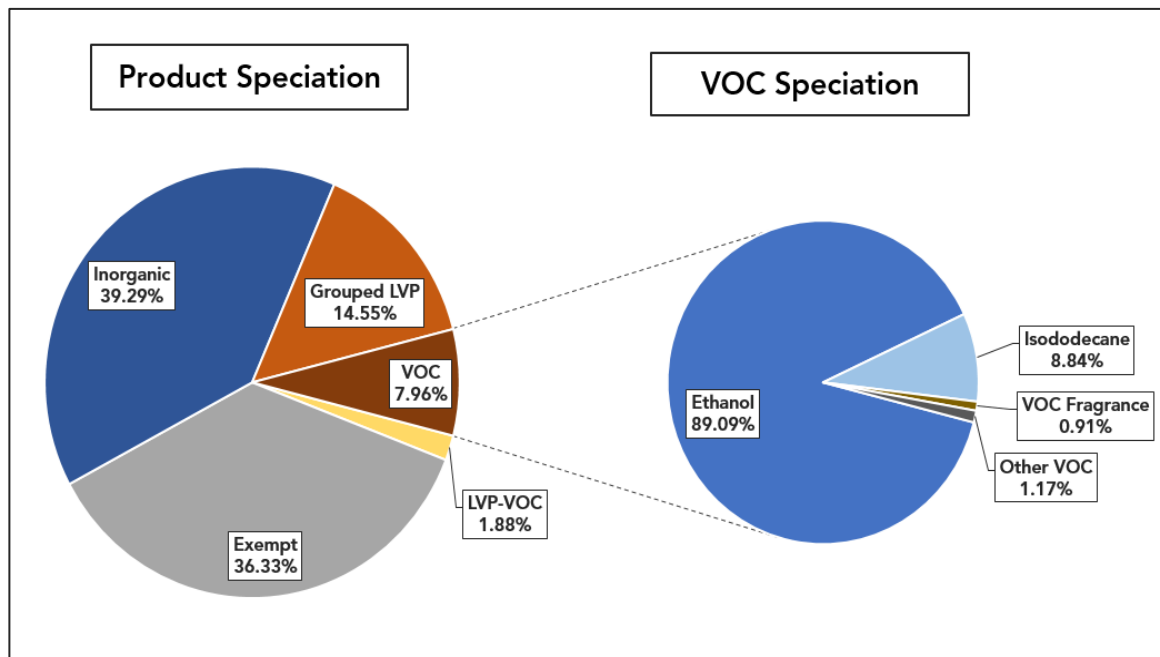


Figure III-10: Nonaerosol Hair Shine Speciation



b. Regulatory History

CARB regulated the "Hair Shine" category under the "Mid-term Measures" of the

Consumer Products Regulation, adopted in July of 1997, with a 55 percent VOC standard, which became effective on January 1, 2005 (CARB, 1997b). At the time of the 1997 rulemaking, no aerosol hair shine product existed on the market that complied with the proposed 55 percent by weight VOC standard. However, the Board adopted a Tier II standard of 55 percent by weight VOC, effective on June 1, 1999, for “Hair Finishing Spray” (originally called “Hair Spray”) (CARB, 1997a); manufacturers expected to be able to comply with this standard by June of 1999. Because of the similarities between the “Hair Shine” and “Hair Finishing Spray” categories, staff believed compliance could be achieved for the aerosol form of “Hair Shine” through the transfer of technology used to formulate “Hair Finishing Spray.” In order to meet the then-proposed 55 percent standard, the VOC content of the aerosol hair shine formulations was reduced by approximately 40 percent.

The “Hair Shine” category has grown extensively since it was last surveyed in the Mid-term Measures 1994/1995 Consumer and Commercial Products Survey, when 11 companies reported 24 products sold in California in 1995. Aerosol hair shines reported in the 1994/1995 Survey were mostly designed and marketed for consumers with extremely curly hair. In contrast, hair shine products reported in the 2015 Consumer Products Survey are labeled to be used on diverse types of hair, with the 2015 market in California mostly dominated by non-aerosol products.

c. Proposed VOC Standard and Reformulation Strategies

Staff is proposing to lower the VOC standard for the “Hair Shine” product category from the current 55 percent by weight to 50 percent by weight, effective January 1, 2029. Table III-7 below presents the anticipated emission reductions and current complying market-share at the proposed standard. As shown in Table III-7, when fully effective, the proposed standard will result in VOC emission reductions of approximately 0.01 tpd.

Table III-7: Hair Shine Proposal*

Product Form	Proposed VOC Standard (wt. %)	Proposed Effective Date	Complying Product Formulations	Complying Market Share (%)***	VOC Emission Reductions (tpd)**
Nonaerosol	50	1/1/2029	225	88	0.01
Aerosol	50	1/1/2029	35	82	0.00
Total	50	1/1/2029	257	87	0.01

* Based on 2015 Consumer Products Survey data (CARB, 2019)

** 2015 Consumer Products Survey data emissions adjusted for complete market coverage

*** Based on mass of products sold

Staff recognizes that lower VOC standards for this category do not achieve significant VOC reductions. However, this proposed standard is necessary to align with the proposed "Hair Finishing Spray" 50 percent VOC standard. Because some "Hair Finishing Spray" products may have functionalities similar to those of "Hair Shine" products, such as providing a shine to hair, there may be an overlap between claims made by "Hair Shine" products and "Hair Finishing Spray" products. Proposed lower standards for "Hair Shine" products are intended to align with those for "Hair Finishing Spray" by 2029 to help ensure products in the larger but similar "Hair Finishing Spray" category are not relabeled as "Hair Shine" to avoid being subject to more stringent VOC standards. This alignment of hair care product VOC standards is needed to ensure that anticipated emission reductions from the larger "Hair Finishing Spray" category are achieved, to meet 2016 State SIP Strategy VOC reduction commitments.

Reformulation options to comply with the proposed standards for aerosol "Hair Shine" products may include replacing the hydrocarbon propellant with HFC-152a, or with a mixture of hydrocarbon propellant and HFC-152a. Substitution of a portion of the VOC content with exempt siloxane compounds is another reformulation option for both aerosol and nonaerosol products. Although not considered a likely reformulation pathway for this product category, staff has determined that LVP-VOC substitution options for VOC constituents currently present in existing product formulations would result in lower product ozone forming potential.

3. Temporary Hair Color

a. Category Description

“Temporary Hair Color” products are designed to apply a temporary layer of color or glitter to human hair, wigs, or animal fur. This product category also includes products that claim to cover thinning or baldness by thickening or adding texture, as well as glow-in-the-dark and black-light-activated products. “Temporary Hair Color” products are different from demi-permanent, semi-permanent, and permanent hair dyes because they are not intended to last for more than one shampoo cycle. “Temporary Hair Color” products are used for decorative purposes for a variety of events, such as parties, sporting events, and theater. They are also used to cover grey hair, or as a temporary fix for hair root touch-ups between hair dyeing sessions. Pet owners also use these products on their pet’s fur to enhance their coats for shows and competitions, or for purely decorative purposes.

“Temporary Hair Color” products apply colorants that do not penetrate the hair cuticle. “Temporary Hair Color” products deposit large color molecules between the cells of the hair cuticle to coat the surface of the hair.

“Temporary Hair Color” products are sold in a variety of retail outlets, including mass-merchandise retail chain stores, beauty supply stores, costume shops, novelty shops, party supply stores, and seasonal specialty shops (such as shops only open for the Halloween season), as well as on the internet. While sales for these products peak near Halloween, they are available, purchased, and used year-round.

Most “Temporary Hair Color” aerosol products are sold as mists and foams, with over 90 percent of the market being mists. Both mist and foam forms of “Temporary Hair Color” contain solvents and propellants. Solvents carry colorants onto the hair cuticle. Ethanol and acetone are the main solvents used in “Temporary Hair Color” mist formulations. “Temporary Hair Color” foam formulations use a combination of water and LVP-VOC solvents. Propellants are used in both types of formulations to deliver active ingredients. The primary propellants present in these formulations are propane and butane blends, dimethyl ether, and occasionally HFC-152a.

Figure III-11 shows the speciation and VOC speciation for both “Temporary Hair Color” aerosol mists and “Temporary Hair Color” aerosol foams. The mist formulations also generally contain acetone and HFC-152a, which are exempt VOCs. These products average about 52 percent VOC content, mainly from ethanol and hydrocarbon propellant, consisting of a liquefied mixture of n-butane, isobutene, and propane. The remainder of these formulations are comprised of inorganic compounds and nonvolatile ingredients, which include polymers and resins, pigments or glitter, and other elements. The foam formulations generally contain water, propellants, nonvolatile ingredients, and fragrance. Only a few companies reported “Temporary Hair Color” products of the foam form in response to the 2015 Consumer Products Survey. In Figure III-11, these products have been included with the mists.

Figure III-11: Temporary Hair Color Speciation (All Product Forms)

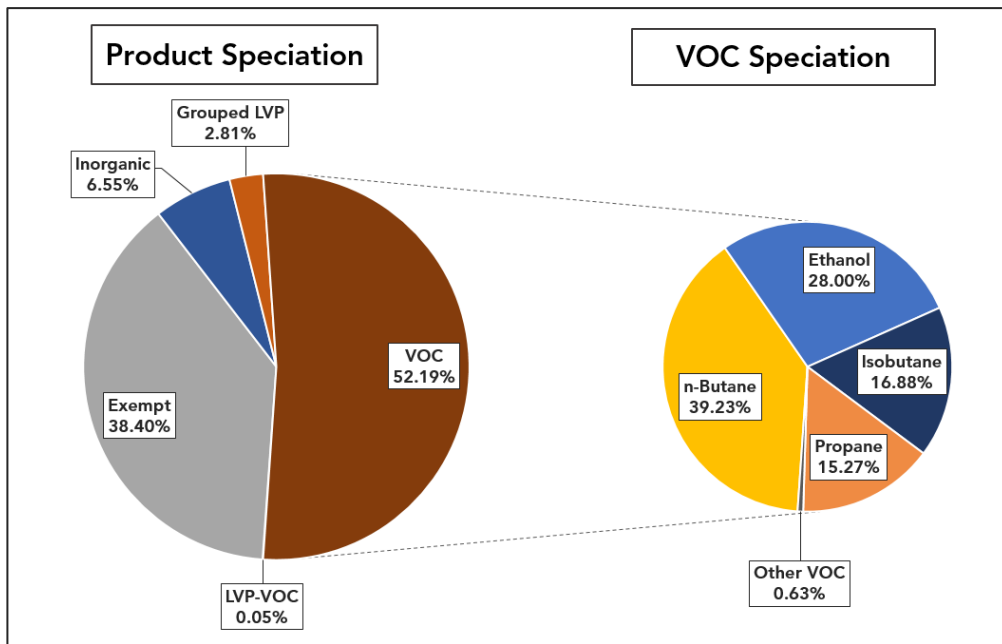


Table III-8 lists the number of product manufacturers, product formulations, category sales, sales weighted average VOC content, and VOC emissions in the “Temporary Hair Color” category, from the 2015 Consumer Products Survey results.

Table III-8: Temporary Hair Color Products*

Number of Companies	Number of Product-Formulations	Category Sales (tpd)	Sales-weighted Average VOC (Wt. %)**	Adjusted VOC Emissions (tpd)**
12	40	0.41	52.19	0.21

* Based on 2015 Consumer Products Survey data (CARB, 2019)

** 2015 Consumer Products Survey data emissions adjusted for complete market coverage.

b. Regulatory History

The “Temporary Hair Color” product category was originally created in 2006 to differentiate these types of products from “Hair Finishing Spray” products. At the time, many “Temporary Hair Color” aerosol sprays made holding claims consistent with “Hair Finishing Spray” claims (CARB, 2006). In order to avoid being subject to the “Hair Finishing Spray” VOC standard, many aerosol temporary hair color manufacturers changed their labeling by removing style/finishing claims. In a November 2006 rulemaking, CARB set a VOC standard of 55 percent by weight for the then-new “Temporary Hair Color” product category, in part to address this

relabeling dynamic and resulting lost emission reductions. The “Temporary Hair Color” 55 percent VOC standard became effective on December 31, 2010.

Prior to the 2006 regulatory amendments, aerosol “Temporary Hair Color” product formulations were similar to “Hair Finishing Spray” product formulations in use before the adoption of the lower VOC standards for “Hair Finishing Spray.” The aerosol “Temporary Hair Color” products were typically comprised of propellant, ethanol, and resins or polymers in similar proportions to hair sprays. The color products, however, contained a small percentage of pigments or glitter in addition to other components. Most of the “Temporary Hair Color” products did not, at the time, comply with the then-proposed 55 percent by weight VOC standard. Most “Temporary Hair Color” manufacturers reformulated the mists and, as a result, 0.13 tons per day of VOC emissions were reduced from this category by 2010.

c. Proposed VOC Standard and Reformulation Strategies

“Temporary Hair Color” is currently regulated at a 55 percent by weight VOC standard, and was responsible for 0.21 tons per day of VOC emissions in 2015. Staff is proposing a 50 percent by weight VOC standard, to become effective January 1, 2029. Table III-9, below, shows the resulting emissions and currently-complying market-share at the proposed standard.

Table III-9: Temporary Hair Color Proposal*

Proposed VOC Standard Wt.%	Proposed Effective Date	Complying Product Formulations	Complying Market Share (%)**	Adjusted Emission Reductions (tons/day)***
50	1/1/2029	5	3	0.02

* Based on 2015 Consumer Products Survey data (CARB, 2019)

** Based on mass of products sold.

*** 2015 Consumer Products Survey data emissions adjusted for complete market coverage.

Table III-9 shows that the proposed standard will result in VOC emission reductions of approximately 0.02 tons per day by 2029. Table III-9 also shows that only three percent of the product mass of the “Temporary Hair Color” category sold in 2015 comply with the proposed 50 percent by weight VOC standard. A similar situation occurred in 2006, when this category was initially regulated. At the time, the “Temporary Hair Color” product category had a much smaller complying market share, and a shorter time to comply with the proposed VOC standard (CARB, 2006), but were still able to comply on time.

Based on stakeholders’ feedback, staff is proposing to implement the new proposed standard for this category in 2029. This would allow “Temporary Hair Color” product manufacturers eight years to comply with a 50 percent by weight VOC standard. As mentioned previously, there are two types of “Temporary Hair Color:” foams and mists. Currently, most of the foam products already meet the proposed VOC standard. Foam products that are not meeting the proposed standard can be reformulated by increasing the water content, or by replacing

hydrocarbon propellants with non-hydrocarbon propellants or exempt propellants. A similar reformulation approach can be used by manufacturers of mist products form. This includes substituting exempt propellant such as HFC-152a for hydrocarbon propellants or substituting ethanol with an exempt material such as acetone.

Staff has proposed a 50 percent by weight VOC standard for "Temporary Hair Color" due to the potential for overlap of functionality with "Hair Finishing Spray" and "Dry Shampoo" products. When the "Hair Finishing Spray" product category was regulated in 1990, manufacturers changed product label claims to match that of "Temporary Hair Color" products. As a result, CARB set a VOC standard for "Temporary Hair Color" to align it with the standard for "Hair Finishing Spray."

Some "Hair Finishing Spray" products still have functionalities similar to "Temporary Hair Color," as colorant ingredients are occasionally used in hairsprays. "Dry Shampoo" also utilizes colorant to hide any starch that may otherwise be visible upon product application. Setting identical VOC standards across all hair care product categories would help to remove any potential confusion for manufacturers and help simplify program implementation, and, as discussed previously, help ensure that anticipated VOC reductions from hair care categories are achieved.

4. Dry Shampoo

a. Category Description

“Dry Shampoo” (currently defined as “No Rinse Shampoo”) products are consumer products designed to be applied to dry hair to clean, absorb oil, and eliminate odor, and are removed from the hair without the use of water. “Dry Shampoo” is intended to be massaged into the hair or applied to the roots of the hair and subsequently combed/brushed through the hair or toweled out of the hair to remove most or all of it for the primary purpose of renewing, refreshing, or bringing back volume, and/or to maintain personal hygiene. A lipophilic ingredient, typically a starch, in the product absorbs the oil in the hair or at the roots of the hair.

“Dry Shampoo” products are packaged and sold as aerosol mists or foams, powders, and liquids:

- The aerosol mist product form is sprayed onto the hair, concentrating on the roots.
- The foam form can be either sprayed into the palm of the hand and then applied to dry hair, or just applied directly to the dry hair.
- Powder products are sprinkled onto or squirted into the hair, concentrating on the roots.
- Liquid products are available in a disposable cap or squirt bottle. The cap is applied to the head and hair, which is then massaged through the cap until the hair is saturated. For the liquid form in a squirt bottle, the liquid in the squirt bottle is squirted onto the hair until the hair is saturated, then massaged into the hair. Liquid forms in both the squirt bottle and cap are toweled from the hair to remove.

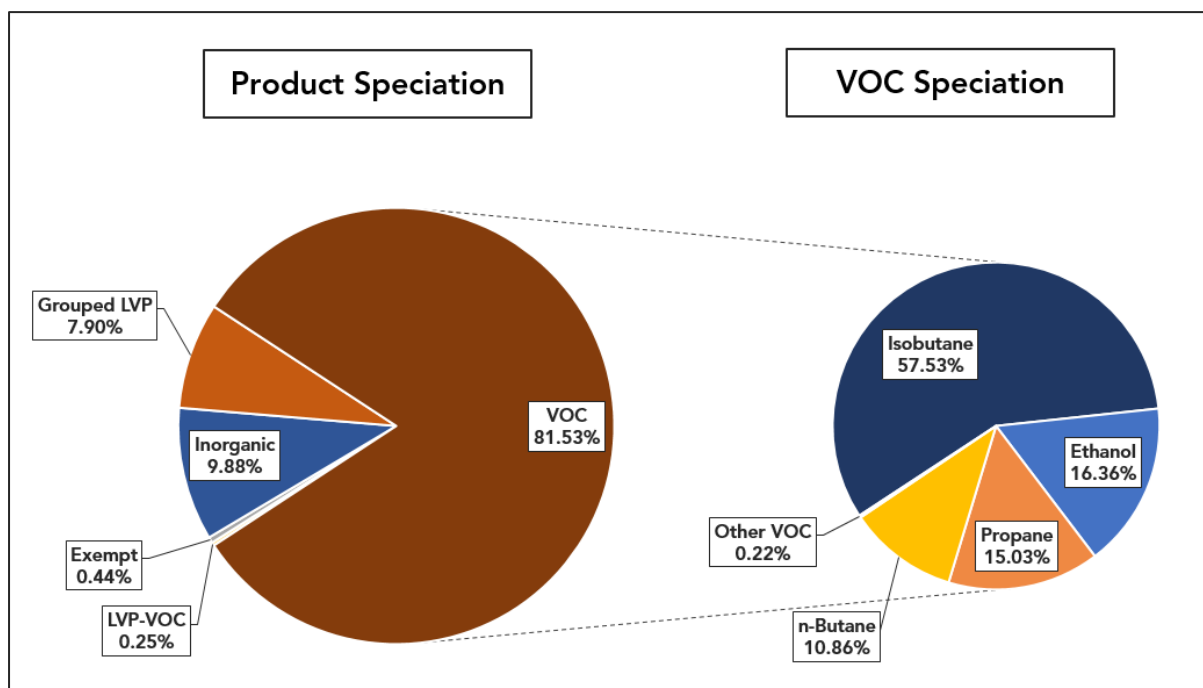
All of these product forms require a short contact period in order for the oils to be absorbed into the lipophilic substrate (starch) and refresh the hair. For all product forms, the oil bound to the starch substrate is combed, brushed, or toweled out of the hair.

“Dry Shampoo” products are used in private homes, institutional settings such as hospitals and nursing homes, and in commercial establishments such as hair salons. “Dry Shampoo” products are sold in medical supply, discount, department, drug, grocery, and beauty supply stores, as well as in beauty salons and on the Internet.

2015 Consumer Products Survey data indicates that about 90 percent of dry shampoo products are aerosols, and the remaining 10 percent consist of dry powder and liquid forms. The aerosol form has the highest level of VOCs for these types of products. The liquid form contains very low VOC concentrations, and the powder form does not contain VOC ingredients.

Figure III-12 provides the product speciation and VOC composition for this product category.

Figure III-12: Dry Shampoo Speciation



The VOC content of “Dry Shampoo” products range from zero percent to 99 percent by weight. The key VOC ingredients in “Dry Shampoo” are hydrocarbon propellants and ethanol. The purpose of the propellants is to deliver the oil-absorbing ingredients from the can to the hair. The main functions of ethanol, a solvent, are to suspend the oil-absorbing ingredients and to help the product remain dry, so it can evaporate from the hair and leave the oil-absorbing ingredients on the hair and scalp.

As shown in Figure III-12, typical VOC propellants for the aerosol and liquid product forms include isobutane, propane, and n-butane. Some formulations contain the exempt propellant HFC-152a. There is also a small amount of fragrance in “Dry Shampoo” formulations. The powder form does not contain solvents or propellants, so its VOC content is much lower than the aerosol or liquid forms. The formulations also contain lipophilic ingredients, such as rice starch or silica, to absorb oil; various oils; siloxanes to provide shine; and fragrance.

Dry shampoo products are experiencing a faster growth rate than most of the other hair care products surveyed in 2015. In a previous personal care products survey conducted in 2003, “Dry Shampoo” had not been reported as being sold in California. In contrast, in the 2015 Consumer Products Survey, 75 companies reported 94 product formulations in this category, with 1.29 tons per day sold and 1.04 tons per day of VOC emissions, as indicated in Table III-10.

Table III-10: Dry Shampoo Products*

Number of Companies	Number of Product Formulations	Category Sales (tpd)	Sales-weighted Average VOC (Wt. %)**	Adjusted VOC Emissions (tpd)**
51	94	1.29	81.00	1.04

* Based on 2015 Consumer Products Survey data (CARB, 2019)

** 2015 Consumer Products Survey data emissions adjusted for complete market coverage

b. Regulatory History

“Dry Shampoo” is currently defined as “No Rinse Shampoo” in the Consumer Products Regulation. In the 2013 rulemaking, the “No Rinse Shampoo” category was added to the Consumer Products Regulation to differentiate these products from conventional shampoo and hair styling products, in response to stakeholders’ requests for clarification that “No Rinse Shampoo” products that made no styling claims were not hair styling products subject to a VOC standard.

c. Proposed VOC Standard and Reformulation Strategies

“Dry Shampoo” product sales are experiencing a faster growth rate than most personal care products that reported sales in the 2015 Consumer Products Survey. To address the resultant growing VOC emissions from the use of these types of products, staff is proposing to regulate VOC emissions from this category in two stages. The VOC standard proposed for the first stage, Tier I, is 55 percent by weight, with an effective date of January 1, 2023. The VOC standard proposed for the second stage, Tier II, is 50 percent by weight, with an effective date of January 1, 2029. The powder, liquid, and cap forms of “Dry Shampoo” will mostly be unaffected by this proposal, as they contain minimal VOCs and already meet the proposed standards. Most aerosol dry shampoo products would need to be reformulated to meet the new VOC standards, which staff believe is feasible. As shown in Table III-11, staff’s proposal would achieve approximately 0.58 tons per day VOC reductions in 2023, and 0.78 tons per day VOC reductions in 2031. Table III-11 below presents the emission reductions and currently complying market-share at the proposed standard.

Table III-11: Dry Shampoo Proposal*

Category Name	Proposed Effective Date	Proposed VOC Standard (Wt.%)	Complying Product Formulations	Complying Market Share (%)**	Adjusted Emission Reductions (tons/day)***
Dry Shampoo	1/1/2023	55	37	13	0.58
	1/1/2029	50	35	12	0.78

* Based on 2015 Consumer Products Survey data (CARB, 2019)

** Based on mass of products sold.

*** 2015 Consumer Products Survey data emissions adjusted for complete market coverage.

Table III-11 above shows that in 2015, 37 “Dry Shampoo” products, representing about 13 percent of the market, were already in compliance with the proposed Tier I VOC standard. The majority of “Dry Shampoo” products reported in the 2015 Consumer Products Survey are aerosol products, some of which were also in compliance with the proposed standard.

The two principal VOC ingredients in aerosol “Dry Shampoo” are the propellant, usually hydrocarbon based, and the carrier solvent, typically an alcohol. Reformulation strategies that can be used to meet the proposed standards include substituting hydrocarbon propellants with non-hydrocarbon propellants or exempt propellant, or substituting VOC carrier solvent with non-VOC solvent, demonstrating the feasibility of this proposed standard.

C. Personal Fragrance Product

1. Category Description

“Personal Fragrance Product” is currently defined as any product which is applied to the human body or clothing for the primary purpose of adding a scent or masking a malodor, including, but not limited to, cologne, perfume, aftershave, toilet water, lotion, powder, body mist, and body spray. Products specifically excluded from the category are Deodorants, which are regulated in Article 1 (title 17, CCR, sections 94500-94506.5) and are labeled to provide a scent or minimize odor when applied to the human axilla; medicated products; mouthwash; skin care products to be used primarily to alleviate dry and irritated skin; and other possibly-fragranced products that have a primary function other than the application of scent generally to the body and/or clothing.

The number of manufacturers, product formulations, sales, average VOC content, and VOC emissions from products in the “Personal Fragrance Product” category, based on the 2015 Consumer Products Survey data, are presented in the table below.

Table III-12: Personal Fragrance Products*

Fragrance Content (Wt.%)	Number of Companies	Number of Product-Formulations	Category Sales (tpd)	Sales-weighted Average VOC (Wt. %)	Adjusted VOC Emissions (tpd)**
≤ 20***	141	2,715	21.16	69.22	14.64
> 20	38	166	0.28	71.94	0.20
ALL	141	2,881	21.44	69.26	14.84

* Based on 2015 Consumer Products Survey data (CARB, 2019). Includes “Deodorant Body Spray” and “Aftershave” Products.

** 2015 Consumer Products Survey data emissions adjusted for complete market coverage.

As shown in Table III-12, the sales of products in this category with more than 20 percent fragrance is negligible compared to products in this category with less than or equal to 20 percent fragrance.

After an extensive review of labels and formulas from products with 20 percent or less fragrance, staff found that, although not lending themselves easily to regulatory definition, the products can generally be grouped into four subtypes: fragrance mist, fragrance body spray, aftershave, and eau de parfum/eau de cologne/eau de toilette (EDP/EDC/EDT). The following is a description of each type.

Fragrance Mist:

Fragrance mist products are packaged with a pump spray delivery system. They may mention uses "for the body," but this tends to be an incidental claim, or it may not contain any such claim at all. Other claims include scenting the air, clothing, or personal spaces. These products are designed, in general, to add a subtle fragrance to one's personal space, and the amount of product dispensed per use is typically higher than for EDP/EDC/EDT products.⁶ Fragrances delivered in this subtype typically contain fruity, herbal or floral notes, or a combination thereof. Some of these products have functions other than imparting a fragrance, such as moisturizing or imparting a sheen or glitter to the skin.

A typical formulation consists of around three percent fragrance, 70 to 75 percent ethanol, and water as the remainder. Depending on the various product functions previously mentioned, (such as moisturizing or imparting a sheen or glitter to the skin) other ingredients may include small amounts of silicones, oils, surfactants, emollients, or glitter.

The fragrance mist subtype makes up six percent of "Personal Fragrance Product" formulations, and is produced by 16 percent of the companies that reported making "Personal Fragrance Product." The average fragrance content is 3.3 percent, and the average VOC content, not including fragrance, is 72 percent. As illustrated in Fig. III-14, products potentially identified as fragrance mists account for about 39 percent of the VOC emissions of the "Personal Fragrance with less than or equal to 20% Fragrance" subcategory.

Fragrance Body Spray:

Fragrance body spray products include "Deodorant Body Spray" and other products sprayed all over the body that mainly function to impart a scent to the body. "Deodorizing" can be a function of this subtype, but the products are distinguished from deodorant products by the absence of any indication that the product can be used on or applied to the human axilla (underarms) to provide a scent and/or minimize odor. "Deodorant Body Spray" is a subcategory of the "Personal Fragrance Product" category, and is defined in the regulation as a

⁶ A product which only claims to add a fragrance to the air would be categorized as an air freshener and would not be included in this analysis.

product “that is designed for application all over the human body to provide a scent.” This subcategory consists primarily of products supplied in a pressurized aerosol package, with the remainder of fragrance body sprays typically being non-aerosol pump sprays which can be sprayed on the body (and sometimes also to the hair and on clothing). As is the case with fragrance mist, fragrance body sprays can also make other claims, such as adding a shimmer, moisturizing the skin, or providing a sunscreen.

Fragrance body spray fragrance content ranges from less than one percent to nine percent, with the greatest sales by mass occurring in the two to three percent range. The ethanol content ranges from zero to 75 percent, with the greatest sales by mass occurring in the 69 to 70 percent range. After ethanol and fragrance content, the remainder is mostly water. Depending on the claims made, other ingredients in the formula can be emollients, silicone, glitter, surfactants, and UV absorbers.

The fragrance body spray subtype makes up 10 percent of “Personal Fragrance Product” formulations, with an average fragrance content of 2.9 percent and an average VOC content, not including fragrance, of 69 percent. As illustrated in Fig. III-14, fragrance body sprays account for about 32 percent of the VOC emissions of the “Personal Fragrance with less than or equal to 20% Fragrance” subcategory.

After Shave:

After shave products are to be applied after shaving, and include balms, lotions and “splashes.” They are packaged as pourable liquids, or in pumps and squeeze bottles. Some products are akin to a more dilute version of a “fragrance line,” which would include a cologne, EDT spray, and an after shave, the main purpose of which is to impart a fragrance to the skin (mainly around the face and neck). Other after shave products are designed to treat the skin after shaving, and contain emollients and/or oils to moisturize the skin after shaving. Other uses of an after shave, besides imparting a fragrance, include functions such as hydrating and protecting the skin, stopping the spread of bacteria, preventing “bumps” and ingrown hairs, and soothing and calming the skin.

The after shave subtype makes up about six percent of “Personal Fragrance Product” formulations. Ethanol concentration in this subtype varies from zero to 75 percent, while the average fragrance content is 2.3 percent and the average VOC content, not including fragrance, is 38 percent. As shown in Fig. III-14, after shave products account for about four percent of the VOC emissions of the “Personal Fragrance with less than or equal to 20% Fragrance” subcategory.

EDP/EDC/EDT:

EDP/EDC/EDT products are typically sprayed on pulse points and include roll-on and solid products. They are generally applied at smaller dosage levels than the other subtypes, and do not have any other function than the application of fragrance to the body or clothing for the purpose of adding a distinctive fragrance to one’s personal space.

EDP/EDC/EDT products are the most simply formulated products. They consist predominantly of fragrance compounds, ethanol, and water. EDP/EDC/EDTs may contain very small amounts of other ingredients, such as colorants, UV filters, and antioxidants. Fig. III-13 illustrates the sales mass of each subtype at each fragrance level. As shown in the graph, EDP/EDC/EDTs typically have higher fragrance contents than the other subtypes. A typical formulation consists of 10 percent fragrance, 70 percent ethanol, and less than one-half percent additives, with the balance being water.

This subtype makes up 78 percent of "Personal Fragrance Product" formulations, and is produced by 69 percent of the companies making personal fragrance products. EDP/EDC/EDT products typically have much higher fragrance content than the other subtypes of PFP, and most EDP/EDC/EDT products are comprised of more than ten percent fragrance. The average fragrance content for EDP/EDC/EDT products is 10.8 percent, and the average VOC content, not including fragrance, is 71 percent. As illustrated in Fig. III-14, EDP/EDC/EDTs account for about 25 percent of the VOC emissions from the "Personal Fragrance with less than or equal to 20% Fragrance" subcategory.

Figures III-13 and III-14, below, illustrate the product average fragrance content distribution and VOC emissions contribution by product subtype.

Figure III-13: Subtype Product Sales Mass per Fragrance Content

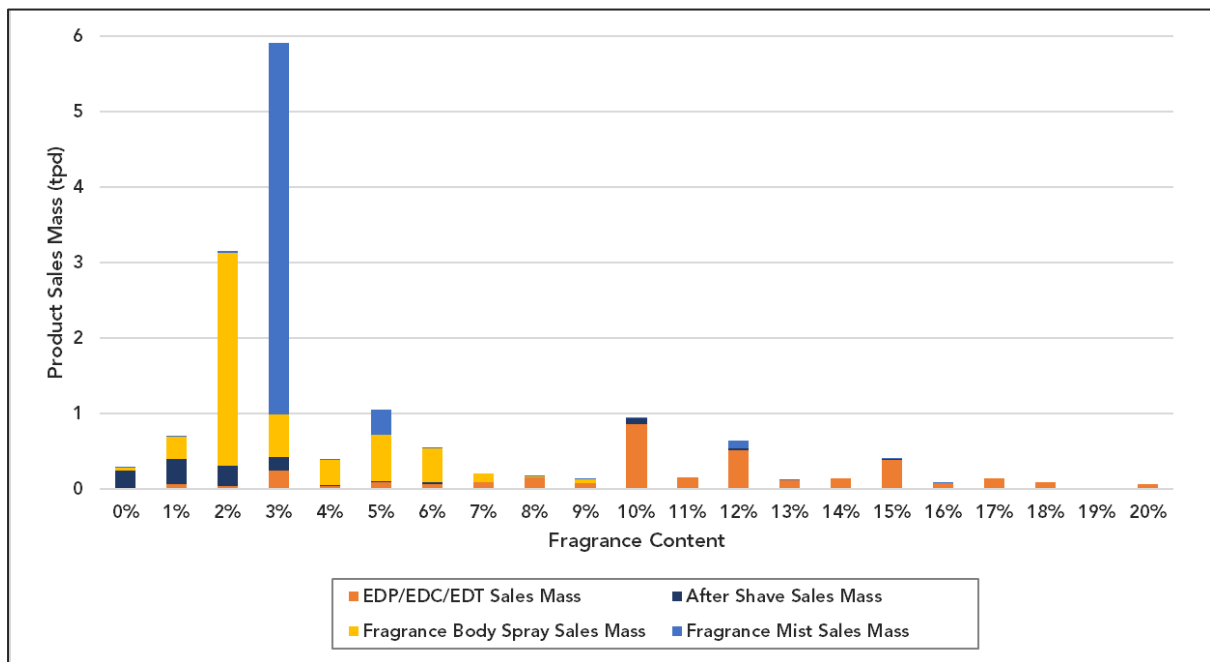
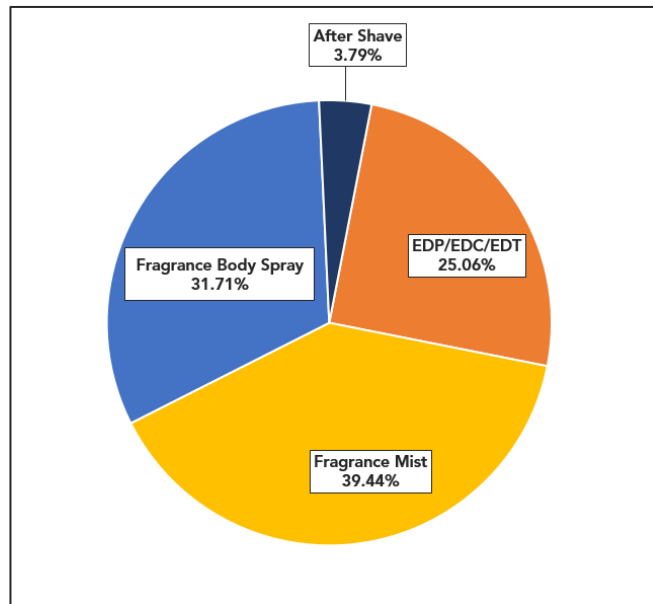


Figure III-14: Personal Fragrance Product Subtype VOC emissions



2. Regulatory History

Personal fragrance products were regulated under "Phase II" of the Consumer Products Regulation, adopted in January of 1992. At that time, the category was responsible for 5.45 tons per day of VOCs, with the "perfume/cologne/toilet water" subcategory contributing about four tons per day. At the hearing, the Board divided the entire "Personal Fragrance Product" category into two subcategories, "based on the fragrance content of products instead of on different definitional subcategories of personal fragrance products" (CARB, 1992). As stated in the Final Statement of Reasons for that rulemaking, "this modification was made to allow greater flexibility to industry in complying with the standards, and to avoid definitional problems in clearly distinguishing the boundaries of each product subcategory" (CARB, 1992). The dividing line, based on a product's fragrance content, used to distinguish the two subcategories of "Personal Fragrance Product" in the 1992 rulemaking, was 20 percent fragrance.

Products with 20 percent or less fragrance were required to meet a VOC standard of 80 percent by weight, effective in 1995. A second tier standard of 75 percent by weight became effective in 1999. Products with more than 20 percent fragrance were required to meet a VOC standard of 70 percent by weight, effective in 1995. A second tier standard of 65 percent by weight became effective in 1999 (CARB, 1992).

In addition, the Board provided an exemption from the standards in section 94509(a) for products existing or in development on or before April 1, 1992, or that were sold in California before January 1, 1994. The January 1, 1999 "Personal Fragrance Product" standards would not apply to products which had been sold in California prior to that date, so the second tier standards would only apply to products introduced after 1999. A further exemption, section 94510(j), specified that the VOC standards in section 94509(a) would not apply to any VOC which is a

fragrance in a "Personal Fragrance Product" category or subcategory (CARB, 1992), effectively allowing for products composed nearly entirely of VOCs.

The next and most recent time the "Personal Fragrance Product" category requirements were amended was in 2008. At that time, the Board ended the exemption from the VOC standards for "Personal Fragrance Product" existing or in development on or before April 1, 1992, and on the market in California prior to 1994, for products that contain 20 percent or less fragrance, effective December 31, 2014. Also, effective December 31, 2014, the Board ended the exemption from the 75 percent VOC standards for "Personal Fragrance Product" on the market in California prior to January 1, 1999, for products containing 20 percent or less fragrance. The net result was that the 75 percent VOC standard for the subcategory of products containing 20 percent or less fragrance was phased in for all products in the subcategory, regardless of when they were originally sold in California.

For products with more than 20 percent fragrance, the exemptions remain in place. Therefore, products in this subcategory that existed or were in development on or before April 1, 1992, and were sold in California before January 1, 1994, are not subject to a VOC standard. Products that were introduced after that time, but before 1999, are required to meet the VOC standard of 70 percent by weight. Products introduced after 1999 are required to meet the VOC standard of 65 percent by weight. Lastly, clarifying language was added to the definition to include lotions, powders, body mists and body sprays in the "Personal Fragrance Product" category.

3. Proposed VOC Standard and Reformulation Strategies

CARB has not adopted any new VOC standards for the "Personal Fragrance Product" category since it was first regulated in 1992. The current VOC standard for "Personal Fragrance Product" with 20 percent or less fragrance is still 75 percent VOC by weight, and the current VOC standard for "Personal Fragrance Product" with more than 20 percent fragrance is still 65 percent VOC by weight. Both standards became effective January 1, 1999.

To address the growth in emissions from consumer products since the 1992 rulemaking, staff is proposing more stringent VOC standards for Personal Fragrance Products in two tiers. Staff is proposing to shift the threshold which divides "low" and "high" fragrance products from 20 percent to seven percent as of January 1, 2023, and to 10 percent as of January 1, 2031. The proposal would also differentiate between aerosol and nonaerosol forms of fragrance products in applying the two new tiers of VOC standards.

For the first tier, proposed to become effective on January 1, 2023, products with seven percent or less fragrance and aerosol products at all fragrance levels, both of which are currently subject to a 75 percent VOC standard, would be required to meet a new standard of 70 percent. Nonaerosol products with more than seven percent fragrance would still be subject to the 75 percent standard. This maintains the current 75 percent standard for nonaerosol products with a fragrance content greater than seven percent but less than or equal to 20 percent. For

nonaerosol products with a fragrance content greater than 20 percent, the result is an increase in the VOC standard from 65 to 75 percent. Since the sales mass of this subcategory accounts for about one percent of the whole “Personal Fragrance Product” category, the potential increase in emissions is negligible compared to the reductions achieved for the overall category (CARB, 2019). Such an approach maximizes potential VOC reductions from this “Personal Fragrance Product” while maintaining a single regulatory fragrance threshold, to facilitate program implementation and enforcement. As previously mentioned, products in existence with more than 20 percent fragrance as of the 1992 rulemaking remain subject to an 80 percent VOC standard; staff’s proposal would not impact the VOC content of these longstanding products.

Table III-13: Personal Fragrance Product Proposal*

Proposed Subcategory (% indicates fragrance level)	Proposed VOC Standard (Wt. %)	Proposed Effective Date	Complying Product-Formulations (%)	Complying Market-Share (%)**	Adjusted Emission Reductions (tons/day)***
≤ 7% ⁺	70	1/1/2023	56	45	0.41
≤ 10%	50	1/1/2031	20	5	5.05
> 10% ⁺⁺ (nonaerosol)	75	1/1/2023	ALL	ALL	NONE ⁺⁺
> 10% (aerosol) ⁺⁺⁺	70/50	2023/ 2031	N/A	N/A	NONE ⁺⁺⁺

*Based on 2015 Consumer Products Survey data (CARB, 2019)

** Based on mass of products sold

*** 2015 Consumer Products Survey data emissions adjusted for complete market coverage.

+Nonaerosol products with fragrance content greater than seven percent would be exempt from the first tier standard.

++All nonaerosol products with more than 10 percent fragrance are currently regulated at a standard of either 65 or 75 percent VOC by weight.

+++No aerosol products were found in the 2015 Consumer Products Survey with more than 10 percent fragrance.

For the second tier, effective January 1, 2031, products with 10 percent or less fragrance, and aerosol products at all fragrance levels, would be subject to a 50 percent VOC standard. This would leave nonaerosol products with fragrance levels of greater than 10 up to and including 20 percent at the existing standard of 75 percent. And nonaerosol products with more than 20 percent fragrance would remain at their first-tier standard of 75 percent.

As shown in Table III-13, the proposed first-tier standard will result in an estimated VOC emission reduction of 0.41 tons per day in 2023. The proposed second-tier VOC standard of 50 percent VOC, effective January 1, 2031, would reduce emissions from “Personal Fragrance Product” by 5.05 tons per day in 2031.

Aerosol and nonaerosol "Personal Fragrance Product" would have distinct reformulation pathways. For the nonaerosol form, a common formulation for fragrance body sprays and eau de parfums consists of ethanol, fragrance water, and trace amounts of LVP-VOCs. For these products, reformulation would likely consist of replacing some of the ethanol content with water. Innovative choices of additives, fragrance ingredients, and possibly also pump spray hardware may also facilitate compliance with proposed standards. Other types of products with more diverse product functions (as described above) tend to include more ingredients, with a corresponding increase in LVP-VOC ingredients and content. Among these formulations, more latitude exists for innovation with additive ingredients.

Fragrance body spray is the only "Personal Fragrance Product" subtype packaged in aerosol form reported in the 2015 Consumer Products Survey. For this form, products can be formulated with exempt propellant in place of hydrocarbon propellants. There are also products with lower VOC content in the category are currently formulated with dimethyl ether. Even though dimethyl ether is a VOC, it has much greater solubility in water than hydrocarbon propellants, which allows for a finer spray with products formulated with water. Therefore, it allows formulation with a higher amount of water and reduced amounts of ethanol, reducing VOCs emitted.

CARB staff believes that it will be possible for responsible parties to reformulate to meet the new standards of 70 and 50 percent VOC by weight by 2023 and 2031, respectively. Staff expects utilization of solubilizers would facilitate compliance with the 50 percent standard. Even though VOC standards for "Personal Fragrance Product" have remained unchanged since 1992, multiple pressures to create a new market segment for nonalcoholic fragrances began to take place worldwide in 1993 (Blakeway, 1993). This kind of technology is currently being used in "Personal Fragrance Product" formulations with lower VOC content, and staff expect its use to grow if this proposal is adopted.

However, staff recognizes that the 50 percent standard presents technical challenges and may be technology forcing for industry. Although evaluation of the product formulation data received during the 2015 Consumer Products Survey indicate that 20 percent of product formulations would comply with the proposed standard, CARB staff has committed to industry stakeholders to conduct another full technical assessment of the Tier 2 standard by 2027 to determine if the 50 percent VOC standard for products with less than or equal to 10 percent fragrance will continue to be technically and economically feasible across all "Personal Fragrance Product" subtypes. To conduct that further technical assessment, staff would collect survey data of 2025 calendar year product sales, formulations, and reports of industry efforts and progress in meeting the 2031 standard. In new proposed subsection 94513(i), "Personal Fragrance Product" manufacturers would be required to supply detailed written updates on their research and development efforts undertaken to achieve compliance with the 2031 VOC standard. The reports would include sales and formulation data for current products. Staff would use this information to assess the continued feasibility of the 2031 standard. CARB commits to not publicly disclose any manufacturer-provided

information that could compromise a company's trade secrets and/or ability to protect its proprietary information via the patent process, consistent with CARB's approach to prior consumer product technology assessments.

D. Crawling Bug Insecticides (Aerosol)

1. Category Description

"Crawling Bug Insecticide" products are consumer pesticide products designed to eradicate non-flying household insects or pests, such as ants, cockroaches, spiders, mites, and other crawling bugs. These products may also be used in janitorial, institutional, or commercial settings, but exclude products that are designed specifically for use by licensed pest control operators (PCOs). "Crawling Bug Insecticide" products do not include products designed to be used exclusively on humans or animals, or any house dust mite products.

Insecticide products that are sold in California must be registered with the California Department of Pesticide Regulation and, in accordance with the Federal Insecticide, Fungicide, and Rodenticide Act, with U.S. EPA. Insecticides used by PCOs generally either contain higher levels of active ingredients than their consumer-use counterparts or contain restricted materials that require a permit for use and possession. These products fall under the authority of DPR and are not available to typical consumers, so they are excluded from this regulation.

"Crawling Bug Insecticide" products are sold in supermarkets, mass merchandise outlets, hardware stores, nurseries, and other locations, including the internet. These products are used around homes, offices, and commercial and institutional areas.

"Crawling Bug Insecticides" are available in a wide variety of product forms, and incorporate many different strategies for controlling insects. The most common forms include bait stations, residuals (solid granules), liquids, and aerosols. Only the aerosol form of these products is discussed in this chapter. Aerosol "Crawling Bug Insecticides," while targeting specific insects such as ants and roaches, are usually effective against many other crawling pests as well.

Aerosol crawling bug insecticides are typically formulated with one or more active ingredients that make up less than one percent of the aerosol product and propellants, with the remainder consisting of inactive ingredients. Inactive ingredients include the carrier, which is either an organic solvent or water with emulsifiers. Inactive ingredients may also include attractants, pheromones, fragrances to mask unpleasant odors, and other ancillary ingredients.

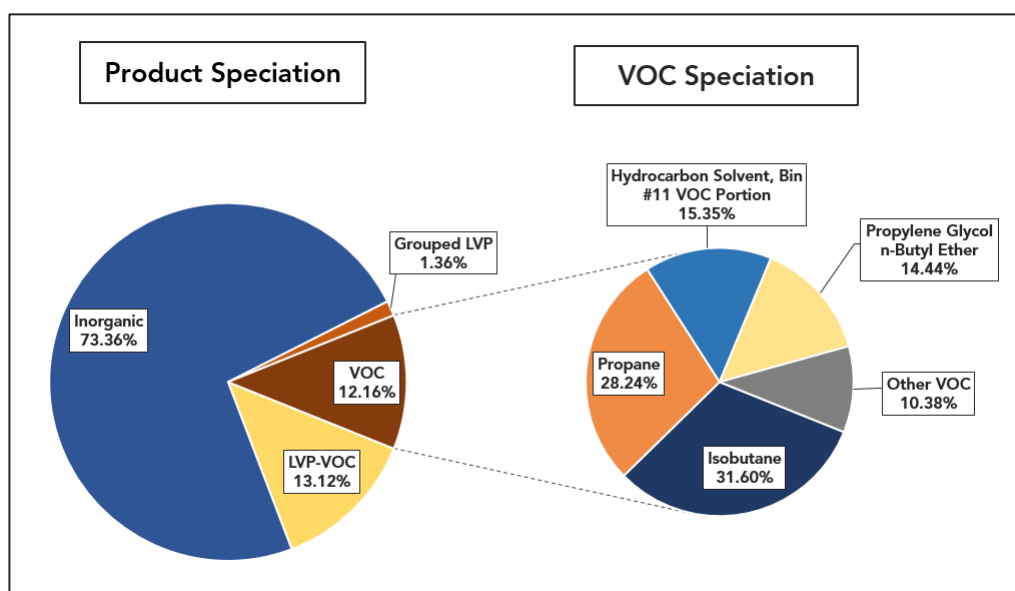
Hydrocarbon propellants are most commonly used, and typically consist of a liquefied mixture of mostly propane and isobutane, as well as n-butane. Carbon dioxide has also been observed in the 2015 Consumer Products Survey results as a propellant. Water-based formulations typically contain hydrocarbons as a propellant.

Typical solvents in solvent-based products include various petroleum distillates (both VOC and LVP-VOC, and primarily aliphatic hydrocarbon solvents); glycol

ethers (e.g. propylene glycol n-butyl ether, diethylene glycol monobutyl ether); alcohols (e.g. ethanol and isopropyl alcohol); and others. Typical solvents in water-based products include water, glycol ethers, alcohols, and other water mixable solvents.

Figure III-15 illustrates the VOC contribution of various ingredient types used in this product category.

Figure III-15: Aerosol Crawling Bug Insecticide Speciation



The active ingredient is the compound that carries out the desired insecticidal function. The ability of an active ingredient to actually kill insects, rather than flush them out or just provide knockdown, is a key measure of its activity. Products may contain one or more active ingredients, targeting the same or different metabolic functions of the insect.

The most commonly used active ingredients in this product category are pyrethrins and pyrethroids. Pyrethrins are natural extracts from the Chrysanthemum flower. They are oily liquids that were discovered to have insecticidal properties centuries ago. Pyrethroids are synthetic derivatives of pyrethrins that have improved killing power, knockdown, or flushing ability. Pyrethrins and pyrethroids have low mammalian toxicity, yet are highly effective against insects, which is why their use in consumer insecticides is prevalent.

The number of manufacturers and product formulations, sales, average VOC content, and VOC emissions from aerosol "Crawling Bug Insecticide" products based on the 2015 Consumer Products Survey data are presented in the table below.

Table III-14: Crawling Bug Insecticide (Aerosol) Products*

Number of Companies	Number of Product-Formulations	Category Sales (tpd)	Sales-weighted Average VOC (Wt. %)*	Adjusted VOC Emissions (tpd)**
25	87	15.60	12.32	1.92

* Based on 2015 Consumer Products Survey data (CARB, 2019)

** 2015 Consumer Products Survey data emissions adjusted for complete market coverage

2. Regulatory History

Crawling bug insecticides (all forms) were first regulated under Phase II of the Consumer Products Regulation, which was adopted in January of 1992. The Board adopted a two-tier standard for these products, setting a VOC standard of 40 percent by weight, effective January 1, 1995, and a 20 percent by weight VOC standard, effective January 1, 1998. For products subject to registration requirements under FIFRA, an additional year was granted to come into compliance with the new VOC standards. Hence the second-tier VOC standard of 20 percent by weight becoming effective in January of 1999 (CARB, 1991). In a 1999 rulemaking, the VOC standard for the aerosol form of crawling bug insecticide products was set to 15 percent by weight VOC, with an effective date of December 31, 2004. The VOC standard for the "Crawling Bug Insecticide" products category has not been revisited for over 20 years.

For further information on the previous rulemakings, the reader is referred to the following rulemaking documents:

- Phase II - Technical Support Document: Proposed Amendments to the Statewide Regulation to Reduce Volatile Organic Compound Emissions from Consumer Products (CARB, 1991); and
- Staff Report: Initial Statement of Reasons for Proposed Rulemaking: Proposed Amendments to the California Consumer Products Regulation (CARB, 1999).

3. Proposed VOC Standard and Reformulation Strategies

The current VOC standard for "Crawling Bug Insecticide" aerosol products is 15 percent by weight, effective December 31, 2004. Staff is proposing to lower the allowable VOC content for Aerosol Crawling Bug Insecticide products to eight percent by weight, with a proposed effective date of January 1, 2030, and to create a new subcategory of insecticide specifically targeting *Cimex lectularius* (Common Bed Bugs) and/or *Cimex hemipterus* (Tropical Bed Bugs). The proposed "Bed Bug Insecticide" subcategory would not be subject to the proposed eight percent by weight VOC standard, but would instead still be subject to the 15 percent by weight VOC standard for the aerosol form and 20 percent by weight VOC standard for all other forms. Table III-15 below presents the emission

reductions and currently complying market-share at the proposed eight percent by weight VOC standard. The values presented do not include products that will fall under the proposed “Bed Bug Insecticide” subcategory.

Table III-15: Crawling Bug Insecticide (aerosol) Proposal*

Proposed VOC Standard (Wt. %)	Proposed Effective Date	Complying Product-Formulations	Complying Market Share (%)**	Adjusted Emission Reductions (tons/day)***
8	1/1/2030	25	11	0.81

* Based on 2015 Consumer Products Survey data (CARB, 2019) excluding Bed Bug Insecticide

** Based on mass of products sold.

*** 2015 Consumer Products Survey data emissions adjusted for complete market coverage

As shown above, the proposed eight percent by weight VOC standard would result in estimated VOC reductions of 0.81 tons per day Statewide and 0.34 tons per day in South Coast in 2031. The proposed eight percent by weight VOC standard is based on staff’s review of data collected from the 2015 Consumer Products Survey, technical discussions with crawling bug insecticide manufacturers, as well as the review of existing and newer aerosol technologies.

“Crawling Bug Insecticide” aerosol products are formulated as both solvent-based and water-based formulations. Typical solvents in solvent-based products include petroleum distillates, glycol ethers, and alcohols. The selection of the appropriate solvent depends on the product type and residual time required. Hydrocarbon propellants mainly consist of a liquefied mixture of propane, isobutane, and normal butane. Water-based formulations typically contain compressed gases, such as carbon dioxide or nitrogen, as a propellant. Various additives in small quantities are also included to address specific problems or enhance product performance.

Staff’s evaluation of the “Crawling Bug Insecticide” (aerosol) product category shows that some complying products already exist. Table III-15 above shows that in 2015, 25 products, representing about 11 percent of the market, were already in compliance with the proposed lower VOC standard. Some of the complying products are solvent-based, and others are water-based.

Based on the formulation data reported in the 2015 Consumer Products Survey, several main reformulation strategies can be utilized to meet the proposed eight percent by weight VOC standard. These strategies include substituting VOC petroleum distillates with LVP-VOC petroleum distillates; using other LVP-VOC solvents; reducing the hydrocarbon propellant content; and substitution of VOC propellants with exempt or compressed gas propellants.

E. Sunsetting the Two Percent Fragrance Exemption

Staff is proposing to sunset the two percent fragrance exemption for most regulated consumer product categories by 2031 to reduce VOC emissions and improve program transparency, clarity, and effectiveness. Staff are also proposing to retain a modified 0.25 percent fragrance exemption for select categories, due to the potential technical challenges or unintended consequences of full fragrance exemption elimination for those categories. Staff's proposal would not amend the existing Two Percent Fragrance Exemption for "Antiperspirant" or "Deodorant" products regulated under Article 1 of the Consumer Products Regulations.

1. Description of Fragrance

Fragrances are a class of VOC and LVP-VOC chemical compounds and compound mixtures used in consumer products to impart an odor or scent, or to mask the malodor of other chemical substances used in product formulations. Fragrances range from simple, artificially synthesized chemical compounds to complex mixtures of chemical compounds extracted from natural sources. Some chemicals, such as monoterpenes, and serve as both a degreasing agent and a fragrance in cleaning products such as floor cleaners, heavy duty hand cleaners, and general purpose degreasers.

Fragrance is prevalent in consumer products, being present in nearly every consumer products category. Data received in response to CARB's 2015 Consumer Products Survey shows that fragrance was second only to ethanol when ranking TOG ingredients by mass in consumer products, and fragrance represented 7.60 percent of all TOG emissions in 2015. See the Appendix B to this ISOR, for more information.

2. Regulatory History

Fragrance, as defined in the Consumer Products Regulation, is "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 Hg at 20°C, the sole purpose of which is to impart an odor or scent, or to counteract a malodor." While many other definitions in the Consumer Products Regulations have undergone multiple revisions in the past 30 years, the fragrance definition has only been revised once, in 1991, to remove the term "colorants."

Article 2 consumer products are subject to three limitations with respect to fragrance content, depending on their specific category. With the exception of pressurized gas dusters, all consumer products categories are granted an exemption to their applicable VOC standard of up to two percent by weight of fragrance. In addition, air freshener products that contain VOCs comprised solely of fragrance are exempt from their otherwise applicable VOC standard, and the fragrance content of personal fragrance products is not included in compliance determinations for the applicable VOC standard.

Although the definition of fragrance has remained unchanged for over three decades, regulated industry has sought clarity with respect to certain aspects of the applicability of the Two Percent Fragrance Exemption.

3. Staff Proposal

Staff’s analysis of fragrance formulation compositions and utilization in consumer product formulations, detailed in Appendix B, show that the utilization of fragrance in regulated consumer products categories does not support a technical feasibility argument for retention of a two percent exemption for fragrance in the vast majority of regulated categories. As shown in Table III-16, over 85 percent of product formulations and product mass are not utilizing the Two Percent Fragrance Exemption at all, not even to support use of a fraction of fragrance. This means that these products can still meet their VOC standard without the Two Percent Fragrance Exemption, showing the exemption is not needed. Removal of the exemption is still needed to ensure that manufacturers do not start using the exemption in the future to meet more stringent VOC standards and undermine attainment of federal and State ambient air quality mandates, and to improve program equity, transparency and clarity. Staff are therefore proposing to sunset the exemption by 2031 for most product categories.

Table III-16: Utilization of the Two Percent Fragrance Exemption by Regulated Consumer Product Sector

Regulated Sector	% Product-Formulations Not Using Exemption*	Mass Not Using Exemption*
Household	87.1% - 95.6%	83.9%-84.6%
Personal Care	90.2% - 92.3%	80.4% - 89.0%
Insecticide, Solvents, and Automotive	94.6% - 97.0%	97.1% - 99.0%
Total	88.6% - 95.2%	86.2% - 87.5%

* Range derived from fragrance VOC speciation assumption. See Appendix B: Evaluation of Two Percent Fragrance Exemption Utilization for more information.

During the extensive public process (described in section 6, below) to develop this proposal, staff met with stakeholders to discuss potential categories for which full elimination of the Two Percent Fragrance Exemption would pose technical challenges or a significant cost or implementation burden. Based upon these discussions, a cost survey of product manufacturers (described in Chapter IX), and staff evaluation of the data and information described in Appendix B, staff determined that its proposed sunset of the Two Percent Fragrance Exemption is both feasible and cost-effective for the vast majority of product categories. However, as discussed below, staff are proposing retention of a smaller percentage fragrance exemption for certain product categories where a complete sunset of the exemption presents unique feasibility challenges.

a. **“General Purpose Cleaners” and “General Purpose Degreasers”**

Speciation data collected as part of the 2015 Consumer Products Survey regarding the VOC constituents of nonaerosol general purpose cleaner and degreaser categories shows that monoterpene compounds, including limonene and other citrus terpenes, as well as pine terpenes and other fragrance compounds, make up a significant portion of the VOC content of those product categories. Figures III-16 and III-17 show the relative concentrations of the VOC constituents in those two respective categories, with monoterpenes and fragrance making up 58 percent of the VOC content of nonaerosol general purpose cleaners and 24 percent of the VOC content of nonaerosol general purpose degreaser.

Figure III-16: VOC Constituents of Nonaerosol General Purpose Cleaners

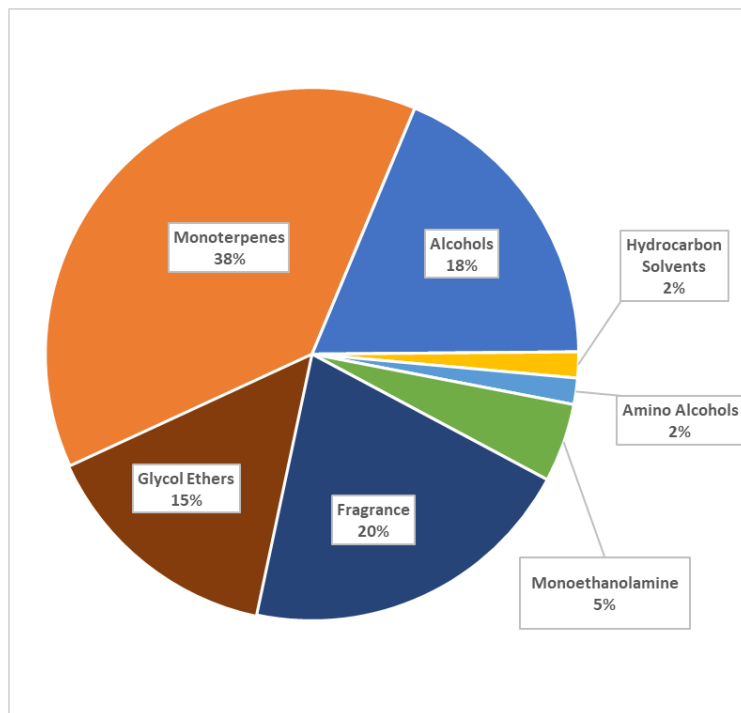
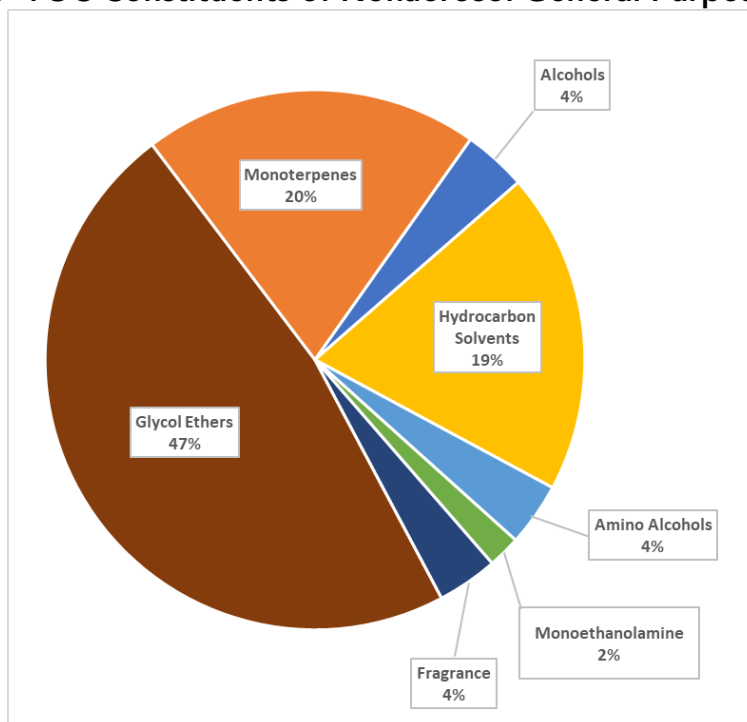


Figure III-17: VOC Constituents of Nonaerosol General Purpose Degreasers



Regulated industry has argued that, considering the already very low VOC standard of 0.5 percent for these two categories, a complete sunset of the two percent exemption would present a feasibility challenge, and staff concurs with this assessment. In recognition of the challenge lemon- or citrus-scented products face in meeting a 0.5 percent VOC standard without a limited exemption, staff is proposing to retain a 0.25 percent fragrance exemption for nonaerosol "General Purpose Cleaners" and nonaerosol "General Purpose Degreasers."

Staff's proposal would allow monoterpenes up to a combined 0.25 percent by weight to be exempt as part of this 0.25 percent fragrance exemption for these two categories. In other words, fragrance and monoterpenes up to a combined 0.25 percent by weight would be exempt from the 0.5 percent VOC standard under this proposal. CARB's "fragrance" definition would continue to exclude monoterpenes in categories whose primary function is to clean or degrease from the definition of fragrance. As degreasing agents in products formulated to clean or degrease, monoterpenes have a dual function (i.e., as both solvents and fragrance) and therefore do not meet the "sole purpose" criteria required to be met to qualify as a fragrance under the "fragrance" definition. Even with this partial retention, staff still expects to achieve a 0.1 tpd reduction in VOC emissions from these two categories as a result of reducing the fragrance exemption from 2 percent to 0.25 percent.

b. "Air Freshener", "Disinfectant", and "Sanitizer"

Staff are proposing to retain a 0.25 percent fragrance exemption beginning on January 1, 2031, for all the "Air Freshener" subcategories, including "Automatic Aerosol", "Concentrated Aerosol", "Dual Purpose Air Freshener/Disinfectant", "Liquid/pump spray", "Manual Aerosol", "Solid/semisolid", and "Total Release

Aerosol.” Complete elimination of the two percent fragrance exemption in these categories, combined with the proposal for lower “Manual Aerosol Air Freshener” VOC standards, has been identified by staff and stakeholders as posing technical feasibility challenges. The other VOC constituents in air freshener products, such as ethanol, often serve as both a solvent and as method to retard microbial growth within the product. In particular, product manufacturers have discussed the difficulty they have controlling microbial growth in products that contain less than five percent ethanol, which is the current proposed VOC standard for the “Manual Aerosol Air Freshener” category. Staff believe that this proposed VOC standard may not be feasible without the retention of a 0.25 percent fragrance exemption.

Staff are also proposing to retain a 0.25 percent fragrance exemption for the aerosol and nonaerosol “Disinfectant” and “Sanitizer” categories. These important health-benefit product categories are subject to FIFRA and California Department of Pesticide Regulation requirements that, depending on the circumstances, could result in the need for products to reregister or recertify. Staff believe a retention of a 0.25 percent fragrance exemption is sufficient for the vast majority of these products to retain their efficacy and to remain registered.

c. Exemption of LVP-VOC Content

Since 1996, any LVP-VOC constituent of a fragrance mixture was counted toward the Two Percent Fragrance Exemption before the LVP-VOC exemption was applied. Product VOC content was calculated by first subtracting two percent of the fragrance weight, including LVP-VOCs. If any fragrance remained (i.e. the product was formulated with more than two percent by weight of fragrance), the LVP-VOC portion of what remained, if known, would then qualify for the LVP-VOC exemption.

As part of the proposed elimination of the Two Percent Fragrance Exemption, staff is proposing that the LVP-VOC portion of fragrance mixtures would be included in the overall exemption for LVP-VOC under section 94510(d) before utilization of the fragrance exemption is determined. For example, if a product subject to a VOC standard of two percent and with a fragrance exemption of 0.25 percent has a fragrance content of 4.50 percent and no other VOC ingredients, the product would comply with the standard if the fragrance was 50 percent VOC and 50 percent LVP-VOC.

4. Benefits of Staff Proposal

As shown in Table III-17, staff anticipate the bulk of the VOC reductions achieved through the sunset of the two percent fragrance exemption will occur in the household product categories, half of which will come from non-aerosol General Purpose Cleaners and Degreasers, followed by personal care products and products in the remaining sectors.

**Table III-17:
Expected VOC Reductions Due To Two Percent Fragrance Exemption Sunset**

Regulated Category Group	Reductions (tpd)
Household	0.25
Personal Care	0.04
Insecticide, Solvents, and Automotive	0.01
Total	0.30

Elimination of this exemption would achieve several benefits beyond achievement of 0.30 tpd VOC reductions Statewide in 2031, including:

- Lock In Emission Reductions: While manufacturer utilization of the Two Percent Fragrance Exemption is now low, emissions could increase significantly if the exemption were to be fully utilized. Sunsetting the exemption would ensure that over about three tons per day of VOC emissions do not occur in future years by ensuring that utilization of the exemption will not increase.
- Reduced Need: Our improved understanding of fragrance ingredient speciation indicates that most fragrance ingredients are LVP-VOCs, which are already exempt pursuant to section 94510(d) of the Consumer Product Regulation. Therefore, the vast majority of products do not need the Two Percent Fragrance Exemption to comply with applicable VOC standards, and nonaerosol "General Purpose Cleaner," nonaerosol "General Purpose Degreaser," "Sanitizer," "Disinfectant," and air freshener products do not need more than a 0.25 percent exemption.
- Encourage Transparency: The Two Percent Fragrance Exemption enables consumer product manufacturers to be unaware of the properties of fragrance purchased from third-party vendors, since CARB exempts up to two percent of fragrance from VOC standard compliance determinations and most manufacturers do not use the full two percent of fragrance allowed under the existing exemption. Elimination of this exemption for most categories could encourage greater transparency regarding fragrance ingredients in those products for which the exemption is reduced or eliminated as product manufacturers request VOC content information from fragrance vendors to ensure their products – including fragrance – are formulated to meet the applicable VOC standard without the Two Percent Fragrance Exemption.
- Enhance Clarity: CARB staff and product manufacturers over the years have had numerous discussions regarding whether a particular ingredient meets the regulatory definition of "Fragrance," which depends on the purpose of an ingredient (to be a fragrance, an ingredient's "sole purpose" must be "to impart an odor or scent, or to counteract a malodor"). Treating fragrance

VOC content the same as non-fragrance VOCs for the purpose of compliance determinations would eliminate the need to determine the purpose of an ingredient, at least for product categories for which no fragrance exemption remains, providing more clarity for regulated parties, to help them decide how to formulate their products to make sure they comply with the consumer products regulations.

- Simplify Compliance Determinations: Staff's proposal would also simplify CARB laboratory testing and subsequent product compliance determinations by eliminating the need to identify and quantify thousands of possible fragrance ingredients for the purpose of excluding them from a product's allowable VOC content under the existing two percent fragrance exemption.
- Consider Public Health Concerns: CARB has received several public comments during the rulemaking process, including a letter signed by 26 public interest groups, encouraging CARB to eliminate this exemption due to their concerns regarding the potential impact of fragrance on public health.
- Program Equity: Staff's proposal would treat smog-forming VOC emissions equally, regardless of their intended function. Staff does not see a compelling reason why fragrance VOC ingredients should be treated preferentially to non-fragrance VOCs, allowing fragranced products within a regulated category to emit more VOC than non-fragranced products.

5. Reformulation Strategies

Consumer products manufacturers with product formulations that rely on the Two Percent Fragrance Exemption to comply with VOC standards will need to take steps to ensure that their products remain in compliance once the exemption has sunset or (in the case of nonaerosol "General Purpose Cleaner," nonaerosol "General Purpose Degreaser," "Disinfectant," "Sanitizer," or air freshener product) been reduced. Although these steps could potentially include product or fragrance reformulation, staff believe product manufacturers will employ a tiered strategy, beginning with a review of the VOC content of the fragrance ingredients they are using before any reformulation is considered.

Many consumer product manufacturers have relied on the assumption that the fragrances they are using are 100 percent VOC. CARB's 2016 Fragrance Formulator Survey showed that, in fact, many fragrance formulations are not 100 percent VOC, and that manufacturers do not formulate many of their products up to the applicable VOC standard. Manufacturers will need to consult with their fragrance supplier and treat the fragrance as they would any other partial VOC ingredient in their formulations. But elimination of the Two Percent Fragrance Exemption is unlikely to require reformulation of many products.

If the VOC content of a fragrance used in a product causes the product to exceed the VOC standard for the applicable category, the manufacturer will have at least two options to make the product compliant:

1. Reduce the concentration of other VOC constituents in the formula; and/or
2. Reduce the amount of fragrance used in the product.

For many product categories, Option #1 will be the most likely pathway, since many product formulations are conservatively fragranced due to the relatively higher cost of the ingredient compared to other VOCs.⁷

6. Development of Staff Proposal

Staff's proposal to sunset the Two Percent Fragrance Exemption and reduce the exemption for nonaerosol "General Purpose Cleaners," nonaerosol "General Purpose Degreasers," "Disinfectant," "Sanitizer," and air freshener categories was developed and refined during an extensive regulatory development process, with input from numerous interested stakeholders. In general, industry stakeholders have indicated that staff's proposal is overly burdensome and may be infeasible, while environmental and public health stakeholders have commented that staff's proposal and implementation date are overly generous. These proposals are feasible, for the reasons described at length above and in Appendix B.

Development of this proposal originates from staff discussions beginning in 2015 with the Fragrance Creators Association and other fragrance industry stakeholders regarding the eligibility of monoterpenes for the Two Percent Fragrance Exemption. These meetings included discussion of development and interpretation of the exemption, the purpose of monoterpenes in nonaerosol general purpose cleaners and degreasers, and how much of the Two Percent Fragrance Exemption is typically utilized by manufacturers for various products.

CARB staff initially proposed to sunset the Two Percent Fragrance Exemption in its second public workshop regarding development of these Proposed Amendments, on November 7, 2019, during which CARB originally proposed to sunset the exemption for all Article 1 categories on January 1, 2027. CARB held five additional public workshops and work group meetings to discuss the policy and technical rationale that underlay that proposal, review proposed refinements based upon stakeholder feedback, and address stakeholder questions and comments.

CARB also sent surveys regarding the proposed sunset of the Two Percent Fragrance Exemption in May 2020 to more than 1,300 consumer product manufacturers known to CARB to sell products in California. Product manufacturers were asked to estimate the potential compliance cost of a Two Percent Fragrance Exemption sunset, as well as identify specific product categories they manufacture for which they believe elimination of the exemption might pose technical feasibility challenges. CARB received 41 responses to this survey, with 15 manufacturers identifying categories for which they believe technical challenges may exist. CARB staff discussed these potential issues with the seven product manufacturers willing to speak with staff, and determined that the technical feasibility challenges did not in fact exist, or could be addressed by proposing a lower 0.25 exemption for

⁷ Sixty-three percent of respondents to CARB's cost survey of consumer product manufacturers indicated that they would reduce non-fragrance VOC content, while 37 percent indicated they would reduce fragrance VOC.

nonaerosol "General Purpose Cleaners," nonaerosol "General Purpose Degreasers," "Disinfectant," "Sanitizer," and air freshener categories.

Overall, CARB staff has held numerous meetings with the trade associations and non-governmental organizations, as well as numerous meetings with individual product manufactures, to develop and refine this proposal. As we evaluated and discussed with stakeholders individual categories for which the sunset was proposed, staff consistently confirmed that while a few manufacturers within a category may currently utilize the Two Percent Fragrance Exemption, that most products within that category that utilize a diversity of fragrance do not utilize the exemption, and those few products that use the exemption utilize a very small fraction of VOC fragrance above the applicable VOC standard. Staff altered its proposal to propose a lower 0.25 exemption for nonaerosol "General Purpose Cleaners," nonaerosol "General Purpose Degreasers," "Disinfectant," "Sanitizer," and air freshener categories to address anticipated feasibility issues in those categories. Staff therefore believes this proposal is technically feasible, particularly given the extensive lead time proposed.

F. Proposals to Improve Program Transparency, Clarity, and Effectiveness

1. Energized Electrical Cleaner

CARB staff are proposing to revise the definition of "Energized Electrical Cleaner" to exclude from the category products sold to automotive maintenance and repair establishments, to help ensure that the Consumer Products Regulations remain consistent with CARB's Airborne Toxics Control Measure for Automotive Maintenance and Repair Activities and reduce VOC emissions.

a. Category Description

"Electrical Cleaner" products are products labeled to remove heavy soils, such as grease, heavy oil, or grime, from electrical equipment, such as electric motors, armatures, relays, electric panels, and generators. These products normally use aggressive solvents to clean heavier soils off of electrical equipment. The "Electrical Cleaner" category does not include products that are labeled to clean casings or housings of any electrical equipment, or other general purpose or special purpose cleaners or degreasers.

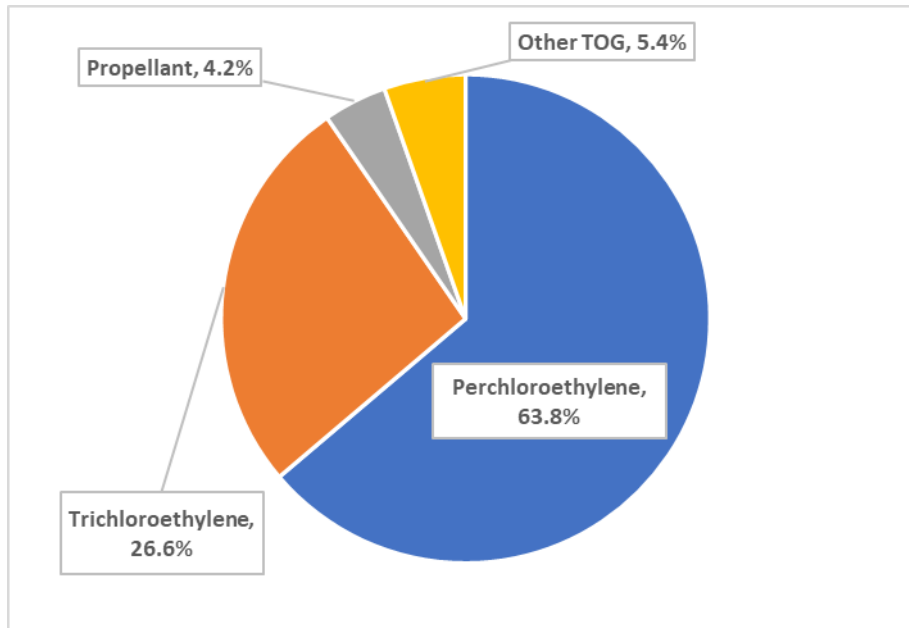
In electrical cleaning applications, there are situations where there is a need for non-flammable solvent. These situations occur when equipment must be cleaned while current is running through it, thus creating a spark or flammability hazard. Products designed to address this flammability concern often utilize chlorinated solvents designated by CARB as toxic air contaminants (TACs), such as perchloroethylene and/or trichloroethylene. These products are defined as "Energized Electrical Cleaner," and must be labeled to clean and/or degrease electrical equipment where cleaning and/or degreasing is accomplished when electrical current exists, or when there is a residual electrical potential from a component, such as a capacitor. In addition, "Energized Electrical Cleaner" must be clearly labeled with the statement:

“Energized Equipment use only.
Not to be used for motorized vehicle maintenance, or their parts.”

This “Energized Electrical Cleaner” definition in the Consumer Products Regulation became effective on July 20, 2005.

As illustrated in Figure III-18, “Energized Electrical Cleaner” is comprised of about 90 percent perchloroethylene and trichloroethylene, which are classified by CARB as TACs.

Figure III-18: TOG Speciation of Energized Electrical Cleaner¹



¹Based upon 2013-2015 Consumer and Commercial Products Survey data.

b. Regulatory History

“Electrical Cleaner” products are currently regulated under the CARB Consumer Products Regulation in two subcategories: “Electrical Cleaner” and “Energized Electrical Cleaner” (CARB, 2004a). Before 2004, products labeled to function as electrical cleaners were defined as “Electronic Cleaner” (CARB, 1999), which were excluded from the then-newly-proposed “General Purpose Degreaser” category, and were not subject to VOC standards or toxics prohibitions.

The 2004 rulemaking divided the “Electronic Cleaner” category into three subcategories, which were developed based on CARB’s review of label claims on products submitted in response to a consumer products survey, product function and end-use variation among the products in this category, and input from stakeholders. Notably, the “Energized Electrical Cleaner” category was created to secure reductions in TAC emissions from the “Electrical Cleaner” and “Electronic Cleaner” categories, while providing an exception for specialized products containing TACs where no safe alternatives existed. “Energized Electrical Cleaner” is for use on equipment that cannot be shut off or unplugged before being cleaned, or in applications that require non-flammability (CARB, 2004a). Projected

TOG emissions from the “Energized Electrical Cleaner” category were expected to be 69.4 tons per year in 2015, including 62.8 tons per year of TACs. More information regarding “Energized Electrical Cleaner” sales and emissions can be found in Appendix C.

In order for a product to qualify as an “Energized Electrical Cleaner,” its label must indicate that the product is not to be used “for motor vehicle maintenance, or their parts.” This labeling requirement has two rationales. First, a report prepared by the Institute for Research and Technical Assistance for South Coast AQMD (SCAQMD, 2003) describes the circumstances under which energized electrical cleaners are used. Typical situations include applications where the equipment to be cleaned is operating on alternating current, such as a city transformer, that must remain energized to provide electricity to the city. In instances where low voltage direct current is used as a power source, such as in motorized vehicles, use of an energized electrical cleaner is not needed (CARB, 2004a). Staff has confirmed that “Energized Electrical Cleaner” products continue to be unnecessary to safely maintain or repair motor vehicles, including zero-emission vehicles.

Second, staff wanted to make sure that the Consumer Products Regulations were consistent with the Airborne Toxics Control Measure for Automotive Maintenance and Repair Activities, adopted in 2000 (CARB, 2000). The CARB AMR ATCM prohibits the use of perchloroethylene, methylene chloride, and trichloroethylene in products designed for use in automotive repair facilities, which includes the product categories “Automotive Brake Cleaner,” “Carburetor & Choke Cleaner,” “Engine Degreaser,” and “General Purpose Degreaser (automotive use).” These products are used in applications similar to those of electrical cleaner products that could have automotive end uses, and staff wanted to ensure that TAC-containing energized electrical cleaners were not utilized for these purposes in violation of the CARB AMR ATCM (CARB, 2004a).

To ensure this consistency between the Consumer Products Regulations and the CARB AMR ATCM, which also ensured that the Consumer Products Regulations did not prevent the CARB AMR ATCM TAC reductions, CARB adopted an additional requirement in the 2004 consumer products rulemaking requiring all responsible parties who sold an “Energized Electrical Cleaner” product containing perchloroethylene or methylene chloride to submit annual reports to CARB detailing the weight percent of perchloroethylene and methylene chloride in each product sold in California, and the sales volume of each such product.

c. Automotive Market Endpoints and Excess TAC Emissions

CARB allows the use of “Energized Electrical Cleaner” products containing TACs solely for the specialized purpose of safely cleaning energized electrical equipment. As discussed above, these products are intended to be used under hazardous conditions where sparks from the components of the equipment being cleaned cannot be de-energized and would pose a flammability concern, and not for general-purpose degreasing, or for automotive maintenance or repair.

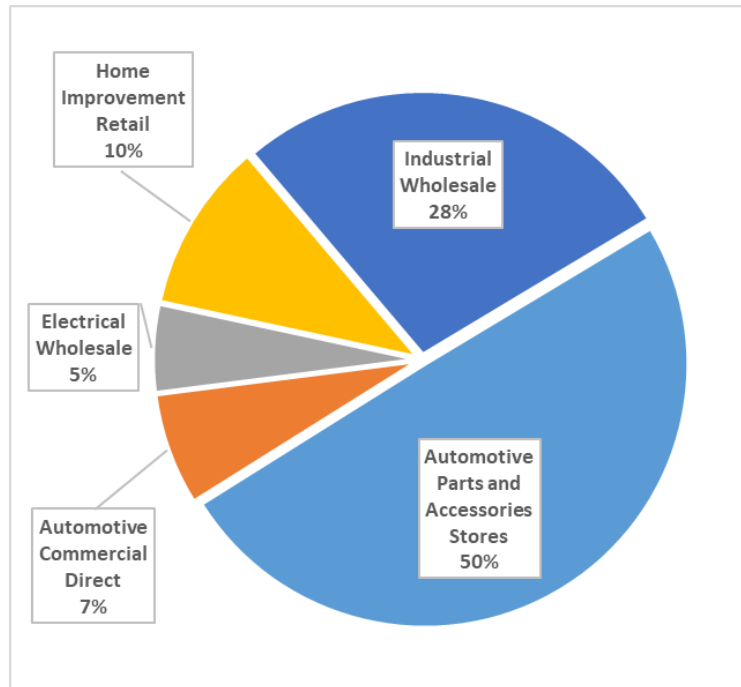
CARB's emissions inventory for electrical cleaner products, developed as part of the 2005 rulemaking (CARB, 2004b), show that CARB expected TAC emissions of no greater than 62.8 tons per year in 2015 as a result of allowing TAC ingredients to be used in products in the "Energized Electrical Cleaner" category. However, analysis of the sales data that was submitted in response to the 2015 Consumer Products Survey, as well as of product mass, perchloroethylene content, and methylene chloride content that were reported between 2006 and 2010, as required by section 94513(e), show that TAC emissions from the category are much higher than CARB had projected. In 2015, TAC emissions from "Energized Electrical Cleaner" were 120.2 tons per year, over 91 percent higher than anticipated. Appendix C provides additional information regarding this determination.

To explain this discrepancy, staff performed a review of "Energized Electrical Cleaner" market endpoint data from a major manufacturer of these products, which included a review of the destination of over 460 bulk transactions of "Energized Electrical Cleaner" products, and were able to classify each of these endpoints by the specific type of consumer served by the particular destination for the products. Broadly defined, these include:

- A. Electrical Wholesalers, who primarily supply products to electrical contractors on a wholesale basis;
- B. Industrial Wholesalers, who supply a wide range of industrial consumers, including factories, warehouse, and industrial maintenance contractors;
- C. Home Improvement Retailers, including big box home improvement retailers that provide a wide variety of products to the average consumer;
- D. Automotive Parts and Accessories Stores, who provide automotive parts and maintenance supplies to both the average retail consumer and commercial automotive repair facilities; and
- E. Automotive Commercial Direct Suppliers, who directly supply commercial automotive repair facilities with parts and maintenance supplies.

As shown in Figure III-19, in 2019, despite the labeling requirement in the regulation, 57 percent of energized electrical cleaners were sold to either automotive parts and accessories stores, or to automotive commercial direct suppliers. The identified increased TAC emissions and unintended sales show that the existing language in the Consumer Products regulations is not achieving the intended consistency with the CARB AMR ATCM.

Figure III-19: 2019 Energized Electrical Cleaner Market Endpoints



d. Proposed Definition Update and Record Retention Requirement

Staff believe that the current labeling requirements have not sufficiently prevented off-label sales of these products to automotive repair facilities such that the intent of the CARB AMR ATCM is met and public health is protected (CARB, 2000b). This channel is supplied both indirectly, by automotive parts and accessories stores who sell to automotive maintenance and repair facilities, and directly, by automotive commercial direct wholesalers. Therefore, staff are proposing to achieve consistency of the Consumer Products Regulations with the CARB AMR ATCM by excluding from the “Energized Electrical Cleaner” category products sold to “Automotive Maintenance Facilities” or “Automotive Repair Facilities,” as defined in section 93111(c)(4). Such products would instead be considered “Electrical Cleaners,” and would then be subject to the existing VOC standard in section 94509(a) and toxics prohibitions in section 94509(m), instead of being subject to no VOC standard or TAC prohibition as an “Energized Electrical Cleaner.”

This additional category exclusion is likely to change business decisions to sell this product through the automotive maintenance supply channel. This automotive maintenance supply channel bypasses traditional consumer products and automotive supply retail outlets and provides products directly to automotive repair facilities, which makes it more difficult to verify that a product follows the requirements to be considered an “Energized Electrical Cleaner,” in compliance with the CARB AMR ATCM (CARB, 2000). Thus, this proposed change would keep the Consumer Products Regulations consistent with the CARB AMR ATCM.

Staff are also proposing an additional record retention requirement for automotive parts and accessories stores that sell “Energized Electrical Cleaner” after the effective date of this rulemaking. As described in section (f), below, between 21 and 75 percent of automotive retailer revenues come from direct sales of

automotive-related products to automotive maintenance and repair facilities. The proposal would require automotive part and accessory retailers to maintain their existing sales records for "Energized Electrical Cleaner" product for five years, and to make these records available to CARB upon request. Staff anticipates that these records would include sales receipts, sales contracts, or other documentation, and would reflect, at a minimum, the name, manufacturer, container size, number of units sold, and the sale date for "Energized Electrical Cleaner" products sold to the general public, and the name and address of "Energized Electrical Cleaner" sold to a California business. Staff's proposal is intended to apply to any California-based automotive part and accessory store that sells "Energized Electrical Cleaner", as well as automotive part and accessory store internet sales of "Energized Electrical Cleaner" into California.

This proposal would not require an automotive parts and accessories store to request or collect the name, address, or other personally identifiable information that it does not otherwise generate as part of its typical business practice. However, to the extent that a retailer does generate or collect such information when selling "Energized Electrical Cleaner," particularly with respect to sales to a California business, staff's proposal would require this information to be retained for a minimum of five years. This record retention element is intended to facilitate enforcement of staff's proposed new "Energized Electrical Cleaner" category to exclude sales to AMRs, and could provide additional data to inform the need for future rulemaking, if necessary to further restrict off-label product use.

e. VOC Emissions Reduction

Staff anticipate there will be additional reductions in VOC emissions from this proposal, due to the substitution of "Energized Electrical Cleaner," which typically has a higher VOC content, with other automotive cleaners and degreasers with lower applicable VOC standards for use in commercial automotive maintenance and repair. The "Energized Electrical Cleaner" category is not currently subject to a VOC standard. However, as previously discussed, 26.6 percent of the "Energized Electrical Cleaner" category consists of trichloroethylene, which is classified as a VOC and as a TAC.

The most likely candidates for product substitution in the automotive repair context would be either "Brake Cleaner," "Carburetor or Fuel-injection Air Intake Cleaner," or aerosol "Engine Degreaser," all of which are subject to a 10 percent by weight VOC standard, which would result in VOC emissions that are 62.4 percent lower than the current average VOC emissions from the "Energized Electrical Cleaner" category. By 2023, staff estimate a potential VOC reduction of between 1.4 and 6.3 tons per year as a result of this proposed amendment.

f. Toxic Air Contaminant Emission Reductions

2015 Consumer Products Survey data indicates that "Energized Electrical Cleaner" is responsible for more than half of perchloroethylene and trichloroethylene emissions from all consumer products. Staff believe that a by-product of the Proposed Amendments will be a significant reduction in perchloroethylene and trichloroethylene emissions, consistent with the CARB AMR ATCM. Half of

“Energized Electrical Cleaner” sales take place through automotive parts retail and accessories stores that also derive between 21-75 percent of their total revenue from direct sales to commercial automotive repair facilities (GPA, 2018), (AAP, 2019), (OAP, 2020). Applying an average of this range as a factor to the mixed retail and commercial market share translates to 24 percent of total TAC emissions occurring due to sales of “Energized Electrical Cleaner” products to commercial auto repair facilities, sales which were not intended to be allowed to qualify for this category, and provides a lower bound to our estimates of potential TAC reductions that would be achieved as a by-product of this proposal. As shown in Table III-18, combined with the seven percent of direct commercial sales of “Energized Electrical Cleaner” products, staff anticipate a reduction in emissions of between 6.6 and 29.3 tons per year of perchloroethylene, and of between 2.3 to 10.1 tons per year of trichloroethylene by 2023 from this proposal.

Table III-18: Potential TAC Emission Reductions in 2023 from Energized Electrical Cleaner (tons per year)

Toxic Air Contaminant	Potential Emission Reductions ¹
Trichloroethylene	2.3-10.1
Perchloroethylene	6.6-29.3
Total Potential TAC Reductions	8.9-39.4

¹Based upon a range of between a 7 and 48 percent share of sales to AMR facilities

g. Development of Staff Proposal

Staff’s proposal to further clarify the types of sales allowed for a product to be considered an “Energized Electrical Cleaner” product was developed and refined throughout the regulatory development process. Staff received input from interested industry stakeholders, both individually and as a group, during discussions with the Household and Commercial Products Association.

CARB staff initiated discussions with stakeholders on a potential definitional change to the “Energized Electrical Cleaner” category as part a regulatory definitions work group meeting on July 17, 2019, with subsequent public work group meetings in October 2019, February 2020, and October 2020. Over 10,000 automotive parts and automotive maintenance stakeholders were invited to the October 2020 workgroup meeting through CARB’s listserv (e-mail notification) system, including representatives of the California Automotive Wholesalers’ Association, Auto Care Association, and the Household and Commercial Products Association. CARB staff also discussed potential “Energized Electrical Cleaner” definitional changes during three public workshops, on April 14, 2020, July 28, 2020, and November 10, 2020.

Staff also sent a survey in June 2020 (CARB, 2020) regarding potential definitional changes to 29 retailers and wholesalers known to CARB to sell “Energized Electrical Cleaner” products in California. Retailers and wholesalers were asked to estimate the potential compliance cost of implementing potential sales exclusions from the “Energized Electrical Cleaner” category for products they sell, and other potential impacts on their business. CARB staff received only one response to the

survey, even after numerous attempts to elicit responses by email and telephone. The one response staff received was from an electrical wholesaler, who believed the proposed changes would have no impact on their business.

2. Proposed Toxics Prohibition

The Proposed Amendments also include provisions to prohibit use of perchloroethylene, trichloroethylene, methylene chloride, and p-chloro- α,α -trifluorotoluene in the seven categories proposed for lower VOC standards, as reflected in Table III-19, below. In 1990 and 1991, CARB identified perchloroethylene, trichloroethylene, and methylene chloride as toxic air contaminants under California’s Toxic Air Contaminant Identification and Control Program (Health and Safety Code section 39650 et. seq.). In that process, CARB found that no threshold exposure level to these compounds could be identified below which adverse health effects would not be expected. Perchloroethylene and methylene chloride have been listed on California’s Proposition 65 list since 1988 as chemicals “known to the state to cause cancer,” while trichloroethylene was added to the Proposition 65 list in 2014. In addition, in June 2019, OEHHA listed PCBTF as a substance “known to the state to cause cancer” under Proposition 65 (OEHHA, 2019). In August 2020, OEHHA released its PCBTF Cancer Inhalation Unit Risk Factor Technical Support Document, summarizing the carcinogenicity and derivation of a cancer inhalation unit risk factor for PCBTF (OEHHA, 2020).

**Table III-19:
Proposed Product Categories in which Use of Parachlorobenzotrifluoride, Methylene Chloride, Perchloroethylene, and Trichloroethylene is Prohibited**

Product Category	Effective Date	Sell-through Date
Air Fresheners <ul style="list-style-type: none"> • Manual Aerosol Air Freshener • Concentrated Aerosol Air Freshener • Total Release Aerosol Air Freshener 	1/1/2023 1/1/2023 1/1/2023	1/1/2026 1/1/2026 1/1/2026
Crawling Bug Insecticide (aerosol)	1/1/2030	1/1/2033
Hair Care Products <ul style="list-style-type: none"> • Dry Shampoo • Hair Finishing Spray • Hair Shine • Temporary Hair Color 	1/1/2023 1/1/2023 1/1/2029 1/1/2029	1/1/2026 1/1/2026 1/1/2032 1/1/2032
Personal Fragrance Products <ul style="list-style-type: none"> • comprised of less than or equal to 7 percent fragrance • comprised of between 7 and less than or equal to 10 percent fragrance 	1/1/2023 1/1/2031	1/1/2026 1/1/2034

CARB's 2015 Consumer Products Survey data indicate that, despite their significant adverse health impacts, perchloroethylene, trichloroethylene, methylene chloride, and PCBTF continue to be present in consumer products.⁸ Since perchloroethylene, methylene chloride, and PCBTF are classified as 'Exempt' by CARB, and therefore are not considered VOCs for compliance purposes, greater potential exists for these to be used in products as they are reformulated to meet staff's proposed new or lower VOC standards. The proposed targeted prohibition of perchloroethylene, trichloroethylene, methylene chloride, and PCBTF in the proposed seven product categories is intended to avoid public health impacts, particularly to California's children, elderly, and other vulnerable populations, of the proposals to lower VOC emissions from consumer products, while ensuring the feasibility of compliance with new or lower VOC standard proposals in this rulemaking.

3. ACP and IPE Eligibility Criteria

ACP and IPE provisions are included in the existing Consumer Products Regulations to provide industry with flexibility in achieving required VOC reductions. These two provisions also encourage manufacturer innovation by recognizing and providing compliance options for lower emission or more efficient products. This section summarizes staff's proposals to ensure these programs continue to effectively achieve their intended emission benefits.

a. ACP Eligibility Criteria

Under the existing regulations, a manufacturer of two products that exceed their applicable VOC content standards would have to reformulate both products to comply. However, under the ACP, the manufacturer could retain the current formulation of the first product and reformulate the second product below its VOC standard. An ACP can have a complying product and, because it is an emissions averaging program, a product that would not comply on its own listed in the same ACP. The product that would not comply on its own would become compliant and be approved by the Executive Officer pursuant to provisions in the ACP regulation, by averaging the noncomplying product's VOC content with the complying product's VOC content to meet the VOC standard, on average, for both products. Manufacturers with a CARB-approved ACP are required to submit a yearly compliance report for all products they have sold during the calendar year. The annual compliance report must include the VOC content and enforceable sales data for all their ACP products, to ensure all their ACP products are meeting the VOC standard, on average, for all the products.

An increasing number of products that generate ACP credit fall just below the applicable VOC content standard (sometimes by as little as 0.1 percent). While the number of these products and amount of emission credits they have generated

⁸ Methylene chloride is present in ten consumer product categories, with a total of over 1.6 million pounds per year (vast majority in paint stripper); Perchloroethylene is present in 12 categories, with a total of over 200,000 pounds per year; Trichloroethylene present in 10 categories, with a total of over 80,000 pounds per year; and PCBTF present in 21 categories, with a total of over 300,000 pounds per year.

remains low, these products present several challenges. First, it can be difficult to verify that a product is actually generating VOC credit if the difference between a product’s VOC content and the required standard is within the range of the laboratory testing protocol’s margin of error. In addition, if a product’s VOC content is nearly identical to the applicable VOC standard, the natural variability of product ingredient concentrations could result in some products generating credits when they actually exceed the standard. In both of the above cases, the proximity of an ACP product’s VOC content to the applicable standard can present compliance verification challenges. In addition, products just below the standard are less innovative than their lower-VOC counterparts, and are more likely to represent a manufacturer’s typical product offerings. The air quality benefits of these products is, therefore, more uncertain than those of lower-VOC products in the same categories.

Staff is proposing to address these concerns by requiring a company with an approved ACP to only use products that are more than a specified threshold below the applicable VOC standard to generate ACP credits for the purpose of offsetting emissions from products that exceed VOC standards. These eligibility thresholds, illustrated in Table III-20, below, mirror U.S. EPA requirements for precision of pesticide product ingredient reporting, based on the typical variability of pesticide ingredient concentration when good manufacturing practices and quality control procedures are used (40 CFR §158.350.).

Table III-20: ACP Threshold for Emission Credit Generation

VOC Content Standard	Product Eligibility Threshold (% of Applicable Standard)
20% < Standard ≤ 100%	97%
1% < Standard ≤ 20%	95%
≤1%	90%

The eligibility thresholds identified in Table III-20 would become applicable beginning January 1, 2024. This proposal has been developed in collaboration with interested ACP companies and other stakeholders.

b. IPE Eligibility Criteria

The Consumer Products Regulation’s IPE provisions provide manufacturers with the opportunity to market innovative products that are not otherwise complying with the Consumer Products Regulation, if they can demonstrate that the special features of their product allow it to result in lower in-use VOC emissions than a typical compliant product. To use this alternative, the manufacturer must demonstrate by clear and convincing evidence that the use of the innovative feature will result in fewer VOC emissions than from a representative product that complies with the applicable VOC standard. Examples of features that could result in such fewer VOC emissions could include a more efficient application technique, a greater percentage of active ingredients, or more effective active ingredients.

In recent years, some manufacturers have inquired about whether CARB would consider an air freshening catalytic lamp to be IPE-eligible. This product typically consists of a ceramic burner and flammable wick, which extends down into a lamp filled with fragrance oil. Combustion of the fragrance oil results in lower in-use VOC emissions relative to other fragranced air fresheners that do not combust. Staff does not believe that product combustion should be considered innovative for the purposes of demonstrating lower in-use emissions. While combustion may result in reduced VOCs, it may also generate increased oxides of nitrogen (NO_x), particulate matter (PM), and air toxic emissions. In addition, many combustion-based consumer products, such as air freshening candles or catalytic lamps, are commonly used indoors, resulting in a greater potential for personal exposure to indoor NO_x, PM, and air toxic emissions and associated health risks. CARB staff therefore believes it is unwarranted to trade-off lower in-use VOC emissions due to combustion for increased NO_x, PM, or air toxic emissions, given the potential for adverse air quality or public health impacts from those emissions. Thus, staff proposes to update the IPE eligibility criteria to clarify that this combustion approach is not considered IPE-eligible.

4. IPE Eligibility Criteria for Products Utilizing Compressed Gas Propellant Instead of HFC-152a Propellant

The Proposed Amendments also include amendments to IPE eligibility criteria for “Hair Finishing Spray,” “Dry Shampoo,” and “Personal Fragrance Product” products that utilize compressed air, compressed nitrogen, or compressed carbon dioxide propellant. These amendments are intended to encourage product manufacturers to develop and market innovative products that utilize compressed gas propellants instead of HFC-152a in these three product categories.

a. Overview and Background

Existing methods for determining product compliance with applicable VOC standards (based upon ingredient weight) may make manufacturers less likely to utilize compressed gas propellants due to their very low weight relative to other exempt propellants such as HFC-152a. For example, a typical “Hair Finishing Spray” might consist of 45 percent HFC-152a propellant and 55 percent VOC ingredients (by weight), which the HFC-152a discharges onto the hair. Assuming, for the sake of simplicity, that the non-propellant ingredients are all VOCs, this product would comply with a 55 percent by weight VOC standard (i.e., 45 percent by weight exempt HFC-152a and 55 percent by weight other VOC ingredients). In contrast, a product utilizing a compressed gas propellant may emit the same weight of VOC ingredients onto the hair, but the much lighter compressed gas propellant may only account for two percent of the product weight. Assuming that all the non-propellant ingredients are VOCs, the product with compressed gas propellant (which emits the same mass of functional ingredients) would have a VOC content of 98 percent by weight.

Both HFC-152a and compressed gas propellants are responsible for negligible amounts of ozone formation and are therefore not counted towards a product’s VOC content. However, HFC-152a has a much greater climate footprint than compressed nitrogen or air, which are not greenhouse gases, and carbon dioxide,

which has a global warming potential of one. HFC-152a has a GWP of 124, which is below the GWP threshold of 150 established in Consumer Product Regulation section 94509(n)(1), which prohibits the use of higher GWP compounds in certain consumer product categories.

Prohibition of HFC-152a across all consumer product categories would require a technical assessment of feasible alternatives, and may necessitate less stringent VOC standards in cases where non-VOC alternatives do not exist. Due to its relatively low GWP, HFC-152a was also not prohibited by CARB's recently-adopted regulation, '*Prohibitions on Use of Certain Hydrofluorocarbons in Stationary Refrigeration and Foam End-Uses*' (Cal. Code Regs., tit. 17, Division 3, Chapter 1, Subchapter 10, Article 4) and the California Cooling Act (Senate Bill 1013) which, among other restrictions, prohibit the use of higher GWP propellants in most consumer product categories.

The negligible air quality, climate change, and potential health or environmental impacts of compressed gas propellant relative to HFC-152a or other chemically formulated propellants make it an excellent choice from an air quality and public health perspective. However, due to the low expansion ratio of compressed gases, the sprays are fairly wet, and the foams are not as stable as those produced by liquefied gas propellants, making them challenging to utilize for many product types. Higher gas pressures are also required in compressed gas aerosols, and the pressure typically diminishes as the product is used.

Some product manufacturers have indicated that they intend to comply with lower proposed VOC standards for aerosol "Hair Finishing Spray," "Dry Shampoo," and "Personal Fragrance Product" by, among other strategies, increasing their products' HFC-152a content. However, other manufacturers whose corporate ethos dictates that they minimize their carbon footprint have expressed interest in developing and marketing innovative products that are able to utilize compressed gas propellant in these three categories.

b. Staff Proposal

Existing IPE provisions provide a mechanism by which a manufacturer can demonstrate that an innovative product, due to some unique characteristic, results in less VOC emitted per usage than a "representative" product in the same category, even though the innovative product's VOC may exceed the applicable standard. Staff's proposal would provide a new IPE eligibility pathway, by which an innovative product that utilizes zero-emission compressed gas propellant can demonstrate lower GWP and no greater ozone forming potential (OFP) than a "representative HFC-152a product" in the same category. "Propellant" for the purposes of this proposal is defined as described in Consumer Product Regulation section 94508(a)(108).

The "Hair Finishing Spray," "Dry Shampoo" and aerosol "Personal Fragrance Product" categories were selected for this proposed flexibility because HFC-152a is the most common propellant in the "Hair Finishing Spray" and aerosol "Personal Fragrance Product" categories, and is expected to be the primary propellant option if proposed "Dry Shampoo" VOC standards are adopted. 2015 Consumer

Products Survey data indicates that compressed gas propellants were not utilized in any of these categories, making it an innovative potential technology advancement for these product types. Some manufacturers have indicated that CARB's proposed VOC standards for all three of these categories could provide an opportunity to reformulate to meet the new standards with cleaner compressed gas rather than continuing to rely upon HFC-152a.

Staff's proposal would require that an innovative product in the "Dry Shampoo," "Hair Finishing Spray," or "Personal Fragrance Product" categories meet the following criteria to be eligible for this proposed IPE flexibility:

- Section 94509(c)(1): At least 50 percent, by volume, of propellant ingredients are compressed air, compressed nitrogen, or compressed carbon dioxide, and the weight of the proposed innovative product propellant not exceed 50 percent of the weight of the representative product propellant. This would exclude any gas in the headspace of the container that is not compressed and used as a propellant (i.e., "to expel a liquid or other material from the same pressurized container...");
- Section 94509(c)(2): The replacement of HFC-152a with compressed gas propellant lead to the innovative product having a lower GWP than the representative product;
- Section 94509(c)(3): The amount of product delivered by innovative product must be equal to or more than the mass of product delivered by the representative product; and
- Section 94509(c)(4): The ozone-forming potential (OFP) of the innovative product may not exceed that of a representative consumer product, based upon the Tables of Maximum Incremental Reactivity Values in section 94700 of the Consumer Products Regulations.

The first criterion, above, is intended to ensure that innovative products utilize a significant quantity of compressed gas propellants, while allowing flexibility for manufacturers to utilize compressed gas-hydrocarbon (or other propellant) mixtures. The second criterion specifies the source of GWP values to be used for comparison of the representative and innovative product's GWPs. While more recent IPCC assessment report GWP values are available, the fourth assessment report values are proposed to be consistent with the vintage CARB utilizes for its current emission inventory. The third criterion, above, helps ensure an apples-to-apples comparison of functional product utilized by the consumer between the innovative product and the representative HFC-152a product. Reductions in product GWP and OFP must be based upon an equivalent amount of product emitted by, and utilized by, the consumer. Finally, the fourth criterion, above, requires that an innovative product's OFP may not exceed that of the representative HFC-152a product, to ensure that GWP benefits are not achieved at the expense of ozone reductions.

In addition, the Proposed Amendments identify generic "representative HFC-152a products" for "Hair Finishing Spray," "Dry Shampoo," and "Personal Fragrance Product," as shown in Table III-21, below. These generic HFC-152a product formulations are based on an anticipated typical HFC-152a product that complies

with proposed standards for these three categories, and are intended to provide manufacturers with certainty regarding an acceptable “representative HFC-152a product” formulation for purposes of the IPE application evaluation. The Proposed Amendments also provide manufacturers the flexibility to propose their own “representative HFC-152a product.” An IPE based upon a representative HFC-152a product formulation would be valid for as long as the representative HFC-152a product’s VOC content is less than or equal to the applicable product category’s VOC standard. For example, an IPE for which an innovative “Dry Shampoo” is compared with a representative HFC-152a product with 55 percent VOC content would only be valid until December 31, 2028, since a 50 percent VOC “Dry Shampoo” standard would take effect after that date. This is necessary to ensure IPE products meet all applicable IPE eligibility criteria relative to the applicable VOC standards at the time new standards are implemented.

Table III-21: Representative HFC-152a Product Formulations

Product Category and Applicable VOC Standard	Weight Percent by Ingredient				
	Ethanol	HFC-152a	Fragrance ¹	Other Volatile ²	Non-Volatiles and Exempt VOCs ³
Hair Finishing Spray: 50% VOC	45	45	0.1	3.9	6
Dry Shampoo: 55% VOC	30	29	0.2	30.8	10
Dry Shampoo: 50% VOC	30	33	0.2	26.8	10
Personal Fragrance Product: 70% VOC	40	15	2	30	13
Personal Fragrance Product: 50% VOC	30	30	2	22	16

1 – “Fragrance” has assigned MIR value of 6.36 for terpinolene.

2 – “Other Volatile” ingredients includes VOC and LVP-VOCs, with an average MIR of 0.9, based upon representative ingredient mix.

3 – “Non-Volatiles and Exempt VOCs” are assigned an MIR value of 0.00.

In recognition that MIR values for most fragrances do not yet exist, staff proposes assigning fragrance the terpinolene MIR value of 6.36 for the purposes of determining representative and innovative products OFPs. This value represents an assumed “worst case” fragrance MIR, and is the default fragrance MIR value for the purposes of CARB’s reactivity-based standards. Use of this default fragrance MIR value for both the representative and innovative product helps ensure that an innovative product cannot utilize a fragrance with a known, lower MIR to demonstrate lower OFP than the representative product utilizing the “worst case” fragrance MIR.

Finally, staff’s proposal would allow minor changes to an approved IPE compressed gas product’s fragrance or non-reactive ingredients without necessitating a new application process. For “Hair Finishing Spray,” or “Dry Shampoo” IPE products, the change in fragrance plus non-reactive ingredient weight could not exceed 0.5 percent of the total product weight. For “Personal Fragrance Product,” products,

which typically have higher fragrance content, the change in fragrance plus non-reactive ingredient weight could not exceed 2.5 percent of the product weight. Under no circumstances could these changes result in an increase in product OFP. IPE product ingredient changes that meet all of these criteria would require CARB notification rather than a new IPE application.

CARB's intends these proposed IPE provisions to encourage manufacturer research, development, and marketing, and consumer acceptance of a greater diversity of aerosol products utilizing compressed gas propellants, which would reduce VOC emissions from consumer products, by addressing a disincentive for their use in the current regulatory paradigm. Providing this regulatory incentive for the "Dry Shampoo," "Hair Finishing Spray," and "Personal Fragrance Product" categories provides an opportunity for the development of innovative new product formulations as manufacturers create new products to comply with proposed new and lower VOC standards. At the same time, the IPE framework enables CARB staff to ensure new products utilizing compressed gas are responsible for equivalent or lower VOC emissions and, thus, ozone-forming potential. Implementing the proposed IPE provisions for these three categories will provide CARB insight into further opportunities to encourage compressed gas propellants in future regulatory proposals.

In order for California to meet its climate challenges, and ensure clean, healthy air for all residents, it will be critical to further develop innovative technologies that simultaneously reduce greenhouse gasses, toxics, and smog-forming emissions. While the technical challenges remain real, compressed gas propellants have the potential over the next decade to become a feasible alternative to HFC-152a in a diversity of product categories. Such an alternative would enable CARB to restrict or prohibit use of HFC-152a as a propellant, while maintaining progress made in lowering consumer product VOC content.

5. Plastic Pipe Adhesive

CARB staff is proposing to create a new special purpose aerosol adhesive category and VOC standard for plastic pipe labeled exclusively to bond segments of acrylonitrile butadiene styrene, polyvinyl chloride, and/or chlorinated polyvinyl chloride together. This type of product is currently subject to the 30 percent VOC standard for the "Mist Spray Adhesive" category, but was not included in the product surveys that underpinned the rulemaking which lowered the VOC standard from the original level of 65 percent VOC (CARB 2013). Thus, staff's proposal would create a new "Special Purpose Spray Adhesive" category for these products called "Plastic Pipe Adhesive," set a standard of 60 percent VOC for the new category, and exclude the category from the "Mist Spray Adhesive" category.

Staff's evaluation of this category and discussions with the product manufacturer suggest that in-use emissions may be lower than for typical liquid plastic pipe cement that it would replace, due to a greater potential for evaporation from liquid product containers between uses. Staff anticipates, based on 2015 Consumer Products Survey data and stakeholder feedback, that less than 2500 units of this product would be sold annually in California, and that staff's proposal would have a negligible emission impact.

6. Exclusion of Denatured Alcohol Products Used to Maintain Electrical Equipment Owned by Public Utilities from the "Multi-purpose Solvent" Category

CARB staff is proposing to create a narrow exclusion from the "Multi-purpose Solvent" category for products used to maintain electrical equipment owned by public utilities. Some public utilities have requested this narrow exemption for denatured alcohol products that are specified by utility equipment manufacturers as the sole method of maintaining specific, specialized electrical equipment owned and operated by public utilities.

Staff discussions with affected public utilities suggest that some may explore with their denatured alcohol vendors the potential to have denatured alcohol products relabeled at the point of sale to exclude them from the "Multi-Purpose Solvent" definition and associated VOC standards. Other utilities have indicated that they believe these products may be exempt from CARB regulation. Staff's proposal is intended to provide clarity to affected stakeholders, and ensure that public utilities are able to properly and safely maintain critical electrical equipment. This proposal would exempt denatured alcohol used for this purpose from the "Multi-Purpose Solvent" category's VOC standards, although this product's use may still be subject to local air district regulation. CARB anticipates a negligible emission impact from this proposal due to its narrow applicability.

7. Tables of MIR Values

Staff is proposing to add three additional ROCs to the Tables of Maximum Incremental Reactivity Values, MIR Values for Compounds (title 17, CCR, section 94700). This proposal would provide manufacturers additional flexibility in formulating aerosol coating and "Multi-purpose Lubricant" products, and allow for use of a greater number of low reactive ingredients in formulating these and other potential products. The three ROCs staff is proposing to add to the Tables of MIR Values are:

- 1-Chloro-3,3,3-Trifluoropropene: The MIR value for HFO-1223zd was available before the 2010 update, but was not included at the time. In 2009, an experimental and modeling study was carried out to assess the impacts of this compound on ground-level ozone formation, and derive its MIR value (Carter, 2009). Within the same timeframe, studies for two other hydrofluoroolefin (HFO) compounds, trans -1,3,3,3-tetrafluoropropene (trans-HFO-1234ze) and 2,3,3,3-tetrafluoropropene (HFO-1234y), were also conducted and their MIR values were derived. All three HFO compounds are VOC-exempt under federal law due to their low reactivity, and in the 2013 rulemaking, CARB exempted HFO-1234ze. In the 2010 CARB rulemaking, the MIR values for trans-HFO-1234ze and HFO-1234y, along with many additional ROCs, were added to the Table of MIR Values, but the MIR value for HFO-1233zd was not. Therefore, CARB staff is proposing to now add the MIR value for HFO-1233zd to the Table of MIR Values for Compounds.
- Alkane Mixed - Minimally 90% C13 and higher carbon number: This is a generic name for an aliphatic hydrocarbon solvent blend. Prior to the 2010

Update, the MIR value for this complex mixture was listed in the Table of MIR Values for Compounds. In 2010, the MIR values for many ROCs were updated and MIR values for hundreds of new compounds were added. During this process and due to several compound names modification, the MIR value for this aliphatic hydrocarbon solvent blend was unintentionally omitted. We are now proposing to again add it to the Table of MIR Values.

- Diethyl Carbonate: Stakeholders identified diethyl carbonate as a compound that can be used in formulating aerosol coating products and potentially other consumer products. This specific chemical compound has a simple chemical structure, but the MIR value is not listed in the existing Table of MIR Values. Similar carbonated compounds that are already present in the existing Table of MIR Values include: dimethyl carbonate, propylene carbonate, methyl isopropyl carbonate, and diisopropyl carbonate. Methyl isopropyl carbonate, which has a similar molecular weight, is an appropriate surrogate for estimating the MIR value for diethyl carbonate without having to perform additional experimental work. CARB staff worked with Dr. William P.L. Carter (University of California, Riverside), the developer of the numeric MIR scale, to ensure that the process of calculating diethyl carbonate's reactivity value and all calculation details are consistent with the process and calculation details utilized to derive the 2010 MIR values, so no peer review is needed because that process and calculation details have already been peer reviewed. The methods and results of estimating MIR value for a new explicit compound, diethyl carbonate can be found in the report by Venecek (Venecek, 2020).

8. Updates to Test Method 310

In this rulemaking, staff is proposing amendments to "CARB Test Method 310: Determination of Volatile Organic Compounds (VOC) in Consumer Products and Reactive Organic Compounds (ROC) in Aerosol Coating Products (Method 310)," which was first adopted in 1997 and has since been amended several times. The primary purpose of the Proposed Amendments to Method 310 is to make updates for clarity and consistency, to remove and add several reference test methods, and to revise equations to better reflect how CARB staff calculates VOC and ROC.

CARB Staff proposes additions of the definitions of chemical "compound" and chemical "mixture" to Section 1 to standardize the use of scientifically accepted descriptor terminology throughout Method 310.

Staff proposes to divide Section 2 into two parts: Section 2.1 - Reference Methods, and Section 2.2 - Literature References. Section 2.1 is proposed to include Reference Methods, reordered alpha-numerically for ease of navigation. Proposed new section 2.2 would contain all peer-reviewed and published scientific literature sources. This would aid in navigating Section 2.

Staff also proposes to revise language and update the existing equations in Section 4 to provide clearer language and more uniform presentation of the existing equations. A new section (Section 4.1) is proposed to provide specific language and equations for Article 1 (AP/DO) samples. Additionally, revised language and

equations now used for consumer products with VOC embedded within a delivery substrate, like dryer sheets, are proposed to be extended to a broader range of Consumer Products, such as potpourri or scented candles.

Staff also proposes changes to Section 5 to provide a clear and uniform description of ROC determinations using Method 310. In addition, staff proposes to add a new Section 6: Calculation of Product Weighted MIR PWMIR Using ROC Content. This new section would specify the equation to calculate the PWMIR for products subject to reactivity-based limits.

IV. Purpose and Rationale for Each Regulatory Provision

In this chapter, we provide a more detailed description of each of the Proposed Amendments, and explain the purpose and rationale for each of the amendments.

Minor administrative non-substantive modifications to various subsections, wording modifications, and correction of typographical errors are also proposed, the purpose and rationale for which will also be discussed below.

General Proposed Amendments:

Staff propose to add "California" to each mention of the "Air Resources Board" throughout the Antiperspirants and Deodorants, Consumer Products, Alternative Control Plan, and Aerosol Coating Products Regulations; and Test Method 310 to make the regulatory language consistent with references to the agency in other recent regulations. In 2019, the California Air Resources Board started to use its new Logo and the acronym "CARB" instead of "ARB," to reflect its position as a State agency. Therefore, we are also proposing to modify uses of "ARB" to "CARB" as an acronym for the California Air Resources Board throughout all the consumer products regulations to be consistent with how the Agency is referring to itself generally. These proposed amendments are non-substantive, and will not change the meaning, interpretation, or implementation of the Consumer Products regulations.

Purpose for Proposed Amendments to Sections 94501(e), 94508(a)(41), and 94521(a)(27)

Staff is proposing to modify the definition of "Executive Officer" in the Antiperspirants and Deodorants Regulation, Consumer Products Regulation, and Aerosol Coating Products Regulation by adding "California" in front of "Air Resources Board" and replacing "his or her" with "their." The CARB Board is allowed to delegate its duties to the Executive Officer, and the Executive Officer may redelegate their duties. (Health & Saf. Code, §§ 39515, 39516.) By previous adoption of this regulation, the CARB Board has previously delegated certain duties to the Executive Officer in this regulation, and the Executive Officer or their delegate is charged with undertaking many actions throughout this regulation to implement it. This definition helps regulated entities understand what the term "Executive Officer" means as it is used throughout the Antiperspirants and Deodorants, Consumer Products, and Aerosol Coating Products Regulations.

Rationale for Proposed Amendments to Section 94501(e), 94508(a)(41), and 94521(a)(27)

The proposed definition changes for "Executive Officer" would reflect the fact that CARB now uses its full name to refer to itself across agency documents and regulations, making this regulation consistent with other regulations. Further, the proposed definitional change proposes to replace gendered pronouns with gender-neutral language, to reflect changing societal norms and make the regulation more inclusive, to reflect agency policy to respect those that don't

identify as male or female. These proposed changes are needed to make sure the definition of Executive Officer is consistent across different CARB regulations, so that the definition of Executive Officer remains clear to the regulated community.

A. Antiperspirants and Deodorants Regulation

Purpose for Proposed Amendments to Section 94501 Authority and Reference

CARB staff is proposing to add Health and Safety Code sections 39515 and 39516 to the authority and references for this section. Section 39515 provides authority for CARB to appoint an executive officer, and to delegate statutory duties to the executive officer. Section 39516 provides that the executive officer can redelegate to a subordinate anything delegated to the executive officer.

Rationale for Proposed Amendments to Section 94501 Authority and Reference

CARB proposes to add Health and Safety Code sections 39515 and 39516 to the authority for this section to reflect CARB's specific authority to adopt a regulation that delegates its legal powers and duties to the executive officer, who may then redelegate to a subordinate, which this regulation is implementing. Further, CARB proposes to add Health and Safety Code sections 39515 and 39516 as references for this section, to reflect that these sections are also to be referenced when reading this section. These Proposed Amendments do not substantively change the operation of the regulation; instead, they serve to clarify that the CARB Board may and does delegate its duties to the Executive Officer, who redelegates them to a subordinate. These delegations are necessary to CARB's proper functioning and ability to implement this regulation, which has many different provisions needed to achieve the State's air quality goals and mandates.

Purpose for Proposed Amendments to Section 94502

Staff proposes to amend section 94502(c) to simplify the regulatory references by removing "Division 3, Chapter 1, Subchapter 7."

Rationale for Proposed Amendments to Section 94502

The proposed change to subsection (c) to remove "Division 3, Chapter 1, Subchapter 7" will leave only the citation directly to the section number in Title 17 of the California Code of Regulations. This proposed change removes unnecessary legalese, which will make it easier for the average person and new regulated entities reading the regulation to understand where to find the reference, making it easier to understand the requirements, so that regulated entities can comply with the regulation and CARB can achieve the needed emission reductions.

Purpose for Proposed Amendments to Section 94506(a)(1)

Section 94506 sets forth test methods to be used, by regulated entities and by CARB, to determine the VOC content of an antiperspirant or deodorant for the purpose of determining a product's compliance with the regulation, thereby ensuring achievement of the VOC emission reductions intended by the regulation.

Staff is proposing a non-substantive modification to update the title of Method 310 by adding "California." The title would state: "California Air Resources Board Method 310, Determination of Volatile Organic Compounds (VOC) in Consumer Products and Reactive Organic Compounds (ROC) in Aerosol Coating Products." CARB is also proposing to update the date Method 310 was last amended to the date this regulation is adopted.

Rationale for Proposed Amendments to Section 94506(a)(1)

The proposed addition of "California" to the title of Method 310 is necessary to be consistent with how the Agency is currently referring to itself. Referring to the most recent effective date for the method, which would be, if these amendments are approved, the date these Proposed Amendments become effective is necessary to let regulated entities know that they should use this updated version of Method 310 in complying with the regulation, and to clarify that the updated CARB Method 310 will be used for compliance verification.

Purpose for Proposed Amendments to Sections 94506(a)(2)(3.4) and (a)(2)(3.6)

Subpart (2) of the "Test Methods" section 94506 reproduces sections 3.4 and 3.6 of the CARB Method 310. We are proposing changes to the reproduced sections 3.4 and 3.6, so it is consistent with the Proposed Amendments to the CARB Method 310.

Rationale for Proposed Amendments to Section 94506(a)(2)(3.4) and (a)(2)(3.6)

Proposed Amendments to the reproduced sections 3.4 and 3.6 of the CARB Methods 310 are necessary to reflect the changes proposed to these sections in the actual CARB Method 310 language, which are further describe below.

Purpose for Proposed Amendments to Section 94506(a)(2)(3.4)

Staff is proposing to change section 3.4 to make it clear that the Executive Officer has discretion to make a VOC content determination, if it applies to the specific product being tested, and that, if done, the VOC content determination shall be done pursuant to sections 3.2 and 3.3.

Staff is also proposing to replace "will" with "shall."

Staff is proposing to replace "formula" with "equation" in subsection 3.4.1. Also, in subsection 3.4.1, staff is proposing to add references to replace the generic reference to "CARB regulations" with references to specific sections of the California Consumer Products Regulations that specify the VOC standards for consumer products that are regulated by CARB.

In subsection 3.4.2 staff is proposing to make the following changes:

- replace "will" with "may;"
- add a timeline of 25 working days from an Executive Officer request for a

responsible party to supply product formulation data when the product does not meet the applicable VOC standards;

- clarify how the Executive Officer shall treat confidential information and streamline references to CARB's confidentiality regulations, including by deleting "CCR, Division 3, Chapter 1, Subchapter 4 (Disclosure of Public Records);" and
- add the sentence "Failure to respond to an Executive Officer request for this information is a violation."

In subsection 3.4.3, staff is proposing to replace "If the information supplied by the responsible party shows that the product does not meet the applicable VOC standards, then the Executive Officer will take appropriate enforcement action" with "If the Executive Officer determines, based on testing, information they may receive from the responsible party, and any other applicable evidence, that the product does not comply with the applicable VOC standard, the Executive Officer may take appropriate enforcement action."

Staff is proposing to delete subsection 3.4.4.

Rationale for Proposed Amendments to Section 94506(a)(2)(3.4)

Adding "if" clarifies that not all testing will require CARB to make a VOC determination, depending upon the product being tested and what CARB is testing for. The rest of the proposed changes to the first paragraph of section 3.4 makes it grammatically work with the addition of "if," and makes it more clear that CARB will use sections 3.2 and 3.3 to make a VOC content determination. Replacing "will" with "shall" makes it more clear that this it is mandatory.

Replacing "formula" with "equation" in subsection 3.4.1 is necessary because it would correctly reflect that the VOC content is calculated using mathematical equations that manipulate various parameters to arrive at a VOC content of the analyzed product.

According to the California Consumer Products Regulations, categories of consumer products that are regulated by CARB are required to remain below or meet the percent VOC by weight standards. Those standards are in sections 94502 and 94509 of the California Consumer Products Regulations (title 17 of the California Code of Regulations). Staff is proposing to reference those specific sections in subsection 3.4.1 of Method 310 to explicitly state that when an Executive Officer determines whether a product meets the applicable VOC standards, the Executive Officer refers to VOC standards presented in the abovementioned sections. Replacing a generic reference to CARB regulations with the specific sections will make it easier for a regulated entity reading Method 310 to know what to reference and more clear what standards they are being held to under Method 310, too.

According to the California Consumers Products Regulations, the Executive Officer may request a responsible party to submit formulation data within 25 working days

and CARB is required to handle the formulation data as confidential as allowed under law. Failure to submit the requested formulation data is a violation. Staff is proposing to add that information to subsection 3.4.2 of Method 310 to remain consistent with the California Consumer Products Regulations, so that all the information is in here, too, instead of making the reader go back and forth, and so that the specific requirements, as well as the fact that it's a violation not to provide the requested data on time, are clear to regulated entities.

Staff is proposing to delete the phrase "CCR, Division 3, Chapter 1, Subchapter 4 (Disclosure of Public Records)" from subsection 3.4.2 because it is unnecessary language. Deleting it helps streamline the reference to the pieces that a reader needs, just the title, CCR, and section number, which makes it easier for a layperson to read and find the reference. Deleting the reference to the "confidentiality procedures" removes unnecessary language, to help make it more clear and thus easier to read and understand this section.

Staff is proposing to modify subsection 3.4.3 to reflect that CARB can determine that a consumer product has violated VOC standards based not only on information provided by the responsible party, but also based on testing and any other applicable evidence. This change brings Method 310 up to date with how CARB actually conducts enforcement, based on all available information.

Staff is proposing to delete subsection 3.4.4 because the clarifications made to subsection 3.4.3 make this subsection redundant and no longer needed.

Purpose for Proposed Amendments to Section 94506(a)(2)(3.6)

Staff is proposing to add that the Executive Officer may use their scientific judgment to perform additional analyses if the product's VOC compliance is not resolved under sections 3.4 and 3.5.

Staff is also proposing to delete subsection 3.6.1 and renumber the rest of the subsections accordingly.

Finally, staff is proposing to replace "will request" with "may ask" and add "additional" in front of "information to explain the discrepancy" in subsection 3.6.2, renumbered as 3.6.1.

Rationale for Proposed Amendments to Section 94506(a)(2)(3.6)

The proposed changes to section 3.6.1 will clarify that the criteria to be used to determine whether further analyses and testing are required is the Executive Officer's scientific judgment, which reflects what CARB actually does and is generally accepted as a basis for requiring additional information. Replacing "will" with "may" clarifies that the Executive Officer has the option to conduct further analyses and testing, but that it is not required and will not automatically happen.

Section 3.6.1 is proposed to be removed because it is misleading and unneeded. CARB may take enforcement action on many bases, and has enforcement

discretion to do so, and this subsection as written may give the false impression that if this one basis is resolved, no enforcement action will be taken at all.

Because section 3.6.1 is proposed to be removed, existing section 3.6.2 will become section 3.6.1, and existing section 3.6.3 will become section 3.6.2, to keep them in numerical order.

Replacing “will request” with “may ask” clarifies that the Executive Officer has discretion to request such information, but need not. Adding “additional” in front of “information to explain the discrepancy” in renumbered subsection 3.6.1 clarifies that this information is additional to other information CARB can request of the responsible party under the regulations and Method 310, and that CARB can use other information it has to explain the discrepancy, too.

Purpose for Proposed Amendments to Section 94506 Authority and Reference

CARB staff is proposing to add Health and Safety Code sections 39515, 39516, 41503.5, and 41700 to the authority for this section. Section 39515 provides authority for CARB to appoint an executive officer, and to delegate statutory duties to the executive officer. Section 39516 provides that the Executive Officer can redelegate to a subordinate anything delegated to the Executive Officer. Section 41503.5 requires CARB to ensure that every reasonable action is taken to achieve State ambient air quality standards for ozone by the earliest practicable date. Section 41700 prohibits the discharge from any source of air contaminants or other materials that negatively impact Californians and their health, safety, or property.

CARB staff is proposing to add Health and Safety Code sections 39000, 39003, 39701, and 41700 to the references cited for this section. Section 39000 sets out the State Legislature’s findings that Californians have an interest in the quality of the environment in which they live, and that this environmental quality is being degraded by pollution. Section 39003 charges CARB with coordinating efforts to attain and maintain ambient air quality standards. Section 39701 requires CARB to coordinate and collect research data on air pollution.

Rationale for Proposed Amendments to Section 94506 Authority and Reference

CARB proposes to add Health and Safety Code sections 39515 and 39616 to the authority for this section to reflect CARB’s specific authority to adopt a regulation that delegates its legal powers and duties to the executive officer, who may then re-delegate them to the appropriate CARB staff under the Executive Officer, which this regulation is implementing. CARB proposes to add section 41503.5 to reflect that this regulatory provision is another reasonable action CARB is taking to achieve State ambient air quality standards for ozone by the earliest practicable date, thereby implementing 41503.5. CARB proposes to add section 41700 to the authority for this section because this section will limit the discharge of VOCs, which negatively affect public health, from consumer products, so this provision is indirectly implementing section 41700.

CARB staff is proposing to add Health and Safety Code sections 39000, 39003, 39701, and 41700 to the references cited for this regulatory provision because they

provide additional context about Legislative intent and authority related to the regulatory provision.

B. Consumer Products Regulation

Purpose for Proposed Amendments to Section 94508(a)(1)(A)(2)(f)

This section would create and define a new “Plastic Pipe Adhesive” subcategory under the “Special Purpose Spray Adhesive” category.

Rationale for Proposed Amendments to Section 94508(a)(1)(A)(2)(f)

This section is needed to define and create a separate VOC standard for the proposed “Plastic Pipe Adhesive” category. Plastic pipe adhesive products are considered “Mist Spray Adhesive” in the current regulation, and are therefore currently subject to the “Mist Spray Adhesive” products’ 30 percent VOC standard. Staff’s evaluation of the feasibility of the 30 percent VOC standard for “Mist Spray Adhesive” products in previous rulemakings did not account for aerosol adhesives used to bond segments of acrylonitrile butadiene styrene, polyvinyl chloride, or chlorinated polyvinyl chloride pipe together. Such products currently require a higher VOC content to function properly, and a new subcategory definition under “Special Purpose Spray Adhesive” is required so that a more feasible VOC standard can be implemented.

Purpose for Proposed Amendments to Section 94508(a)(1)(A)(2)(g) through (i)

The definitions in sections 94508(a)(1)(A)(2)(f) through 94508(a)(1)(A)(2)(h) would be renumbered as sections 94508(a)(1)(A)(2)(g) through 94508(a)(1)(A)(2)(i).

Rationale for Proposed Amendments to Section 94508(a)(1)(A)(2)(g) through (i)

These amendments are needed to accommodate a proposed definition for “Plastic Pipe Adhesive” in alphabetical order in section 94508(a)(1)(A)(2)(f), and to retain the remaining three existing definitions that follow, in alphabetical order. Putting these in alphabetical order makes it easier for regulated entities to find specific terms in the regulation, which makes it easier to comply and, thus, for CARB to achieve the emission reduction ends of the regulation overall.

Purpose for Proposed Amendments to Section 94508(a)(6)

This subsection would amend the existing “Air Freshener” subcategory definitions (A) through (C), “Double Phase Aerosol Air Freshener”, “Dual Purpose Air Freshener/Disinfectant” and “Single Phase Aerosol Air Freshener,” to only apply to products manufactured before January 1, 2023. This subsection would also add and describe the following five new “Air Freshener” subcategory definitions that would apply to products manufactured on or after January 1, 2023: “Automatic Aerosol Air Freshener,” “Concentrated Aerosol Air Freshener,” “Dual Purpose Air Freshener/Disinfectant,” “Manual Aerosol Air Freshener,” and “Total Release Aerosol Air Freshener.”

Health and Safety Code section 41712(g) allows consumer products manufactured before the effective date of a new regulation to continue to be sold for three years after the new regulation's effective date if the manufacturing date or date code is clearly on the products. CARB is thus creating new subcategories to achieve further feasible VOC reductions emitted by these consumer products, while also allowing for the three-year sales grace period established by the Legislature.

Rationale for Proposed Amendments to Section 94508(a)(6)

Products manufactured before January 1, 2023:

This section is necessary for existing VOC standards to continue to apply for "Double Phase Aerosol Air Freshener," "Dual Purpose Air Freshener/Disinfectant," and "Single Phase Aerosol Air Freshener" products manufactured before January 1, 2023. The continued applicability of VOC standards for these types of products manufactured prior to January 1, 2023, is needed to ensure California continues to achieve the anticipated emission reductions from these types of products until that date, to continue to progress toward State and federal air quality mandates, while honoring the three-year sales grace period established by the Legislature in Health and Safety Code section 41712(g). It also allows a grace period that ensures manufacturers have time to comply with the new standards.

Products manufactured on or after January 1, 2023:

This section needs to be added to make certain subcategories subject to different VOC standards, to achieve the maximum feasible VOC emission reductions from manually-activated aerosol air freshener products in particular, beginning on January 1, 2023, and to meet federal ambient air quality deadlines, both of which are required by Health and Safety Code section 41712.

Staff has determined that a lower VOC standard for all "Single Phase Aerosol Air Freshener" product would be infeasible by January 1, 2023, due to challenges in reformulating the subset of automatically-dispensed (i.e., motion or timer activated) products with a lower VOC content. Therefore, staff could not adopt a lower VOC standard for all "Single Phase Aerosol Air Freshener" products under Health and Safety Code section 41712. Staff has also determined that all "Double Phase Aerosol Air Freshener" products are manually-activated. Proposed language to redefine the universe of "Single Phase Aerosol Air Freshener" and "Double Phase Aerosol Air Freshener" products as "Automatic Aerosol Air Freshener," "Concentrated Aerosol Air Freshener," "Dual Purpose Air Freshener/Disinfectant," "Manual Aerosol Air Freshener," and "Total Release Aerosol Air Freshener" enables CARB to set the lowest feasible VOC standards for manually-activated product types, as soon as they will become feasible, while maintaining existing VOC standards for automatic air freshener products where lower standards are infeasible. This allows CARB to obtain additional VOC reductions needed to achieve the federal ozone standards, and to meet its obligations under Health and Safety Code section 41712 to achieve the maximum practicable VOC reductions feasible from consumer products.

The specific definitions were developed with input from stakeholders, and account for the specific characteristics of the products, so that regulated entities understand what products fit into each subcategory and, therefore, which VOC

standards apply to each product. More specific details behind the rationale is given for each new proposed definition below:

- The proposed definition for “Automatic Aerosol Air Freshener” is necessary to exclude these products from the proposed lower VOC standards for manually-activated aerosol air freshener products, since lower VOC standards for automatic aerosol air freshener products would not be technically feasible.

“Automatic Air Freshening Dispenser” is also proposed to be defined in this subsection to provide clarity to regulated entities about what products fit into this subcategory, by accurately identifying and limiting the types of aerosol air freshener products that meet the definition of “Automatic Aerosol Air Freshener” (i.e., those that can only function if paired with a device that enables it to dispense product at a certain interval, when motion activated, or under other preset conditions). This proposed definition is necessary to provide a clear delineation, based upon the product dispensing mechanism, between an automatic aerosol air freshener, and the universe of other aerosol air fresheners that do not utilize a separate dispenser.

- The proposed definition for “Concentrated Aerosol Air Freshener” is necessary to achieve the maximum feasible VOC emission reductions from the “Manual Aerosol Air Freshener” subcategory. “Concentrated Aerosol Air Freshener” products have a greater challenge meeting the proposed “Manual Aerosol Air Freshener” product standard, due to their higher fragrance content. Excluding “Concentrated Aerosol Air Freshener” products from the proposed “Manual Aerosol Air Freshener” definition enables proposed lower VOC standards to be set for the much larger “Manual Aerosol Air Freshener” category. The proposed “Concentrated Aerosol Air Freshener” definition specificity regarding minimum allowable fragrance content, maximum amount of product dispensed per valve actuation, and maximum container size is necessary to ensure that “Manual Aerosol Air Freshener” products are not reclassified as “Concentrated Aerosol Air Freshener” to be subject to this subcategory’s proposed less stringent VOC standards, and ensure the maximum practicable VOC reductions feasible are achieved.
- The Proposed Amendments would not change the existing regulatory definition of “Dual Purpose Air Freshener/Disinfectant.” However, it would add that existing definition to this new subsection. This definition is necessary in this subsection to continue to define “Dual Purpose Air Freshener/Disinfectant” products manufactured on or after January 1, 2023, as needed to specify their applicable VOC standard on or after January 1, 2023, in Section 94509(a), and continue achieving VOC reductions from this subcategory.
- The proposed definition for “Manual Aerosol Air Freshener” is necessary to specify what types of products would be subject to proposed lower VOC standards in section 94509(a), as needed to maximize feasible VOC emission reductions from aerosol air freshener products. It is necessary to exclude “Automatic Aerosol Air Freshener” and “Dual Purpose Air Freshener/Disinfectant” from the definition of “Manual Aerosol Air Freshener”,

since it is not technically feasible for “Automatic Aerosol Air Freshener” and “Dual Purpose Air Freshener/Disinfectant” to meet the same proposed VOC standards as “Manual Aerosol Air Freshener.” Thus, this also helps provide regulated entities clarity about which VOC standard must be met for each kind of product.

- The proposed definition for “Total Release Aerosol Air Freshener” is necessary to achieve the maximum feasible emission reductions from the “Manual Aerosol Air Freshener” subcategory. “Total Release Aerosol Air Freshener” products have a greater challenge meeting the proposed “Manual Aerosol Air Freshener” product standard. Excluding “Total Release Aerosol Air Freshener” products from the proposed “Manual Aerosol Air Freshener” definition enables proposed lower VOC standards from the much larger “Manual Aerosol Air Freshener” category. The proposed “Total Release Aerosol Air Freshener” definition’s specificity indicating that this product dispenses all or most of its product during a single application, and has a maximum size of five ounces, is necessary to ensure that “Manual Aerosol Air Freshener” products are not reclassified as “Total Release Aerosol Air Freshener” to be subject to this subcategory’s proposed less stringent VOC standards, allowing CARB to actually achieve the intended VOC reductions of setting a lower VOC standard for “Manual Aerosol Air Freshener” products.

Purpose for Proposed Amendments to Section 94508(a)(36)

Staff is proposing to change the category name from “No Rinse Shampoo” to “Dry Shampoo,” as well as corresponding definitional updates regarding product label use instructions to reflect the specific characteristics of “Dry Shampoo” products.

Rationale for Proposed Amendments to Section 94508(a)(36)

The proposed change in category name from “No Rinse Shampoo” to “Dry Shampoo” better reflects how these types of products are labeled and commonly referred to by product manufacturers and the general public, so that the regulation is more clear and thus easier to understand and comply with. The category name and definition are accordingly moved up and renumbered to (a)(36) to keep the list of categories in alphabetical order, making it easier for regulated entities and the public to find.

Proposed amendments to the “No Rinse Shampoo” category, being renamed as “Dry Shampoo,” are to delete the terms “designed or” to enhance clarity, because the specific language on the label is less subject to interpretation than design intent, and it is easier for regulated entities to understand what is expected of them. The proposed “Dry Shampoo” definition states that the product is for cleaning the hair, so deletion of the words “eliminates odor or absorbs oil” that were used in the “No Rinse Shampoo” is to remove redundant language that expresses the same concept of cleaning hair, to make the definition simpler and clearer. Deletion of the word “toweling” in rewriting the “No Rinse Shampoo” definition for the “Dry Shampoo” definition is needed to reflect how “Dry Shampoo” products are typically used, since toweling is not a typical way to remove the product. Finally, indication that “Dry Shampoo” is applied to dry hair

and does not subsequently need to be rinsed is needed to differentiate “Dry Shampoo” from other types of hair care products, which have different VOC limits, so that the VOC reductions from each of these can be achieved and set to the maximum extent practicable and feasible.

Purpose for Proposed Amendments to Section 94508(a)(36) through (91)

Each of existing sections 94508(a)(36) through (91) would be renumbered to one integer higher, beginning with section 94508(a)(36) being renumbered as section 94508(a)(37) and ending with section 94508(a)(90) being renumbered as section 94508(a)(91).

Rationale for Proposed Amendments to Section 94508(a)(36) through (91)

These amendments are needed to accommodate a proposed update of the “No Rinse Shampoo” category name to “Dry Shampoo,” which would replace “Dusting Aid” as the new section 94508(a)(36). The section numbers for all existing definitions that come in alphabetical order between “Dry Shampoo” and “No Rinse Shampoo” need to be advanced by one for this section to remain in alphabetical order with no reuse of section numbers. Keeping the definitions in alphabetical order makes it easier for regulated entities to find requirements in the regulation, making it easier for them to comply with the regulation so that CARB can achieve the VOC reductions from the products, as intended by the regulation and as required by Health and Safety Code section 41712.

Purpose for Proposed Amendments to Section 94508(a)(39)

Staff is proposing to update the definition of “Energized Electrical Cleaner” to remove “both of;” change where “cleaning and/or degreasing is accomplished when electrical current exists” to “where cleaning and/or degreasing can only be performed when electrical current exists;” and set forth that neither an “Electronic Cleaner” product, nor a product, on or after January 1, 2023, sold to an “Automotive Maintenance Facility or Automotive Repair Facility,” or by code 441310 in the North American Industry Classification System, meets the definition of an “Energized Electrical Cleaner,” meaning that such a product would not be considered an “Energized Electrical Cleaner.”

Rationale for Proposed Amendments to Section 94508(a)(39)

Deletion of the word “both” is needed because an additional set of criteria has been proposed to define “Energized Electrical Cleaner;” both indicates two, so it needs to be deleted to make it clear that there are now more than two criteria that determine whether a product falls into this category.

Adding criteria is necessary to ensure that the maximum feasible emission reductions are achieved from other product categories intended for automotive maintenance and repair that have lower VOC standards. “Energized Electrical Cleaner” products do not have a VOC standard, since meeting a VOC standard would compromise their function; making sure the criteria is clear and narrowly tailored allows CARB to continue achieving the maximum feasible reductions

required by Health and Safety Code section 41712, while still allowing for a lower standard where needed to maintain product functionality, by ensuring only those products that really do not need a VOC standard are in the “Energized Electrical Cleaner” subcategory and the other products that can meet a stricter standard actually do.

Re-numbering the subsections of the definition from 1, 2, etc. to A, B, etc. is necessary to make the definition consistent with the numbering conventions used in other definitions in the regulation.

Replacing “is accomplished” with “can only be accomplished” clarifies that the product must be intended for use on equipment that cannot be deenergized prior to cleaning. This is again intended to achieve the maximum feasible reductions by keeping the exception to the lower “Electrical Cleaner” standard for “Energized Electrical Cleaner” products limited to only those products that really need it.

Finally, the proposed additional defining criteria, which would exclude products sold to “Automotive Maintenance Facilities” or “Automotive Repair Facilities,” as defined in California Code of Regulations, title 17, section 93111(c)(4), is needed because “Energized Electrical Cleaner” is comprised of approximately 90 percent perchloroethylene and trichloroethylene. These are TACs CARB previously banned from use in automotive maintenance and repair to protect public health in the AMR ATCM. Nevertheless, these TAC ingredients continue to be used in automotive maintenance and repair facilities, endangering the public health of workers and users of this product, and resulting in even higher VOC emissions than is necessary, in that setting, where it is not needed. Adding this criterion would reduce exposure to the toxic ingredients in automotive maintenance and repair, and ensure the maximum feasible reduction in VOC emissions from these products by restricting the sale of products that wish to qualify for the “Energized Electrical Cleaner” category’s less stringent VOC standard.

This sales restriction would provide an incentive to product manufacturers to not sell to “Automotive Maintenance Facilities” or “Automotive Repair Facilities” if they want to be entitled to have the product considered to be an “Energized Electrical Cleaner,” subject to a less stringent VOC standard. This addition would make this regulation consistent with a regulation CARB adopted that prohibited toxic air contaminant ingredients in “Energized Electrical Cleaner” from being used in automotive maintenance and repair, and thus protect public health by helping ensure that “Energized Electrical Cleaner” is in fact not continuing to be used in automotive maintenance and repair (where it is prohibited for most uses by the AMR ATCM), but continues to be available where it is needed to safely clean or degrease energized electrical equipment, reducing emissions and exposure to these TACs in unnecessary settings. These exclusions would become effective for products manufactured on or after January 1, 2023, which would allow stakeholders time to sell out of products they currently possess, and to identify compliant alternatives.

Purpose for Proposed Amendments to Section 94508(a)(66)

The Proposed Amendments to the “Hair Finishing Spray” definition narrow the

products that fall into this category by focusing on the product's label and removing "designed," eliminating several possible label claims that make a product eligible for this category instead of a product category with a more stringent VOC standard, and by clarifying how and when the product label indicates that the product should be applied. The Proposed Amendments would also clarify that this category does not include products "labeled," rather than intended to aid in, styling, and labeled, rather than providing for, finishing a hair style. Also, the section would be renumbered to 94508(a)(67), as described above.

Rationale for Proposed Amendments to Section 94508(a)(66)

The proposed modifications to the "Hair Finishing Spray" definition are needed to more effectively distinguish this product from "Hair Styling Product," which is subject to a lower VOC standard, so that manufacturers are clear about which category and VOC standard applies to their product, and to help make sure that "Hair Styling Products" are actually meeting their lower VOC standard. This helps ensure that CARB is achieving the intended maximum practicable and feasible VOC emission reductions from each of these categories, per Health and Safety Code section 41712.

The word "consumer" would be deleted for consistency with other definitions in the regulation. The Proposed Amendments to delete "designed or" is needed to enhance clarity, because the specific language on the label is less subject to interpretation than design intent, so focusing on the language on the label will make it more clear to regulated entities how to comply with the regulation.

Other proposed changes are to improve clarity by eliminating details regarding product intent which may be vague or overlap with other hair care product category functions, including deletion of "to provide sufficient rigidity, to hold, retain or finish the style of the hair for a period of time" and replace them with the less ambiguous statement that the product is applied "once styling is complete." Proposed replacement of "aerosol hair sprays, pump hair sprays, spray waxes; color, glitter, or sparkle hair spray products" with "products that are labeled for both hair styling and finishing" is needed to both simplify the definition and more effectively distinguish a "Hair Finishing Spray" product from the other hair care product categories based on how each is used. This will again ensure that manufacturers know which category their product fits into and which VOC standard it must meet, and will allow CARB to achieve the maximum emission reductions practicable and feasible. Additional proposed modifications are needed in the definition to further clarify that products which aid in styling but do not finish the hair style are categorized as "Hair Styling Products" and would not fall into the "Hair Finishing Spray" category and be subject to "Hair Finishing Spray's" higher VOC standard.

Purpose for Proposed Amendments to Section 94508(a)(68)

Staff is proposing to replace the term "designed" with the term "labeled" in the first sentence of the "Hair Shine" definition. Staff is also proposing to delete from the definition that "Hair Shine" does not include "products whose primary purpose

is to condition or hold the hair.” Also, the section will be renumbered to 94508(a)(69), as described above.

Rationale for Proposed Amendments to Section 94508(a)(68)

Proposed replacement of the term “designed” with “labeled” is needed to enhance clarity, because the specific language on the label is less subject to interpretation than design intent. The proposed deletion of the statement that “Hair Shine” does not include “products whose primary purpose is to condition or hold the hair” would streamline the definition by deleting redundant language that could cause confusion. The “Hair Shine” category definition already specifies that hair shines are products labeled for the primary purpose of creating a shine; thus, excluding products with a different primary purpose is unnecessary and could lead a reader to be confused about how to apply the definition. These clarifications allow regulated entities to better understand how to comply with the regulation, thereby enabling achievement of the regulation’s intended emission reductions.

Purpose for Proposed Amendments to Section 94508(a)(69)

CARB is proposing to modify the definition of “Hair Styling Product” by replacing the term “No Rinse Shampoo” with “Dry Shampoo,” replacing “previously styled hair for a period of time” with “a hairstyle once all styling is complete,” and deleting the words “the” and “temporarily” from the final sentence. Also, the section will be renumbered to 94508(a)(70), as described above.

Rationale for Proposed Amendments to Section 94508(a)(69)

The proposed definitional changes are needed for consistency with proposed changes to the definition of “No Rinse Shampoo” and “Hair Finishing Spray” for the reasons given in the rationales for those proposed amendments.

Purpose for Proposed Amendments to Section 94508(a)(76)

We are proposing to modify the “Insecticide” category definition to add and define a “Bed Bug Insecticide” subcategory, adding a new subsection (A). CARB also proposes to update the “Crawling Bug Insecticide” category definition to exclude the “Bed Bug Insecticide” category, and renumber subsection 94508(a)(76)(A)-(F) to 94508(a)(76)(A)-(G).

Rationale for Proposed Amendments to Section 94508(a)(76)

Health and Safety Code section 41712 allows CARB to set VOC standards to achieve needed reductions as soon as practicable and feasible. CARB staff has determined that all “Crawling Bug Insecticide” products can meet a lower VOC standard except “Bed Bug Insecticide.” Defining “Bed Bug Insecticide” to exclude it from the larger “Crawling Bug Insecticide” category enables CARB to propose lower VOC standards for, and therefore achieve greater VOC reductions from, aerosol “Crawling Bug Insecticide” products. Renumbering is required to account for the addition of the proposed new “Bed Bug Insecticide” category definition, while keeping the regulation easily citable by leaving in subsection numbers.

Purpose for Proposed Amendments to Section 94508(a)(88)(B)

Staff is proposing to exempt denatured alcohol products from the definition of "Multi-purpose Solvent" if they are sold exclusively to a public utility, as defined by section 216 of the Public Utilities Code; are used to maintain electrical equipment owned by a public utility; and the manufacturer requires the particular electrical equipment for which the product is being used to be maintained using denatured alcohol. This proposal would add a new subsection (B)(7) to renumbered section 94508(a)(89)(B).

Health and Safety Code section 41712(b) requires CARB to adopt "regulations to achieve the maximum feasible reduction in volatile organic compounds emitted by consumer products" where CARB determines that "(1) The regulations are necessary to attain state and federal ambient air quality standards[, and] (2) The regulations are commercially and technologically feasible and necessary."

Rationale for Proposed Amendments to Section 94508(a)(88)(B)

Certain manufacturers of specialized electrical equipment owned and operated by public utilities require that their equipment be maintained exclusively with denatured alcohol. Thus, public utility stakeholders requested this amendment so they can follow equipment manufacturer instructions to safely and effectively maintain their critical infrastructure, while remaining compliant with CARB regulations. It is not feasible for products to meet the low "Multi-purpose Solvent" VOC standard and still be effective at cleaning the electrical equipment owned only by public utilities. By excluding products sold exclusively to PUC-defined public utilities for the narrowly-defined purpose of following equipment manufacturer's instructions from the "Multi-purpose Solvent" category, staff is providing as narrow exemption as possible, maintaining the maximum feasible reductions from the "Multi-purpose Solvent" category, while still considering the needs of public utility stakeholders.

Purpose for Proposed Amendments to Section 94508(a)(91)

Staff is proposing to delete the existing definition for "No Rinse Shampoo" from section 94509(a)(91).

Rationale for Proposed Amendments to Section 94508(a)(91)

This proposed amendment is needed to ensure that section 94508(a) remains in alphabetical order, since "No Rinse Shampoo" would be renamed "Dry Shampoo," as previously described. Retaining a definition for "No Rinse Shampoo" when the category has been renamed "Dry Shampoo" would be redundant and confusing for stakeholders.

Purpose for Proposed Amendments to Section 94508(b)

Staff is proposing to add language that will clarify that each of the provisions, and parts thereof, are severable, so that the rest of one or more provisions will remain

valid if any one provision or part of a provision is declared invalid by a court.

Rationale for Proposed Amendments to Section 94508(b)

This proposed amendment is needed to help regulated entities understand that when part or all of a provision is stricken by a court, the rest of the provision or regulation remains valid. This is needed to be consistent with other CARB regulations, which all contain this provision, as well.

Purpose for Proposed Amendments to Section 94508 Authority and Reference

CARB staff is proposing to add Health and Safety Code sections 39515, 39516, 39659, 41503.5, and 41511 to the authority for this section. Section 39515 provides authority for CARB to appoint an executive officer, and to delegate statutory duties to the executive officer. Section 39516 provides that the executive officer can redelegate to a subordinate anything delegated to the executive officer. Section 39659 allows CARB to take any action necessary to regulate toxic air contaminants. Section 41503.5 requires CARB to ensure that "every reasonable action is taken to achieve the state ambient air quality standards for ozone, carbon monoxide, nitrogen dioxide, and sulfur dioxide at the earliest practicable date." Finally, section 41511 allows CARB to "require the owner or the operator of any air pollution emission source to take such action as the state board or the district may determine to be reasonable for the determination of the amount of such emission from such source."

CARB staff is proposing to add Health and Safety Code sections 39000, 39003, 41511, and 41700 to the reference for this section. Section 39000 lays out the Legislature's findings and declaration that Californians have an interest in State environmental quality, and that quality is being degraded by pollution, adversely impacting the health, safety, welfare and sense of well-being of Californians. Section 39003 provides that CARB is charged with, among other things, coordinating efforts to attain and maintain ambient air quality standard, and researching the causes of and solutions to air pollution. Section 41700 prohibits the discharge of any air contaminant or other material causing injury, nuisance, or danger to the public.

Rationale for Proposed Amendments to Section 94508 Authority and Reference

CARB proposes to add Health and Safety Code sections 39515 and 39516 to the authority for this section to reflect CARB's specific authority to adopt a regulation that delegates its legal powers and duties to the Executive Officer, who may then redelegate to a subordinate, which this regulation is implementing. While CARB is not adopting this regulation as an ATCM, CARB is ensuring the achievement of the AMR ATCM through its proposed limitations on "Energized Electrical Cleaner" products, discussed above, as allowed by section 39659. These Proposed Amendments also result in ozone reductions, implementing sections 41503.5 and 41511.

Further, CARB proposes to add Health and Safety Code sections 39000, 39003, 41511, and 41700 as references for this section, to reflect that these sections are also to be referenced when reading this section, as background for understanding the regulation and its context, and to provide context for the need for the regulatory changes and CARB authority to make them.

Purpose of Proposed Amendments to Section 94509(a)

Staff is proposing to modify the Table of Standards in section 94509(a) to be consistent with the proposed amended category names and additional category in section 94508(a). In addition, staff is proposing to update the table to incorporate staff's proposed new or lower VOC standards and deadlines for meeting those standards for seven consumer product categories: "Manual Aerosol Air Freshener," "Hair Finishing Spray," "Dry Shampoo," "Hair Shine," "Temporary Hair Color," "Personal Fragrance Product", "Plastic Pipe Adhesive," and "Crawling Bug Insecticide" (aerosol). Additional detail regarding the proposed VOC standards for each of these eight consumer product categories is provided below, while additional information regarding each category can be found in Chapter 3 of this ISOR.

Proposed "Plastic Pipe Adhesive" Amendments

CARB proposes to add a line in the table for the "Plastic Pipe Adhesive" category, with a 60 percent VOC standard as of the date this proposed regulation is amended. This new line reflects the addition of this subcategory under "Special Purpose Spray Adhesive" in section 94508, discussed above.

Proposed Aerosol Air Freshener Proposed Amendments

The proposed Table of Standards amendments in section 94509(a) would reflect the transition of the "Single Phase Aerosol Air Freshener" and "Double Phase Aerosol Air Freshener" categories to four new categories of aerosol air freshener after January 1, 2023 - "Automatic Aerosol Air Freshener," "Manual Aerosol Air Freshener," "Concentrated Aerosol Air Freshener," and "Total Release Aerosol Air Freshener." Existing VOC standards for "Single Phase Aerosol Air Freshener" and "Double Phase Aerosol Air Freshener" of 30 percent and 20 percent, respectively, is proposed to be replaced, beginning on January 1, 2023, with the following VOC content standards for the specified new product categories:

- "Manual Aerosol Air Freshener": 10 percent by weight on January 1, 2023, and 5 percent by weight on January 1, 2027;
- "Concentrated Aerosol Air Freshener": 15 percent by weight on January 1, 2023, and 10 percent by weight on January 1, 2027; and
- "Total Release Aerosol Air Freshener": 25 percent by weight on January 1, 2023.

2015 Consumer Products Survey data indicates that "Automatic Aerosol Air Freshener" products all currently meet the definition of "Single Phase Aerosol Air

Freshener.” “Automatic Aerosol Air Freshener” products would continue to be subject to the 30 percent by weight VOC content standard that currently applies to “Single Phase Aerosol Air Freshener.”

The Table of Standards would also refer the reader to additional sections for additional requirements that apply to “Manual Aerosol Air Freshener,” “Concentrated Aerosol Air Freshener,” and “Total Release Aerosol Air Freshener.”

Proposed Hair Care Product Amendments

The proposed updates to the Table of Standards in section 94509(a) would achieve the maximum VOC reductions practicable and feasible that are also required to meet the ozone ambient air quality standards by establishing new or lower VOC standards for four hair care product categories, as follows:

- “Dry Shampoo”: 55 percent by January 1, 2023, and 50 percent by weight by January 1, 2029;
- “Hair Shine”: 50 percent by weight by January 1, 2029;
- “Hair Finishing Spray”: 50 percent by weight by January 1, 2023; and
- “Temporary Hair Color”: 50 percent by weight by January 1, 2029.

The table would also refer the reader to additional sections for additional requirements that apply to the categories.

Crawling Bug Insecticide (Aerosol)

The Proposed Amendments would achieve VOC reductions from aerosol “Crawling Bug Insecticide (aerosol)” by lowering the applicable VOC standard from 15 percent to eight percent by weight beginning on January 1, 2030. All other forms of “Crawling Bug Insecticide” would retain the 20 percent VOC standard. A new category called “Bed Bug Insecticide,” which is currently subject to the “Crawling Bug Insecticide” VOC standards, would be created. “Bed Bug Insecticide (aerosol)” would be subject to a 15 percent by weight VOC standard as of the effective date of these Proposed Amendments and “Bed Bug Insecticide (all forms)” would be subject to a 20 percent by weight VOC standard as of the effective date.

Proposed Personal Fragrance Product Amendments

The update to the Table of Standards in Section 94509(a) would achieve VOC reductions from this category by lowering the applicable fragrance content threshold from the current 20 percent fragrance to seven percent fragrance as of January 1, 2023, and to 10 percent fragrance as of January 1, 2031, and adjusting the applicable VOC standard to be implemented in 2023 and 2031. For products manufactured between January 1, 2023 and December 31, 2030:

- Aerosol “Personal Fragrance Product” would be required to meet a 70 percent VOC standard, regardless of fragrance content;
- Non-aerosol “Personal Fragrance Product” with more than 20 percent fragrance would transition from the current 65 percent VOC standard to a 75 percent VOC standard;

- Non-aerosol products with more than seven percent and less than or equal to 20 percent fragrance would retain the current applicable 75 percent VOC standard; and
- The VOC standard for non-aerosol products with seven percent or less fragrance would decline from 75 to 70 percent.

For products manufactured on or after January 1, 2031:

- Aerosol "Personal Fragrance Product" would be required to meet a 50 percent VOC standard, regardless of fragrance content;
- Non-aerosol "Personal Fragrance Product" with more than seven percent and less than or equal to ten percent fragrance would transition from a 75 percent VOC standard to a 50 percent VOC standard; and
- The VOC standard for non-aerosol products with seven percent or less fragrance would decline from 70 to 50 percent.

Rationale of Proposed Amendments to Section 94509(a)

Proposed VOC standards are necessary to achieve the consumer product sector VOC reduction commitment identified in the 2016 State SIP Strategy, to achieve the national ambient air quality standard for ozone, as required by Health and Safety Code section 41712, and meet its obligations under State law to achieve the maximum practicable VOC reductions feasible from consumer products. Staff developed the proposed standards based on the review of data collected from the 2015 Consumer Products Survey, as well as review of existing technologies, from which information the proposed standards were found to be commercially and technologically feasible. If adopted, the proposed standards would result in a reduction of Statewide VOC emissions of 3.00 tpd in 2023 and 4.03 tpd in 2031. Additional detail regarding the rationale for the proposed VOC standards for each of these seven consumer product categories is provided below.

Plastic Pipe Adhesive

The proposed VOC standard for "Plastic Pipe Adhesive" is intended to achieve the lowest possible feasible VOC standard for this category while excluding it from the "Mist Spray Adhesive" category. Products that currently meet the proposed 'Plastic Pipe Adhesive' category definition were not considered when the VOC standard for "Mist Spray Adhesive" was lowered from 65 percent to 30 percent. Staff's evaluation of "Plastic Pipe Adhesive" products showed that these products are not formulated above the proposed 60 percent VOC standard. A lower proposed standard would not be feasible since any emissions reductions that would result would be de minimus.

Aerosol Air Freshener Proposed Amendments

Proposed lower VOC standards for new air freshener classifications is intended to achieve the maximum technically feasible and cost-effective VOC reductions possible required by Health and Safety Code section 41712. Staff's evaluation of 2015 Consumer Products Survey data and discussions with industry stakeholders indicate that lower VOC standards for "Automatic Aerosol Air Freshener," whose

products meet the current definition of "Single Phase Aerosol Air Freshener," are technically infeasible at this time. However, staff and industry stakeholders generally concur that lower VOC standards for manually-activated aerosol air fresheners, which are responsible for the bulk of "Single Phase Aerosol Air Freshener" VOC emissions, are technically feasible.

Bifurcating the 'Single Phase Aerosol Air Freshener' category into automatic and manually-activated product enables achievement of the maximum possible VOC reductions from manual products, while maintaining the functionality and commercial viability of automatic air freshener products. While proposed "Manual Aerosol Air Freshener" VOC standards are more technically challenging for "Double Phase Aerosol Air Freshener" products, manufacturers have the option to reformulate these products as (functionally-equivalent) single-phase air freshener products.

Finally, staff's evaluation of 2015 Consumer Products Survey data and discussions with industry stakeholders indicates that "Concentrated Aerosol Air Freshener" and "Total Release Aerosol Air Freshener" are likely to face technical challenges in meeting the proposed "Manual Aerosol Air Freshener" VOC standards. Slightly less stringent proposed standards (relative to "Manual Aerosol Air Freshener") for these two categories would achieve the maximum feasible emission reductions from the universe of "Manual Aerosol Air Freshener" products while keeping the standards feasible.

Hair Care Product Proposed Amendments

Proposed amended VOC standards for "Hair Finishing Spray," "Hair Shine," and "Temporary Hair Color," and proposed new VOC standards for "Dry Shampoo" are intended to achieve the maximum feasible VOC reductions from these four categories by 2023 and 2029, to help achieve ozone air quality standards, while recognizing that uniform VOC standards are needed to ensure products are reformulated rather than relabeled in an attempt to qualify for less stringent VOC standards.

The Proposed VOC standards for "Hair Finishing Spray" and "Dry Shampoo" would achieve 1.11 and 0.78 tpd VOC reductions, respectively, Statewide by 2031, while reductions from proposed "Hair Shine" and "Temporary Hair Color" categories are negligible. VOC standards for 'Hair Shine' and Temporary Hair Color' are proposed not for direct VOC reductions, but rather to ensure intended VOC reductions are achieved from "Hair Finishing Spray" and "Dry Shampoo" categories.

CARB staff has observed instances in which manufacturers of hair care products modify or expand product label claims to enable a product to fall into regulated categories with less stringent VOC standards, or to be exempt from VOC standards altogether. "Hair Finishing Spray" products at times make label claims similar to those for "Hair Shine," while "Dry Shampoo" often contains dark colorant that may enable it to meet the regulatory definition of "Temporary Hair Color." Proposed uniform standards of 50 percent VOC by 2029 for all four hair care categories is intended to remove the incentive to relabel products to meet a less stringent VOC

standard, thereby ensuring anticipated emission reductions from proposed VOC standards are achieved.

Crawling Bug Insecticide (Aerosol)

The Proposed lower VOC standard for "Crawling Bug Insecticide (aerosol)" products as of January 1, 2030, is intended to achieve the maximum possible technically-feasible VOC reductions from this category. Based upon technical discussions with industry stakeholders, "Bed Bug Insecticide (aerosol)" has been excluded from the proposed lower VOC standard due to technical challenges meeting the proposed eight percent VOC standard.

Personal Fragrance Product

Proposed amendments to "Personal Fragrance Product" VOC standards and applicable fragrance thresholds identified in section 94509(a) are intended to achieve the most technically feasible and cost-effective emission reductions possible from this category. Staff's evaluation of 2015 Consumer Products Survey data indicates that the vast majority of VOC emissions come from products with 10 percent or less fragrance content. Establishing lower VOC standards for products at or below the current 20 percent fragrance threshold would require reformulation of hundreds of products with between 10 and 20 percent fragrance with very low sales and VOC emissions. Products with more than 20 percent fragrance content are also responsible for very low sales and VOC emissions.

Staff's evaluation of 2015 Consumer Products Survey data and discussions with industry representatives, particularly EDP/EDC/EDT product manufacturers, indicated that it would be infeasible for products with more than seven percent but less than 10 percent fragrance to meet the proposed 70 percent VOC standard by 2023. Proposed amendments are intended to exclude these products from the proposed January 1, 2023, VOC standard due to near-term feasibility challenges, but would require they meet the more stringent second tier of standards by January 1, 2031, in part to deter manufacturers with less than seven percent fragrance from increasing product fragrance content to just over seven percent. This proposal is intended to maximize the emission reductions from the large and diverse "Personal Fragrance Product" category, while minimizing technical challenges, number of products required to be reformulated, and compliance costs for product manufacturers.

Raising the applicable fragrance threshold from at or below seven percent as of January 1, 2023, to at or below 10 percent as of January 1, 2031, is intended to reduce the incentive for products with less than seven percent fragrance to reformulate with a higher fragrance content rather than be reformulate with a lower VOC content.

Finally, as for the current subcategory of "products with more than 20 percent fragrance," the VOC standard would increase from 65 to 75 percent by weight, effective in 2023. Staff believe that, due to the prohibitive expense of fragrance ingredients as compared to other ingredients in the category, an increase of emissions from products which contain more than 20 percent fragrance would not

be expected, and the additional complexity a third fragrance standard tier would bring to the regulation is therefore unwarranted.

Purpose for Proposed Amendments to Section 94509(m)(1)(A) and (B)

The proposed regulatory amendments would add subsections (A) and (B) to existing section 94509(m)(1), would update the name of existing Table 94509(m)(1) to Table 94509(m)(1)(A), and establish a new Table 94509(m)(1)(B). Existing section 94509(m)(1) and Table 94509(m)(1), would be renamed section (m)(1)(A) and Table 94509(m)(1)(A), respectively and would retain the existing prohibition on the use of methylene chloride, perchloroethylene, and trichloroethylene in the identical specific consumer product categories, with one addition. Table 94509(m)(1)(A) would add "Plastic Pipe Adhesive" as a new category in which the use of methylene chloride, perchloroethylene, and trichloroethylene would be prohibited.

Proposed new section 94509(m)(1)(B) Table 94509(m)(1)(B) would indicate that parachlorobenzotrifluoride, methylene chloride, perchloroethylene, and trichloroethylene are prohibited in the categories proposed for new or lower VOC standards, including aerosol air fresheners, hair care products, personal fragrance products, and aerosol crawling bug insecticide, with an effective date identical to that of the proposed VOC standards, and a three-year sell through period.

Rationale for Proposed Amendments to Section 94509(m)(1)

These provisions and new tables are necessary to ensure that consumer products are not reformulated with toxic air contaminants as manufacturer's modify their product formulations to comply with proposed VOC standards, and that the specific list of product categories in which the identified toxic air contaminants cannot be used, and implementation date, is clear to regulated entities. Parachlorobenzotrifluoride, methylene chloride, perchloroethylene, and trichloroethylene have all been identified by CARB as toxic air contaminants, and are listed by the State of California on Proposition 65 as potentially causing cancer or reproductive harm. While these four compounds are not currently found in the proposed categories in which prohibitions are proposed, they are present in several other existing consumer product categories. The prohibition of parachlorobenzotrifluoride, methylene chloride, and perchloroethylene is particularly critical because, as exempt VOCs, manufacturers may find reason to reformulate products with these three compounds to comply with proposed lower VOC standards. This prohibition therefore protects public health and maintains the toxic air contaminant restrictions that apply to the existing categories already in a way that cannot be achieved with a non-prescriptive approach to these ingredients.

Rationale for Proposed Amendments to Section 94509(m)(1)(A)

Renaming Table 94509(m)(1) as Table 94509(m)(1)(A) is needed to distinguish Table 94509(m)(1)(A) from the new proposed Table 94509(m)(1)(B). "Plastic Pipe Adhesive" must be added to Table 94509(m)(1)(A) to maintain the existing prohibition of methylene chloride, perchloroethylene, and trichloroethylene in products that the Proposed Amendments would redefine from "Mist Spray Adhesive" to the new "Plastic Pipe Adhesive" category. If "Plastic Pipe Adhesive"

products were not added to Table 94509(m)(1)(A), the Proposed Amendments to would result in these products (which had previously been categorized as “Mist Spray Adhesive”) no longer being subject to this toxics prohibition, and could result in a net increase in TACs and a less health-protective regulation.

Rationale for Proposed Amendments to Section 94509(m)(1)(B)

These amendments are needed to clearly identify in a simple and concise table the product categories in which Section 94509(m)(1) prohibits the use of parachlorobenzotrifluoride, methylene chloride, perchloroethylene, and trichloroethylene, as well as the applicable effective date and sell through period. The table format makes it easier for regulated entities to identify and clearly understand the requirements, enabling higher compliance rates and VOC emission reduction achievement. Including these prohibitions in a table format is also needed to be consistent with how prohibitions on other substances are displayed in the regulation.

Purpose for Proposed Amendments to Section 94509(n)

Staff is proposing the following additions to Table 94509(n)(1), which identifies product categories in which use of any chemical compound with a GWP value of 150 or greater is prohibited:

- Modify the “Aerosol Adhesive” category, and add a “Special Purpose Adhesive, Plastic Pipe Adhesive” subcategory, making the GWP prohibition in this table applicable to products in this new subcategory as of the effective date of these proposed amendments. Since products in this new subcategory are already subject to the table’s prohibitions as “Mist Spray Adhesive,” there would be no sell-through allowed;
- Add language to the “Double Phase Aerosol Air Freshener” category specifying that the GWP prohibitions apply to products in this category that are “manufactured before January 1, 2023;”
- Add “Manual Aerosol Air Freshener”, “Concentrated Aerosol Air Freshener”, and “Total Release Aerosol Air Freshener” product categories, making the prohibition on chemical compounds with a GWP of 150 or greater applicable to products in these categories that are “manufactured on or after January 1, 2023,” and letting products that were manufactured before January 1, 2023 with a chemical compound with a GWP of 150 or greater be sold through January 1, 2026;
- Add “Crawling Bug Insecticide (aerosol),” making the prohibition on chemical compounds with a GWP of 150 or greater applicable to products in this category on January 1, 2030, and letting products that were manufactured before January 1, 2030, with a chemical compound with a GWP of 150 or greater be sold through January 1, 2033;
- Add “Dry Shampoo” and “Hair Finishing Spray” categories, making the prohibition on chemical compounds with a GWP of 150 or greater applicable to products in this category on January 1, 2023, and letting products that were manufactured before January 1, 2023, with a chemical compound with a GWP

- of 150 or greater be sold through January 1, 2026;
- Add “Hair Shine”, and “Temporary Hair Color,” making the prohibition on chemical compound with a GWP of 150 or greater applicable to products in this category on January 1, 2029, and letting products that were manufactured before January 1, 2029, with a chemical compound with a GWP of 150 or greater be sold through January 1, 2032; and
- Add “Personal Fragrance Product”, specifying that
 - for products comprised of less than or equal to seven percent fragrance the prohibition on chemical compounds with a GWP of 150 or greater is applicable to products in this category on January 1, 2023, and products that were manufactured before January 1, 2023, with a chemical compound with a GWP of 150 or greater may be sold through is January 1, 2026; and
 - for products comprised of between seven and less than or equal to 10 percent fragrance the GWP prohibition effective date is January 1, 2031 and the sell-through date is January 1, 2034.

This section would also add a footnote to Table 94509(n) indicating that consumer products may also be subject to requirements in California Code of Regulations, title 17, section 95371 et seq., which refers to California’s prohibition on the use of hydrofluorocarbons with high GWP in several applications, including most consumer product propellants (CARB’s HFC Reduction Measure).

Rationale for Proposed Amendments to Section 94509(n)

Section 94509(n) is structured to prohibit any chemical compounds with a GWP over 150 from being used in products in specific categories, while CARB’s HFC Reduction Measure prohibits use of specific hydrofluorocarbon propellants, including HFC-134a, in all consumer product categories unless a category is specifically exempted. Despite these different approaches, staff has determined that the existing CARB HFC Reduction Measure prohibitions ban the use of chemical compounds with a GWP greater than 150 in the seven proposed categories. These Proposed Amendments are necessary to ensure consistency with HFC Reduction Measure prohibitions, and to ensure that manufacturers reformulating the products to meet proposed new or lower VOC standards are aware of these existing prohibitions.

Purpose for Proposed Amendments to Section 94509 Authority and Reference

CARB is proposing to add Health and Safety Code sections 38562.5, 38566, 39515, 39516, 41503.5, and 41511 to the authority for section 94509. CARB is also proposing to add Health and Safety Code sections 38501, 38551, 39003, 39602, 41504, and 41511 to the references for section 94509.

Health and Safety Code section 38562.5 allows CARB to adopt rules to reduce greenhouse gas emissions to meet the AB 32 greenhouse gas limit. Section 38566 requires the State Board to reduce greenhouse gases to 40 percent below the limit by December 31, 2030. Section 39515 provides authority for CARB to appoint an executive officer, and to delegate statutory duties to the executive officer. Section

39516 provides that the executive officer can redelegate to a subordinate anything delegated to the executive officer. Section 41503.5 requires CARB to ensure that every reasonable action is taken to achieve State ambient air quality standards for ozone by the earliest practicable date. Section 41511 allows the State Board to require the owner or the operator of any air pollution emission source to take such action as the state board or the district may determine to be reasonable for the determination of the amount of such emission from such source.

Health and Safety Code section 38501 provides California legislative findings regarding the danger of global warming and the Legislature's intent that CARB reduce greenhouse gas emissions. Section 38551 memorialized California legislative intent that the greenhouse gas emissions limit in AB 32 be used to maintain and continue reductions of greenhouse gas emissions beyond 2020. Section 39003 designates CARB as the State agency charged with coordinating efforts to attain and maintain air quality standards and to research air pollution, among other things. Section 39602 designates CARB as the air pollution control agency for all federal law purposes, including the preparation of the State Implementation Plan required by the Clean Air Act to show how the State's air basins plan to meet the national ambient air quality standards. Section 41504 allows CARB to establish regulations it deems necessary to enable any one or more district to achieve and maintain ambient air quality standards.

Rationale for Proposed Amendments to Section 94509 Authority and Reference

CARB is proposing to add Health and Safety Code sections 38562.5 and 38566 to the authority for section 94509 because section 94509 prohibits the use of chemical compounds with a GWP of 150 or higher in certain product categories to maintain and continue greenhouse gas emission reductions. These sections are proposed to be added to the existing greenhouse gas authority cited for section 94509.

CARB proposes to add Health and Safety Code sections 39515 and 39516 to the authority for section 94509 because section 94509 delegates responsibilities under section 94509 to the Executive Officer, who re-delegates them to the appropriate CARB staff under the Executive Officer. This delegation is necessary to ensure that the emission reductions goals of section 94509 are met, by ensuring there are enough staff working on it to actually implement and enforce section 94509.

CARB proposes to add Health and Safety Code section 41503.5 to the authority for section 94509 because section 94509 takes action to ensure that California achieves air standards for ozone by the earliest practical date, implementing section 41503.5.

CARB proposes to add Health and Safety Code section 41511 to the authority for section 94509 because section 94509 requires consumer product manufacturers to take action to help the Board determine the amount of emissions from consumer products, implementing section 41511.

CARB proposes to add Health and Safety Code sections 38501, 38551, 39003, 39602, 41504, and 41511 to the references for section 94509 to provide context for the need for the regulatory changes and CARB authority to make them.

Purpose for Proposed Amendments to Section 94510(c)

Staff is proposing to delete language from Section 94510(c) such that for products manufactured on or after January 1, 2031, fragrances up to two percent by weight would no longer be exempt from VOC standards specified in section 94509(a). Staff proposes to add Sections 94510(c)(1)-(c)(4) to replace the Two Percent Fragrance Exemption with a narrower exemption for specified weights of fragrances contained in nonaerosol "General Purpose Cleaner" and nonaerosol "General Purpose Degreaser"; "Air Freshener"; "Disinfectant"; and "Sanitizer" products manufactured on certain dates. The new proposed exemptions and rationales for them are provided below. The proposed language would also provide an exemption for up to 0.25 percent monoterpenes by weight in nonaerosol "General Purpose Cleaner" and nonaerosol "General Purpose Degreaser" products manufactured beginning on January 1, 2023.

Rationale for Proposed Amendments to Section 94510(c)

Amendments to sections 94509(c) are needed to achieve VOC reductions from consumer products to meet California's emission reduction commitment in the South Coast by 2031. Amendments to these two sections are also needed to achieve the following:

- **Lock In Emission Reductions:** While manufacturer utilization of the Two Percent Fragrance Exemption is now low, emissions could increase significantly if the exemption were to be fully utilized. Eliminating the exemption is needed to ensure that over three tons per day of VOC emissions do not occur in future years if utilization of the exemption were to increase.
- **Ensure Feasibility:** As described in more detail below, retaining narrower exemptions for a smaller amount of fragrance and monoterpenes would allow continued compliance with the regulation by addressing the feasibility challenges of certain products to comply without any exemption for them.
- **Encourage Transparency:** The Two Percent Fragrance Exemption enables consumer product manufacturers to be unaware of the properties of fragrance purchased from third-party vendors, since CARB exempts up to two percent of fragrance from VOC standard compliance determinations. Elimination of this exemption is needed to encourage greater transparency regarding fragrance ingredients, as product manufacturers request VOC content information from fragrance vendors to ensure their products – including fragrance – are formulated to meet the applicable VOC standard.
- **Enhance Clarity:** CARB staff and product manufacturers over the years have had numerous discussions regarding whether a particular ingredient meets the regulatory definition of "fragrance," which depends in part upon the purpose of an ingredient (its "sole purpose ... is to impart an odor or scent, or to counteract

a malodor”). Treating fragrance VOC content the same as non-fragrance VOCs for the purpose of compliance determinations is needed to provide greater clarity for regulated parties regarding whether a products meets applicable VOC standards by removing the emphasis on an ingredient’s purpose.

- **Simplify Compliance Determinations: The Two Percent Fragrance Exemption** poses challenges for CARB laboratory staff to determine compliance with applicable consumer product VOC standards. To be precise, CARB laboratory staff must identify and quantify thousands of possible fragrance ingredients for the purpose of excluding them from a product’s allowable VOC content. While test methods exist for some of the most common fragrances, others cannot be identified (to determine if they are a fragrance) or quantified (for the purposes of exclusion from determining compliance with a VOC standard). Thus, the Proposed Amendments are needed to simplify CARB laboratory testing and subsequent product compliance determinations, by eliminating the need to identify and quantify thousands of possible fragrance ingredients for the purpose of excluding them from a product’s allowable VOC content.
- **Program Equity:** The Proposed Amendments are needed to provide a level playing field for how CARB treats VOC constituents. Staff’s proposal would treat all smog-forming VOC emissions equally, regardless of their function. Staff does not see a compelling reason for fragrance VOC ingredients to be treated preferentially to non-fragrance VOCs, allowing fragranced products within a regulated category to emit more VOC than non-fragranced products.

Purpose for Proposed Amendments to Section 94510(c)(1)

Staff proposes to add new Sections 94509(c)(1) to provide nonaerosol “General Purpose Cleaner” and nonaerosol “General Purpose Degreaser” products modified exemptions from applicable VOC standards. For nonaerosol “General Purpose Cleaner” and nonaerosol “General Purpose Degreaser” products manufactured between January 1, 2023, and December 31, 2030, fragrance up to a combined two percent by weight and monoterpene up to a combined 0.25 percent by weight, not to exceed a combined total of two percent fragrance and monoterpene by weight, would be exempt from VOC standards specified in section 94509(a).

Rationale for Proposed Amendments to Section 94510(c)(1)

The existing low VOC content standard is 0.5 percent by weight for the nonaerosol “General Purpose Cleaner” and nonaerosol “General Purpose Degreaser” categories. Sections 94510(c)(1)&(2) are needed to address the challenges of complying with this 0.5 percent by weight VOC standard for these categories if the Two Percent Fragrance Exemption is eliminated for these categories. The proposed exemption of up to 0.25 percent monoterpene by weight is needed to address technical feasibility challenges for products in these two categories that utilize monoterpene ingredients for the dual purpose of solvency and fragrance. Retention of the two percent fragrance exemption through 2030 is needed to provide product manufacturers across the diversity of affected product categories time to make necessary product reformulations, and will help to minimize

compliance costs by allowing time for manufacturers to accommodate product reformulations as they roll out new products.

This section is needed to provide both clarity and compliance flexibility to manufacturers of nonaerosol "General Purpose Cleaner" and nonaerosol "General Purpose Degreaser" regarding the use of monoterpenes in these two product categories. Staff and industry stakeholders have had numerous discussions since 2015 regarding whether monoterpenes, which provide both solvency and impart an odor, meet the definition of fragrance and would therefore be eligible for the Two Percent Fragrance Exemption. Speciation of the VOC constituents of nonaerosol general purpose cleaner and degreaser products collected as part of the 2015 Consumer Products Survey shows that monoterpene compounds, including limonene and other citrus terpenes, as well as pine terpenes and other fragrance compounds, make up a significant portion of the VOC content of those product categories (monoterpenes and fragrance make up 58 percent of the VOC content of nonaerosol general purpose cleaners and 24 percent of the VOC content of nonaerosol general purpose degreasers).

Staff evaluation of 2015 Consumer Products Survey data indicates that the VOC content of some nonaerosol "General Purpose Cleaner" and nonaerosol "General Purpose Degreaser" products, including monoterpenes, exceeded the applicable VOC standard by up to two percent. Subsequent discussions with industry stakeholders indicated that many manufacturers intended that these monoterpenes in excess of the standard be classified as fragrance and part of the Two Percent Fragrance Exemption. While CARB staff disagree that monoterpenes meet the definition of fragrance in cleaning or degreasing categories, this section is needed to provide flexibility to maintain a modest amount (i.e., 0.25 percent) of monoterpene in these products between 2023 and 2030, in preparation for a phase-down of the Two Percent Fragrance Exemption by 2031.

Purpose for Proposed Amendments to Section 94510(c)(2)

Section (c)(2) would retain the existing Two Percent Fragrance Exemption for products other than aerosol general purpose cleaners and degreasers that are manufactured before January 1, 2031.

Rationale for Proposed Amendments to Section 94510(c)(2)

This section is needed to provide product manufacturers and formulators clarity regarding the amount of time the existing Two Percent Fragrance Exemption would remain in place, and provide sufficient time to enable product manufacturers and formulators that are utilizing the Two Percent Fragrance Exemption to reformulate products, if necessary, across the diversity of eligible categories.

Purpose for Proposed Amendments to Section 94510(c)(3)

This purpose of adding proposed Section 94510(c)(3) is to retain a combined 0.25 exemption for fragrance and/or monoterpene ingredients in aerosol "General Purpose Cleaner" and aerosol "General Purpose Degreaser" products manufactured on or after January 1, 2031.

Rationale for Proposed Amendments to Section 94510(c)(3)

This section is needed to ensure that it will be technically feasible to manufacture aerosol "General Purpose Cleaner" and aerosol "General Purpose Degreaser" products that utilize fragrance, including monoterpenes. CARB staff evaluation of 2015 Consumer Products Survey data indicates that many products in these two categories that utilize fragrance and/or monoterpenes may face feasibility challenges complying with the applicable 0.5 percent VOC standard were the Two Percent Fragrance Exemption to be completely eliminated for them.

Purpose for Proposed Amendments to Section 94510(c)(4)

This purpose of adding proposed Section 94510(c)(4) is to retain a 0.25 percent fragrance exemption for "Air Freshener," "Disinfectant," and "Sanitizer" products manufactured on or after January 1, 2031.

Health and Safety Code section 41712(d) requires CARB to consider the effect that "regulations proposed for health benefit products will have on the efficacy of those products in killing or inactivating agents of infectious diseases such as viruses, bacteria, and fungi, and the impact the regulations will have on the availability of health benefit products to California consumers."

Rationale for Proposed Amendments to Section 94510(c)(4)

This section is needed to retain a fragrance exemption for "Air Freshener" products for several reasons. First, "Air Freshener" products are eligible for a fragrance exemption pursuant to Section 94510(f), by which products that are comprised of 100 percent fragrance ingredients, minus non-VOC compounds, are exempt from the VOC standards in Section 94509. Complete elimination of the Two Percent Fragrance Exemption could encourage greater use of this second exemption, resulting in increased VOC emissions. Secondly, almost all air freshener products contain fragrance, as it could be argued that fragranting the air is the primary purpose of these products. Finally, several manufacturers have indicated, and CARB staff concurs, that meeting this proposed regulation's five percent VOC standard for "Manual Aerosol Air Freshener" by 2027 would not be feasible without retaining some fragrance exemption. Retaining the exemption for "Manual Aerosol Air Freshener" would also provide greater opportunity for manufacturers to reformulate products to meet the proposed five percent VOC standard with hydrocarbon propellant, at reduced cost relative to the more likely compressed gas propellant reformulation pathway.

Consistent with the requirements of Health and Safety Code section 41712(d), CARB considered the effect of these proposed regulations on the efficacy and availability to California consumers of disinfectant and sanitizer. Staff determined as a result that this section is needed relative to "Disinfectant" and "Sanitizer" to ensure that these critical health benefit products retain needed compliance flexibility to maintain maximum efficacy. Proposed Amendments for "Disinfectant" and "Sanitizer," which are regulated as pesticides under the Federal Insecticide, Fungicide, and Rodenticide Act, would also eliminate the need for, and associated costs of, re-registering them with U.S. EPA, which would be required for new

formulations of the products that would have to be created without this exemption.

Purpose for Proposed Amendments to Section 94510(d)

Proposed additions to Section 94510(d) would indicate that the LVP-VOC portion of any fragrance or monoterpene that is eligible for an exemption pursuant to Section 94510(c) shall not be included in the calculation of the weight of a product's fragrance or monoterpene content for the purposes of Section 94510(c).

Rationale for Proposed Amendments to Section 94510(d)

Proposed amendments to this section are needed to clarify the role of the LVP-VOC exemption (94510(d)) as it applies to fragrance mixtures. The current regulation indicates that the LVP-VOC constituents of a fragrance mixture is counted against the two percent fragrance VOC exemption before the LVP-VOC exemption is applied. Product VOC content is calculated by first subtracting two percent of the fragrance weight, including LVP-VOCs. If any fragrance remains (i.e. the product is formulated with more than two percent by weight of fragrance), the LVP-VOC portion of what remained, if known, would then qualify for the LVP-VOC exemption.

Proposed amended subsection (d) is needed to clarify staff's intention in this rulemaking proposal that the LVP-VOC portion of fragrance mixtures would be included in the overall exemption for LVP-VOC in subsection 94510(d) before utilization of the fragrance exemption is determined. The Proposed Amendments to also apply this approach to monoterpenes in nonaerosol "General Purpose Cleaners" and nonaerosol "General Purpose Degreasers" is needed for consistency with how the exemption is applied to fragrance ingredients.

Purpose for Proposed Amendments to Section 94510 Authority and Reference

CARB is proposing to add Health and Safety Code sections 39515, 39516, 41503.5, 41511, 41700, to the authority for section 94510. CARB is proposing to add Health and Safety Code sections 39000, 39003, 39602, 41504, 41511, and 41700 to the references for section 94510.

Health and Safety Code section 39515 provides authority for CARB to appoint an executive officer, and to delegate statutory duties to the executive officer. Section 39516 provides that the executive officer can redelegate to a subordinate anything delegated to the executive officer. Section 41503.5 requires CARB to ensure that every reasonable action is taken to achieve State ambient air quality standards for ozone by the earliest practicable date. Section 41511 allows the State Board to require the owner or the operator of any air pollution emission source to take such action as the state board or the district may determine to be reasonable for the determination of the amount of such emission from such source. Section 41700 prohibits persons from discharging air contaminants or materials that cause negative impacts on, or danger to the comfort, health, or safety, of a consideration number of persons.

Health and Safety Code section 39000 memorializes the Legislature's findings and

declarations that Californians have an interest in the quality of their environment, which is being degraded by pollution, endangering the health, safety, and welfare of Californians. Section 39003 designates CARB as the State agency charged with coordinating efforts to attain and maintain air quality standards and researching air pollution, among other things. Section 39602 designates CARB as the air pollution control agency for all purposes of federal law, including for preparing the State Implementation Plan required by the federal Clean Air Act. Section 41504 allows CARB to establish regulations it deems necessary to enable any one or more district to achieve and maintain ambient air quality standards.

Rationale for Proposed Amendments to Section 94510 Authority and Reference

CARB proposes to add sections 39515 and 39516 to the authority for this regulatory provision because section 94510 delegates responsibilities to the Executive Officer, who re-delegates them to the appropriate CARB staff under the Executive Officer. This delegation is necessary to ensure that the emission reductions goals of section 94510 are met, by ensuring there are enough staff working on it to actually implement and enforce section 94510.

CARB proposes to add Health and Safety Code section 41503.5 to the authority for section 94510 because section 94510 takes action to ensure that California achieves air standards for ozone by the earliest practical date, implementing section 41503.5.

CARB proposes to add Health and Safety Code section 41511 to the authority for section 94510 because section 94510 requires consumer product manufacturers to take action to help the Board determine the amount of emissions from consumer products, implementing section 41511.

Finally, CARB proposes to add section 41700 to the authority for section 94510 because section 94510 implements this section by controlling the emissions of VOC, which contribute to ozone and associated air quality and health impacts.

CARB proposes to add Health and Safety Code sections 39000, 39003, 39602, 41504, 41511, and 41700 to the references for section 94510 to provide context for the need for the regulatory changes and CARB authority to make them. CARB proposes to add section 39602 to the references for section 94510 because CARB is proposing this regulation to help achieve ozone reductions needed under federal law, and which CARB committed to obtaining in the 2016 State SIP Strategy.

Purpose of Proposed Amendments to Section 94511(c)

The Proposed Amendments would add a new subsection (c) to provide a mechanism within the Consumer Products Regulation IPE provisions for an aerosol "Dry Shampoo," "Hair Finishing Spray," or "Personal Fragrance Product" to exceed the applicable VOC standard if it can be demonstrated that the product meets new proposed requirements at the time of the IPE application, requirements that include that the proposed innovative product has less OFP and a lower GWP than a typical compliant product within the same regulatory category due to replacement of HFC-152a propellant with compressed air, compressed nitrogen,

and/or compressed carbon dioxide propellant.

Rationale for Proposed Amendments to Section 94511(c)

The proposed amendments to add a new subsection (c) are needed to encourage manufacturer research, development, marketing, and consumer acceptance of a greater diversity of aerosol products utilizing compressed gas propellants, by addressing an unintended disincentive for their use in the current Consumer Products Regulations. Addressing this existing disincentive is needed to encourage the development and marketing of aerosol products that utilize compressed gas propellant (which has virtually no carbon footprint), instead of propellants that have a higher GWP (i.e., HFC-152a), as needed to help California meet its goal of carbon neutrality by 2045 (California Executive Order B-55-18, 2018). This reasoning is described below.

Existing methods for determining product compliance with applicable VOC standards (based upon ingredient weight) may make manufacturers less likely to utilize compressed gas propellants, due to their very low density relative to other exempt propellants such as HFC-152a. For example, a typical "Hair Finishing Spray" might consist of 45 percent HFC-152a propellant and 55 percent VOC ingredients (by weight). Assuming, for simplicity, that the non-propellant ingredients are all VOCs, this product would comply with a 55 percent VOC standard (i.e., 45 percent by weight exempt HFC-152a and 55 percent by weight other VOC ingredients). In contrast, a product utilizing a compressed gas propellant may contain the same weight of VOC ingredients, but a compressed gas propellant with much lower density may only account for two percent of the product weight. Assuming that all the non-propellant ingredients are VOCs, the product with compressed gas propellant would have a VOC content of 98 percent by weight, making it noncompliant with the standard without an exemption.

Both HFC-152a and compressed gas propellants are responsible for negligible amounts of ozone formation, and are therefore not counted towards a product's VOC content. However, HFC-152a has a much greater climate footprint than compressed nitrogen or air, which are not greenhouse gases, and carbon dioxide, which has a global warming potential of one. HFC-152a has a GWP of 124, which is below the GWP threshold of 150 established in Consumer Product Regulation section (n)(1) to prohibit higher GWP compounds in certain consumer product categories, but is still high. HFC-152a has not been prohibited because it provides a mechanism to reformulate products to achieve lower VOC and OFP relative to hydrocarbon propellants, and it may be infeasible or cost-prohibitive to achieve lower VOC standards without the use of HFC-152a in many consumer product categories.

However, in order for California to meet its climate challenges, and ensure clean, healthy air for all residents, it will be critical to further develop innovative technologies that simultaneously reduce greenhouse gasses, toxics, and smog-forming emissions. While the technical challenges remain real, compressed gas propellants have the potential over the next decade to become a feasible alternative to HFC-152a in a diversity of product categories. Such an alternative would enable CARB to restrict or prohibit use of HFC-152a as a propellant, while

maintaining progress in lowering consumer product VOC content and OFP.

The "Hair Finishing Spray," "Dry Shampoo" and "Personal Fragrance Product" categories were selected for this proposed flexibility because HFC-152a is the most common propellant in the "Hair Finishing Spray" and aerosol "Personal Fragrance Product" categories, and is expected to be the primary propellant option if proposed "Dry Shampoo" VOC standards are adopted. 2015 Consumer Products Survey data indicates that compressed gas propellants are not utilized in any of these categories, making it an innovative potential technology advancement for these product types. Some manufacturers have indicated that CARB's proposed VOC standards for all three of these categories could provide an opportunity to reformulate to meet the new standards with cleaner compressed gas rather than continuing to rely upon HFC-152a.

The applicant will need to prove the requirements are met by clear and convincing evidence at the time of the IPE application so that the standard is high enough to ensure that the requirements are actually being met by the product when the application is made, which helps ensure the goals of the provision are actually being achieved.

Purpose of Proposed Amendments to Section 94511(c)(1)

Subsection 94511(c)(1) eligibility requirements would require that at least 50 percent of the innovative product propellant ingredients by volume are compressed nitrogen, compressed carbon dioxide, or compressed air, and that the weight of the proposed innovative product's propellant or propellants does not exceed 50 percent of the weight of the representative product's propellant or propellant.

Rationale for Proposed Amendments to Section 94511(c)(1)

This amendment is needed to ensure that a significant portion of the proposed innovative propellant is compressed nitrogen, compressed carbon dioxide, and/or compressed air propellant, while allowing manufacturers to experiment with and potentially develop products with propellant comprised of compressed gas blended with other propellants.

The development of functional products utilizing compressed gas propellant in "Hair Finishing Spray," "Dry Shampoo," and "Personal Fragrance Product" may be very challenging, and some consumers may be less accepting of products using 100 percent compressed gas propellant due to lighter can weight and other differing product characteristics. Allowance of compressed gas blends is needed to help enable effective and market-ready compressed gas products to be developed and gain a foothold in the market, and facilitate the transition to 100 percent compressed gas propellant products in the future.

The proposed language to require that the weight of the proposed innovative product's propellant or propellants does not exceed 50 percent of the weight of the representative product's propellant is needed because many aerosol products using liquefied propellants contain a small amount of air which is present in the

container before the liquefied propellant is added. By requiring that the liquefied propellant weight in the innovative product not exceed 50 percent of the liquefied propellant weight in the representative product, this provision ensures that products using a combination of liquefied and compressed gas propellants are actually deriving functionality from the use of the compressed gas.

Purpose of Proposed Amendments to Section 94511(c)(2)(A) through (C)

This subsection requires that the innovative product have replaced an HFC-152a propellant with compressed nitrogen, compressed carbon dioxide, and/or compressed air propellant, and that such replacement results in the innovative product having a lower GWP than the representative product. The purposes of subsections (c)(2)(A) through (C), respectively, are:

- (A) Requires that product ingredient GWP values be based upon the 100-Year GWP values from the Intergovernmental Panel on Climate Change's (IPCC) Fourth Assessment Report (IPCC, 2007);
- (B) Requires that if no GWP value exists for an ingredient in the IPCC's Fourth Assessment Report, then the GWP value for the ingredient from the IPCC's Fifth Assessment Report (IPCC, 2013) be used; and
- (C) Requires that if no GWP value exists for an ingredient in either the IPCC's Fourth or Fifth Assessment Report, then the ingredient is assigned a GWP value of zero.

Rationale for Proposed Amendments to Section 94511(c)(2)(A) through (C)

The proposed amendments to Subsections 94511(c)(2)(A) through (C) are needed to provide direction and consistency regarding the peer-reviewed source of GWP values to be used for the purpose of demonstrating compliance with subsection 94511(c)(2), to ensure that the innovative compressed gas product would emit less GHG than the representative HFC-152a product, and thereby help California achieve its goal of reducing GHG emissions and achieving carbon neutrality by 2045. These rationales are described further below.

Section 94511(c)(2)(A)

Subsection 94511(c)(2)(A) is needed to help ensure the specified source of these GWP values (the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report) is as consistent as possible with the values utilized by other CARB climate programs, which typically use GWP values from the IPCC's Fourth Assessment Report. This subsection is therefore needed to help ensure that the IPE provisions of these Proposed Amendments are consistent with CARB's other climate-related regulations and GHG inventory methodologies. This consistency is necessary to enable CARB to assess the relative efficacy of GHG reduction strategies, which is necessary to allow CARB to effectively measure progress towards the State's climate goals and prioritize GHG emission reduction strategies.

Section 94511(c)(2)(B)

This subsection is needed to provide a mechanism to ensure the GWP impacts of newer substances for which GWP values were first published in the IPCC's Fifth Assessment Report are considered in determining compliance with subsection 94511(c)(2). This approach balances the need for consistency in GWP values used by CARB programs and the need to assess the GWP impacts of potential IPE products as accurately as possible.

Section 94511(c)(2)(C)

This subsection is needed to provide clarity and transparency regarding how ingredients without a GWP value in either the IPCC's Fourth or Fifth Assessment Reports are assigned a GWP value. Given that IPCC assessment reports are generally accepted to provide the most up-to-date and comprehensive set of GWP values for substances with any significant GWP, zero is appropriate for the substances for which the IPCC has not assessed a GWP value.

Purpose of Proposed Amendments to Section 94511(c)(3)

This proposed subsection would require that the amount of product delivered by the innovative product be equal to or exceed the amount of product delivered by the representative product.

Rationale for Proposed Amendments to Section 94511(c)(3)

This amendment is needed to help ensure that more of the innovative product is used relative to the innovative product it replaces so that the proposal does not result in an increase in GWP and OFP. If more of the innovative product must be used than the representative product (for example, if one can of the representative product dispenses as much "Hair Finishing Spray" as one can of the innovative product, the OFP and GHG benefits of staff's proposal would be offset by increased product usage.

Purpose of Proposed Amendments to Section 94511(c)(4)(A) and (B)

Proposed new subsection 94511(c)(4) would prohibit the OFP of the innovative product from exceeding the OFP of the representative HFC-152a product. Proposed new subsections (c)(4)(A) and (B) would do as follows:

- (A) Specifies that MIR values, for the purposes of determining OFP, shall be based on the MIR values used by the Consumer Product Regulation's Alternate Compliance Option for "Multi-Purpose Lubricant" products; and
- (B) Requires that fragrance ingredients' OFP be calculated using the MIR value for terpinolene identified in the Consumer Product Regulation Table of MIR values.

Rationale for Proposed Amendments to Section 94511(c)(4)

This subsection is needed to ensure that the new proposed IPE will not result in

increased ozone formation, and therefore be counterproductive to California's efforts to attain State and federal ozone standards. The rationale for subsections (A) and (B) are provided below.

Section 94511(c)(4)(A)

This subsection is needed to provide clarity and transparency regarding the MIR values to be used to determine representative and innovative product OFP, and to be consistent with the MIR values used to determine compliance with the "Multi-Purpose Lubricant" and "Aerosol Coating Product" elements of the Consumer Products Regulations, so that the OFP benefits of this proposal can be achieved.

Section 94511(c)(4)(B)

This subsection is needed to ensure that an innovative product not demonstrate an equivalent or lower OFP by utilizing the "worst case" default MIR value for fragrance in the representative product, and a (potentially much lower) actual MIR value for a fragrance in the proposed innovative product. The use of the default 6.36 MIR value for fragrance in the representative product and an actual lower MIR value for fragrance ingredients in the innovative product would inflate the OFP reductions of the innovative product relative to the representative product. Use of a consistent MIR value for fragrance in both the representative and innovative product is needed to ensure that uncertainty regarding fragrance ingredient MIRs does not result in an OFP increase from a proposed innovative product, thereby ensuring the OFP benefits intended by the proposal.

Purpose of Proposed Amendments to Section 94511(d)(1) and (2)

The Proposed Amendments would add a new subsection (d) that would define a "representative HFC-152a product" in the "Hair Finishing Spray," "Dry Shampoo," or "Personal Fragrance Product" categories to compare to the proposed innovative product in those categories under section 94511(c) as a product that meets one of two provisions. Subsections (d)(1) and (2) would be added as described below:

- (1) This proposed subsection provides one of the two criteria a product can meet to qualify as a representative HFC-152a product: have a product formulation in the proposed new table (Table 94511(d)(1)) indicating representative, generic HFC-152a product formulations. The proposed table provides representative HFC-152a product formulations for a "Hair Finishing Spray" product that complies with a 50 percent VOC standard; "Dry Shampoo" products that comply with a 55 percent and a 50 percent VOC standard; and "Personal Fragrance Product" that complies with a 70 percent and a 50 percent VOC standard.
- (2) This proposed subsection provides the second of the two criteria a product can meet to qualify as a representative HFC-152a product, as an alternative to the generic product formulations identified in proposed Table 94511(d)(1). These criteria require that the representative product: meet the same regulatory definition as the innovative product; utilize propellant that

is at least 50 percent HFC-152a, by weight; and have a fragrance content that is representative of products on the California market in the applicable category at the time of the IPE application.

Rationale for Proposed Amendments to Section 94511(d)

This subsection is needed to ensure that the intended air quality benefits of the IPE are achieved. Transparent, understandable, and technically-sound criteria for identifying the baseline product against which the innovative product will be evaluated is critical to ensure that product manufacturers understand the relative OFP and GWP thresholds that the innovative product must achieve, and that these thresholds provide real air quality benefits.

Rationale for Proposed Amendments to Section 94511(d)(1)

This subsection is needed to encourage product manufacturers to develop innovative "Hair Finishing Spray," "Dry Shampoo," and "Personal Fragrance Product" with compressed gas propellant by providing product manufacturers with certainty regarding what a representative HFC-152a product would be. These representative formulations are based upon staff's evaluation of 2015 Consumer Products Survey data, discussions with product manufacturers, and staff's assessment of likely reformulation pathways to comply with the applicable VOC standards. These proposed representative formulations, which are consistent with those described in Appendix D, are intended to encourage more manufacturers to develop innovative products using compressed gas propellant by providing additional certainty regarding approvable representative product formulations.

In the "Dry Shampoo" category, this subsection is also needed to discourage use of HFC-152a to comply with CARB's proposed 55 percent VOC standard in 2023. "Dry Shampoo" products do not yet typically use HFC-152a, but CARB anticipates that many manufacturers will use exempt HFC-152a to meet the proposed 55 percent VOC standard. Without a default representative HFC-152a product formulation, manufacturers would have to first formulate "Dry Shampoo" with HFC-152a for such a product to be identified as "representative," resulting in GHG emissions. Table 94511(d)(1)'s representative HFC-152a "Dry Shampoo" products enable a manufacturer to forgo having to first develop and market an HFC-152a-based "Dry Shampoo," thereby eliminating an unnecessary and costly interim reformulation, and reducing GHG in the interim by keeping an HFC-152a-based "Dry Shampoo" off the market.

"Hair Finishing Spray," "Dry Shampoo," and "Personal Fragrance Product" formulations in Table 94511(d)(1) are based upon staff's evaluation of 2015 Consumer Products Survey data, and are consistent with anticipated ingredient formulation pathways identified in Appendix D. Thus, the formulations in the table represent likely formulations for each of the categories.

Rationale for Proposed Amendments to Section 94511(d)(2)

This subsection is needed to provide product manufacturers with flexibility to compare an innovative product under section 94511(c) to a representative HFC-

152a product not represented under (d)(1), since some manufacturers may have existing HFC-152a products with different ingredient profiles, while ensuring that the representative product against which the innovative product is compared is actually representative of its category. Criteria to ensure the representative product is comparable to the innovative product with which it is compared is needed to ensure that approval of an IPE for the innovative product would not increase OFP and will result in real GWP reductions.

The requirement that the representative product meet the same regulatory definition as the innovative product is to ensure that a representative "Hair Finishing Spray" product is used for comparison to an innovative "Hair Finishing Spray" product, a representative "Dry Shampoo" product is used for comparison to an innovative "Dry Shampoo" product, and a representative "Personal Care Product" is used for comparison to an innovative "personal Care Product." Use of innovative and representative products in the same category is needed to ensure an apples-to-apples comparison of relative OFP and GWP benefits, and ensure the innovative products achieves its intended emission benefits.

The requirement that the representative product's propellant is at least 50 percent HFC-152a is needed to be consistent with the intent of these proposed IPE provisions that the proposed innovative product replace an HFC-152a product and therefore achieve GHG reductions. The 50 percent HFC-152a content threshold balances this goal, with the recognition that some products blend HFC-152a with other propellants.

Finally, the requirement that fragrance content of the representative product is representative of products currently on the California market in the applicable category at the time of the IPE application is needed to ensure that a representative product with atypically high fragrance content (and therefore potentially unrealistically high OFP) is not selected. Use of a representative product with higher fragrance content than the proposed innovative product could result in excess, and unrealistic, calculated OFP benefits. For more discussion regarding how use of the default MIR value for fragrance can skew OFP determinations, see the "Rationale for Proposed Amendments to Section 94511(c)(4)(B)," above.

Purpose of Proposed Amendments to Section 94511(e)

Staff's proposal would renumber existing subsection (c) to become subsection (e), and include IPE application requirements in new subsections (e)(1) and (2). New subsections 94511(e)(1) and (2) are proposed as follows:

1. 94511(e)(1) would include existing IPE application requirements previously identified in section 94511(c) for products that meet existing eligibility criteria identified in subsections 94511(a); and
2. 94511(e)(2) would identify proposed new IPE application requirements for products that meet proposed new IPE eligibility criteria identified in subsections 94511(c).

Rationale for Proposed Amendments to Section 94511(e)

Proposed renumbering of existing subsection (c) to become subsection (e) is needed to accommodate two new IPE provisions as new 94511(c) and (d), discussed above. 94511(e) applies to 94511(a)-(d), and so goes after those provisions.

The amendments to 94511(e) are also needed to illustrate the differing IPE application criteria for products meeting IPE eligibility requirements in subsection (a) versus those products meeting IPE eligibility requirements in subsection (c). These discrete application criteria are identified in new subsections 94511(e)(1) and (2).

Section 94511(e)(1)

These amendments are needed to clearly identify the existing IPE application requirements for products meeting the existing eligibility criteria in subsection (a), which are proposed to be different from the application requirements for products meeting the proposed new criteria in subsection (c). These criteria are identical to existing subsection 94511(c), and are merely being moved into new subsection 94511(e)(1), to make room for the new IPE provisions in 94511(c) and (d), and to allow for, and distinguish them from, new criteria proposed in subsection 94511(e)(2).

Section 94511(e)(2)

These amendments are needed to clearly identify the proposed IPE application requirements for products meeting the proposed new eligibility criteria in subsection (c), and to differentiate these application requirements from products meeting the existing eligibility criteria in subsection (a). These new application requirements are needed to ensure applications provide the information needed to demonstrate a product will achieve the required OFP and GWP benefits, as opposed to the VOC emission benefits required by existing subsections (a) and (b). Requirements that a manufacturer provide the name, weight percent, density, reactivity, and GWP for all ingredients in both the proposed representative and innovative product is needed to determine compliance with requirements of proposed subsections (c)(1) through (4) and subsection 94511(d)(2), if applicable. The proposed requirement that the applicant provide any additional information necessary to enable the Executive Officer to establish enforceable conditions for granting the exemption, including the VOC content and OFP of the innovative product, is needed to enable the Executive Officer to include enforceable provisions any subsequent IPE approval, such as maximum allowable content of specific product ingredients, as needed to ensure the anticipated air quality and GHG benefits are achieved.

Purpose of Proposed Amendments to Section 94511(f)

The purpose of this subsection is to indicate that a product that demonstrates VOC reductions for the purposes of subsection 94511 by product combustion is ineligible for an IPE.

Rationale for Proposed Amendments to Section 94511(f)

This amendment is needed to protect public health, since combustion can increase emissions of oxide of nitrogen, fine particulate matter, and air toxic emissions. Several California air basins, including the South Coast Air Basin, remain in nonattainment of federal ozone and particulate matter standards. In addition, many combustion-based consumer products, such as air freshening candles or catalytic lamps, are commonly used indoors, resulting in greater potential for personal exposure and associated health risks. It would be inappropriate to trade lower in-use VOC emissions due to combustion for increased NO_x, PM, or air toxic emissions, given the potential for adverse air quality or public health impacts from those emissions. Thus, this proposed addition clarifies that no such product can receive an IPE, so there is no incentive to develop or sell such a product in California.

Purpose for Proposed Amendments to Section 94511(c) through (i)

Proposed amendments to these sections would renumber existing sections (c) through (i) to become sections (e) through (m).

Rationale for Proposed Amendments to Section 94511(c) through (i)

Amendments to these sections are needed to accommodate new sections (c), (d), (f) and (k).

Purpose for Proposed Amendments to Section 94511(k)

The Proposed Amendments would add this new section, which would specify that, for an IPE product that was approved pursuant to the proposed subsection (c), when one or more product ingredients change after the product has been granted an exemption, the product with the ingredient changes will be considered a modified product. This new section would further identify under what circumstances a manufacturer must notify CARB of a product ingredient change versus when to apply for a new IPE for the modified product. The specific purpose for each subsection is as follows:

- (1) Indicates that, if the criteria in subsections (A), (B), and (C), described below, are met, a manufacturer must notify CARB of an ingredient modification within 30 days, but need not apply for a new exemption for the modified product:
 - (A) The product ingredient is either a fragrance and/or is not a reactive organic compound, as defined in section 94509(r)(1)(l);
 - (B) The total weight of modified product ingredients in (A) does not exceed 0.5 percent of the total product weight for "Hair Finishing Spray" or "Dry

- Shampoo," and the total weight of modified product ingredients in (A) does not exceed 2.5 percent of total product weight for "Personal Fragrance Product;" and
- (C) The ingredient modifications do not increase the product's OFP.
- (2) Indicates that if a product modification does not meet all three of the criteria in subsections (k)(1)(A), (B), and (C), that the manufacturer must apply for a new IPE for the modified product, and that the modified product must still meet all the requirements to be considered an IPE product.

Rationale for Proposed Amendments to Section 94511(k)

These amendments are needed to provide clear and transparent criteria regarding product ingredient changes after a product receives an exemption under 94511(c) that are considered minor and are unlikely to have an adverse air quality impact. This identification of "de minimus" ingredient changes is needed to enable product manufacturers to make minor product changes, including identical products with different fragrances, without going through what can be a lengthy IPE application process that may not approve a product for an IPE. The criteria in this section for a CARB notification, in lieu of a new IPE application, provides the certainty and regulatory flexibility to manufacturers needed to further encourage manufacturers to develop innovative "Hair Finishing Spray," "Dry Shampoo," and "Personal Fragrance Product," including those using compressed gas propellant.

Rationale for Proposed Amendments to Section 94511(k)(1)

These amendments are needed to provide clarity and certainty that if all three criteria identified in subsections (k)(1)(A), (B), and (C) are met, a manufacturer must notify the CARB Executive Officer within 30 days of an ingredient change in an existing IPE product that was approved based upon the eligibility criteria in subsection (c). The 30-day notification is necessary to ensure that CARB is notified in a reasonable time period that is also enough time for manufacturers to make the report, so CARB can effectively track and ensure compliance for all IPE products, including those with fragrance variants or other minor ingredient changes.

Rationale for Proposed Amendments to Section 94511(k)(1)(A)

These amendments are needed to limit and provide clarity regarding the types of ingredients that may be modified without triggering a new IPE application. Inclusion of fragrance ingredients is needed because many otherwise identical "Hair Finishing Spray," "Dry Shampoo," and "Personal Fragrance Product" have fragrance variants, and requiring each product with a fragrance variant to apply for a new IPE would be overly burdensome on product manufacturers, and could result in fewer innovative products and reduced GHG benefits. Inclusion of ingredients that are not classified as reactive organic compounds (ROC), as defined in section 94509(r)(1) is needed to allow for modification of ingredients that do not have an air quality impact. Flexibility regarding changes in ingredients that are not defined as ROC is warranted, as these ingredients are unlikely to contribute to ozone formation.

Rationale for Proposed Amendments to Section 94511(k)(1)(B)

These amendments are needed to provide clarity regarding the amount of fragrance or non-ROC ingredient modification that would require submittal of a new IPE application. The identified threshold of allowable percent change in ingredients is needed to allow IPE product fragrance substitution, based upon what is a typical fragrance content for "Hair Finishing Spray," "Dry Shampoo," and "Personal Fragrance Product." This de minimus level of fragrance substitution is needed to enable a manufacturer to market a compressed gas product with multiple fragrance variants, thereby further encouraging manufacturers to develop and market compressed gas products.

Rationale for Proposed Amendments to Section 94511(k)(1)(C)

These amendments are needed to ensure that ingredient changes to an existing IPE product do not worsen air quality or increase greenhouse gases. Exclusion of this proposed amendment could result in increased OFP and GWP, and would be contrary to the goals of the IPE. If OFP is increased, a new IPE application for the modified product will help maintain the IPE benefits.

Rationale for Proposed Amendments to Section 94511(k)(2)

These amendments are needed to ensure that ingredient changes to existing IPE products that result in higher OFP or GWP go through the full IPE application process again for the modified product, to ensure these changes do not increase OFP or GWP relative to the representative product, thereby allowing flexibility in making limited changes while still preserving the IPE requirements that will lead to emission benefits. The last sentence is added to clarify the implicit requirement that a modified product must meet the requirements in 94511(c), even with the modifications, to be eligible to be an IPE product.

Purpose of Proposed Amendments to Section 94511(h)

The Proposed Amendments renumber (h) to (l) to account for new provisions in section 94511, and add new language to clarify that if a VOC limit in section 94509(a) is lowered for a product through a later rulemaking, existing IPEs for two categories of products will not be affected. Further, the Proposed Amendments add a new subsection (l)(2) that (specifies that IPEs granted to "Automatic Aerosol Air Freshener" products subject to a 30 percent VOC standard will not be revoked due to later adoption of a lower VOC standard.

Rationale for Proposed Amendments to Section 94511(h)

Retention of the language in subsection (l)(1) into the existing section (h), and addition of the language in subsection (l)(2) into the same subsection (h) would be less clear and transparent if it would include description of the circumstances in which an IPE would have no force and effect, and two exceptions to these circumstances in a single section. The proposed division of the previous subsection (h) into subsections (l)(1) and (l)(2), and new proposed regulatory language in (l)(2)

provides clarity because it more clearly delineates the two circumstances in which the provisions of section 94511(l) would not apply.

Section 94511(l)(1)

Adding an “and” at the end of subsection (l)(1) is needed for clarity, as described above.

Section 94511(l)(2)

Beginning on January 1, 2023, “Manual Aerosol Air Freshener” is proposed to be subject to a lower VOC standard, while “Automatic Aerosol Air Freshener” is proposed to retain its existing 30 percent VOC standard. This proposed addition of subsection (l)(2) is needed to clarify that IPEs approved for “Single Phase Air Freshener” products will remain approved and in effect even if the proposed amendments to transition “Single Phase Air Freshener” to “Manual Aerosol Air Freshener” and “Automatic Aerosol Air Freshener” become effective.

Purpose for Proposed Amendments to Section 94512(f)

The Proposed Amendments would add this new subsection (f) to existing section 94512, which would require any establishment identified as an “Automotive Parts and Accessories Store” or by code 441310 in NAICS that sells “Energized Electrical Cleaner” products in or to a California business to maintain any records it already generates of such activity, including but not limited to the date of sale, the name and manufacturer of the product, the quantity sold, and the name and address of any California business, if applicable. This new proposed subsection (f) would also require these establishments to make these records available to the Executive Officer upon request within 10 business days, and to maintain all such records for five years from the date of sale.

Rationale for Proposed Amendments to Section 94512(f)

This section is needed both to enhance the enforceability of the proposed exclusion from the “Energized Electrical Cleaner” category those products that are sold to automotive maintenance and repair facilities in California, by ensuring that “Energized Electrical Cleaner” sales records that identify product recipients are maintained and available for CARB enforcement purposes, and to ensure automotive parts and accessories stores who sell “Energized Electrical Cleaner” products in or to California have a method to differentiate between entities to which they choose to sell. This provision does not require businesses to create any new records, but only to keep the records they already create as part of their routine business practice that contain the specified information for five years. The five year length of the requirement for records maintenance is needed to provide CARB enforcement adequate data to ascertain the extent of any potential violation of the regulation.

Purpose for Proposed Amendments to Section 94513(i)(1)

Proposed new subsection 94513(i)(1) would require responsible parties (i.e. product

manufacturers and formulators) to provide specific product data and other information by March 31, 2026, for “Personal Fragrance Product” with a fragrance content of less than or equal to 10 percent. The information required to be reported is described in proposed subsection 94513(i)(1)(A) and (B).

Rationale for Proposed Amendments to Section 94513(i)(1)

This section is needed, as stated in the staff report, to conduct a technical assessment to determine if the 50 percent VOC standard for products with less than or equal to 10 percent fragrance will continue to be technologically and economically feasible across all “Personal Fragrance Product” subtypes. Proposed sections 94513(i)(1)(A) and (B) are needed to detail the data to be collected to conduct the technical assessment.

Purpose for Proposed Amendments to Section 94513(i)(1)(A)

Proposed new subsection 94513(i)(1)(A) would require “Personal Fragrance Product” responsible parties to report to CARB product sales and composition for the responsible party’s products sold or offered for sale in California for the calendar year 2025, including the VOC content for fragrance ingredients, and the product label.

Rationale for Proposed Amendments to Section 94513(i)(1)(A)

This section is needed to collect information to allow CARB to evaluate how the current market of “Personal Fragrance Product” with no more than 10 percent fragrance stands in relation to the future standard of 50 percent by weight VOC.

Purpose for Proposed Amendments to Section 94513(i)(1)(B)

Proposed new subsection 94513(i)(1)(B) would require “Personal Fragrance Product” responsible parties to submit to CARB a written update on the cost of their reformulation efforts and their research and development efforts undertaken to date to achieve the proposed 50 percent by weight VOC standard by January 1, 2031. Proposed subsections 94513(i)(1)(B) i) through vi) specify that this report must include at least a description of the steps taken to achieve compliance and the dates the steps were taken, including types of formulations tested, formulation data, prototype testing, toxicity testing and/or research, stability testing, and consumer acceptance research.

Rationale for Proposed Amendments to Section 94513(i)(1)(B)

This section is needed to collect data on the product development steps taken to achieve future VOC standards. CARB would be requiring responsible parties to report on the product development steps taken to bring “Personal Fragrance Product” to market which would be compliant with the upcoming VOC standards, to monitor their progress. Items i) through vi) list typical steps taken in bringing new products to market, so including them helps identify for stakeholders some common steps that should be, and that CARB expects to be, taken. The proposal does not require the responsible party to take all these steps in i) through vi), but

rather to provide detail in its report to CARB regarding each of the six steps taken, and why any of the six steps were not taken, if applicable..

Purpose for Proposed Amendments to Subsections 94513(i)(1)(B) i) through vi)

These subsections would identify the types of information

Rationale for Proposed Amendments to Section 94513(i)(1)(B) i)

This section is needed to provide clarity to product manufacturer that it must report types of formulations that it tested in attempting to develop products that meet the proposed 50 percent standard, and to ensure that CARB will receive this information that is necessary to evaluate the extent, successes and challenges of manufacturers in meeting the proposed standard. This information is needed to enable CARB to determine the extent and types of reformulation pathways evaluated by the manufacturer, including water-based or hydroalcoholic pathways. Additional pathways within a given solvent system for reformulating to a lower VOC formula may involve the use of innovative surface active agents, solvents or other kinds of additives.

Rationale for Proposed Amendments to Section 94513(i)(1)(B) ii)

This section is needed to provide clarity to product manufacturer that it must report formulation data (i.e., ingredient information) for products that it evaluated to meet the proposed 50 percent standard, and to ensure that CARB will receive this information that is necessary to evaluate the extent, successes and challenges of manufacturers in meeting the proposed standard. Product formulations evaluated by the manufacturer are needed to provide CARB with insight regarding how many and what types of products it attempted to formulate to meet the 50 percent VOC standard.

Rationale for Proposed Amendments to Section 94513(i)(1)(B) iii)

This section is needed to provide clarity to product manufacturer that it must report on its testing of prototype products to meet the proposed 50 percent standard, and to ensure that CARB will receive this information that is necessary to evaluate the extent, successes and challenges of manufacturers in meeting the proposed standard. Prototype product testing - packaging laboratory scale samples of product to perform testing on prototypes for marketplace suitability - is a key stage in product development, and this information is needed to provide CARB staff with insight into manufacturer reformulation efforts.

Rationale for Proposed Amendments to Section 94513(i)(1)(B) iv)

This section is needed to provide clarity to product manufacturer that it must report on its toxicity testing and/or research of products to meet the proposed 50 percent standard, and to ensure that CARB will receive this information that is necessary to evaluate the extent, successes and challenges of manufacturers in meeting the proposed standard. Toxicity testing and/or research would be conducted for new ingredients to ensure that the final product would be safe to

apply and inhale and to determine whether any new labeling requirements would apply.

Rationale for Proposed Amendments to Section 94513(i)(1)(B) v)

This section is needed to provide clarity to product manufacturer that it must report on its stability testing for products to meet the proposed 50 percent standard, and to ensure that CARB will receive this information that is necessary to evaluate the extent, successes and challenges of manufacturers in meeting the proposed standard. This stage in product development typically ensures that the newly formulated chemical composition and/or package are compatible with each other and with product "function" for a reasonable period of time. Specifically for "Personal Fragrance Product", stability testing would ensure that the fragrance and other physical properties of the product remain stable over time.

Rationale for Proposed Amendments to Section 94513(i)(1)(B) vi)

This section is needed to provide clarity to product manufacturer that it must report on its consumer acceptance research for products to meet the proposed 50 percent standard, and to ensure that CARB will receive this information that is necessary to evaluate the extent, successes and challenges of manufacturers in meeting the proposed standard. Typically, for new products, a manufacturer would conduct some kind of market testing such as focus group testing or consumer surveys to ensure that the new product would achieve consumer acceptance.

Purpose of Proposed Amendments to Section 94513 Authority and Reference

CARB is proposing to add Health and Safety Code sections 39003, 39515, 39516, 39701, 41503.5, and 41700 to the authority for section 94513. CARB is proposing to add Health and Safety Code sections 39000, 39003, 39602, 39607, 41503.5, and 41700 to the references for section 94513.

Health and Safety Code section 39003 designates CARB as the State agency charged with coordinating efforts to attain and maintain air quality standards and researching air pollution, among other things. Section 39515 provides authority for CARB to appoint an executive officer, and to delegate statutory duties to the executive officer. Section 39516 provides that the Executive Officer can redelegate to a subordinate anything delegated to the Executive Officer. Section 39701 requires CARB to coordinate and collect research data on air pollution. Section 41503.5 requires CARB to ensure that every reasonable action is taken to achieve State ambient air quality standards for ozone by the earliest practicable date. Section 41700 prohibits persons from discharging air contaminants or materials that cause negative impacts on, or danger to the comfort, health, or safety, of a consideration number of persons.

Health and Safety Code section 39000 memorializes the Legislature's findings and declarations that Californians have an interest in the quality of their environment, which is being degraded by pollution, endangering the health, safety, and welfare of Californians. Section 39003 designates CARB as the State agency charged with coordinating efforts to attain and maintain air quality standards and researching air

pollution, among other things. Section 39602 designates CARB as the air pollution control agency for all purposes of federal law, including for preparing the State Implementation Plan required by the federal Clean Air Act. Section 39607 requires CARB to establish a program to secure data on air quality in each air basin, as well as to inventory sources of air pollution with the air basins and determine the kinds and amount of air pollution to the extent feasible.

Rationale of Proposed Amendments to Section 94513 Authority and Reference

CARB proposes to add sections 39515 and 39516 to the authority for this regulatory provision because section 94513 delegates responsibilities to the Executive Officer, who re-delegates them to the appropriate CARB staff under the Executive Officer. This delegation is necessary to ensure that the emission reductions goals of section 94513 are met, by ensuring there are enough staff working on it to actually implement and enforce section 94513.

CARB proposes to add section 39701 to the authority for this regulatory provision because CARB is requiring the submission of certain information regarding consumer products relating to their emissions, thereby implementing the charge in section 39701 to coordinate and collect research data on air pollution.

CARB proposes to add Health and Safety Code section 41503.5 to the authority for section 94513 because section 94513 takes action to ensure that California achieves air standards for ozone by the earliest practical date, implementing section 41503.5.

Finally, CARB proposes to add section 41700 to the authority for section 94513 because section 94513 implements this section by controlling the emission of VOCs, which contribute to ozone and associated air quality and health impacts.

CARB proposes to add Health and Safety Code sections 39000, 39003, 39602, 39607, 41503.5 and 41700 to the references for section 94513 to provide context for the need for the regulatory changes and CARB authority to make them. CARB proposes to add section 39602 to the references for section 94513 because CARB is proposing this regulation to help achieve ozone reductions needed under federal law, and which CARB committed to obtaining in the 2016 State SIP Strategy.

Purpose for Proposed Amendments to Section 94515(a)(1) and (2), (c), (j), and (k)

Section 94515 sets forth test methods to be used to determine VOC and GWP compound content for all consumer product categories regulated under Article 2 of the Consumer Products Regulations. CARB is proposing non-substantive modifications to sections 94515(a)(1) and (2), (c), (j), and (k) to update the title of Method 310 by adding "California;" to add a "C" to the acronym "ARB," so that the acronym for California Air Resources, "CARB," would be used throughout these sections; and to replace the date Method 310 was last amended (May 25, 2018) with a the date on which the Proposed Amendments become effective, so that the

new Method 310 version that would apply would be the one updated as proposed in this rulemaking.

Rationale for Proposed Amendments to Section 94515(a)(1) and (2), (c), (j), and (k)

The proposed amendments are necessary to align the name and acronym for CARB Method 310 with how the Agency is currently referring to itself: as the California Air Resources Board, or CARB for short. Referring to the most recent effective date for the method, which would be, if these amendments are approved, the date these amendments become effective, is necessary to clarify that the updated CARB Method 310 with the amendments proposed in this rulemaking will be used for compliance verification, not a previous version.

Purpose for Proposed Amendments to Sections 94515(a)(2)(3.4)-(a)(2)(3.6)

Subpart (2) of the "Test Methods" section 94515 reproduces sections 3.4, 3.5, and 3.6 of the CARB Method 310. We are proposing changes to the reproduced sections 3.4, 3.5, and 3.6, so they are consistent with the Proposed Amendments to the CARB Method 310.

Rationale for Proposed Amendments to Sections 94515(a)(2)(3.4)-(a)(2)(3.6)

Proposed Amendments to reproduced sections 3.4, 3.5, and 3.6 of the CARB Methods 310 are necessary to reflect the changes proposed to these sections in the actual CARB Method 310 language, which are further describe below.

Purpose for Proposed Amendments to Section 94515(a)(2)(3.4)

Staff is proposing to change section 3.4 to make it clear that the Executive Officer has discretion to make a VOC content determination, if it applies to the specific product being tested, and that, if done, the VOC content determination shall be done pursuant to sections 3.2 and 3.3.

Staff is also proposing to replace "will" with "shall."

Staff is proposing to replace "formula" with "equation" in subsection 3.4.1. Also, in subsection 3.4.1, staff is proposing to add references to replace the generic reference to "CARB regulations" with references to specific sections of the California Consumer Products Regulations that specify the VOC standards for consumer products that are regulated by CARB.

In subsection 3.4.2 staff is proposing to make the following changes:

- replace "will" with "may;"
- add a timeline of 25 working days from an Executive Officer request for a responsible party to supply product formulation data when the product does not meet the applicable VOC standards;

- clarify how the Executive Officer shall treat confidential information and streamline references to CARB's confidentiality regulations, including by deleting "CCR, Division 3, Chapter 1, Subchapter 4 (Disclosure of Public Records);" and
- add the sentence "Failure to respond to an Executive Officer request for this information is a violation."

In subsection 3.4.3, staff is proposing to replace "If the information supplied by the responsible party shows that the product does not meet the applicable VOC standards, then the Executive Officer will take appropriate enforcement action" with "If the Executive Officer determines, based on testing, information they may receive from the responsible party, and any other applicable evidence, that the product does not comply with the applicable VOC standard, the Executive Officer may take appropriate enforcement action."

Staff is proposing to delete subsection 3.4.4.

Rationale for Proposed Amendments to Section 94515(a)(2)(3.4)

Adding "if" clarifies that not all testing will require CARB to make a VOC determination, depending upon the product being tested and what CARB is testing for. The rest of the proposed changes to the first paragraph of section 3.4 makes it grammatically work with the addition of "if," and makes it more clear that CARB will use sections 3.2 and 3.3 to make a VOC content determination. Replacing "will" with "shall" makes it more clear that this it is mandatory.

Replacing "formula" with "equation" in subsection 3.4.1 is necessary because it would correctly reflect that the VOC content is calculated using mathematical equations that manipulate various parameters to arrive at a VOC content of the analyzed product.

According to the California Consumer Products Regulations, categories of consumer products that are regulated by CARB are required to remain below or meet the percent VOC by weight standards. Those standards are in sections 94502 and 94509 of the California Consumer Products Regulations (title 17 of the California Code of Regulations). Staff is proposing to reference those specific sections in subsection 3.4.1 of Method 310 to explicitly state that when an Executive Officer determines whether a product meets the applicable VOC standards, the Executive Officer refers to VOC standards presented in the abovementioned sections. Replacing a generic reference to CARB regulations with the specific sections will make it easier for a regulated entity reading Method 310 to know what to reference and more clear what standards they are being held to under Method 310, too.

According to the California Consumers Products Regulations, the Executive Officer may request a responsible party to submit formulation data within 25 working days and CARB is required to handle the formulation data as confidential as allowed under law. Failure to submit the requested formulation data is a violation. Staff is

proposing to add that information to subsection 3.4.2 of Method 310 to remain consistent with the California Consumer Products Regulations, so that all the information is in here, too, instead of making the reader go back and forth, and so that the specific requirements, as well as the fact that it's a violation not to provide the requested data on time, are clear to regulated entities.

Staff is proposing to delete the phrase "CCR, Division 3, Chapter 1, Subchapter 4 (Disclosure of Public Records)" from subsection 3.4.2 because it is unnecessary language. Deleting it helps streamline the reference to the pieces that a reader needs, just the title, CCR, and section number, which makes it easier for a layperson to read and find the reference. Deleting the reference to the "confidentiality procedures" removes unnecessary language, to help make it more clear and thus easier to read and understand this section.

Staff is proposing to modify subsection 3.4.3 to reflect that CARB can determine that a consumer product has violated VOC standards based not only on information provided by the responsible party, but also based on testing and any other applicable evidence. This change brings Method 310 up to date with how CARB actually conducts enforcement, based on all available information.

Staff is proposing to delete subsection 3.4.4 because the clarifications made to subsection 3.4.3 make this subsection redundant and no longer needed.

Purpose for Proposed Amendments to Section 94515(a)(2)(3.5)

Staff is proposing to add the phrases "or boiling point, or both are" and "which are incorporated by reference herein" to subsection 3.5.1. Staff is also proposing to delete the list of ASTM references from subsection 3.5.1.

Staff is proposing to add subsections 3.5.1.1 and 3.5.1.2 to specify what reference methods could be used to determine the vapor pressure and, separately, which reference methods could be used to determine the boiling point.

Staff is also proposing to add reference method ASTM D1782-08 to subsection 3.5.1.1.

Finally, staff is proposing to replace the first "will" with "may" and the later "will" with "shall" in subsection 3.5.2.

Rationale for Proposed Amendments to Section 94515(a)(2)(3.5)

Section 3.5 appears verbatim in the California Consumer Products Regulations. The phrases "and/or boiling point are" and "which are incorporated by reference herein" are included in the California Consumer Products Regulations, but were inadvertently omitted from Method 310. Thus, these proposed amendments will harmonize the California Consumer Products Regulations with Method 310, as originally intended.

Staff is proposing to delete all of the ASTM references in subsection 3.5.1 because they are moved to subsections 3.5.1.1 and 3.5.1.2.

Adding subsections 3.5.1.1 and 3.5.1.2 would point out explicitly what reference methods apply to which criterion of this exemption, making it easier for regulated entities to know which specific methods apply to which determination, making it easier to comply.

Reference method ASTM D1782-08 was always listed in section 2 but now would be placed in subsection 3.5.1.1, as another alternative, where it can be used to determine vapor pressure, so that all methods related to vapor pressure are in 3.5.1.1.

Replacing "will" with "may" in the first sentence of subsection 3.5.2 clarifies that the Executive Officer has discretion to test a sample of LVP-VOC and is not required to do so. Replacing "will" with "shall" in the final sentence of subsection 3.5.2 makes it more clear that this is mandatory and not just a description of what is done.

Purpose for Proposed Amendments to Section 94515(a)(2)(3.6)

Staff is proposing to add that the Executive Officer may use their scientific judgment to perform additional analyses if the product's VOC compliance is not resolved under sections 3.4 and 3.5.

Staff is also proposing to delete subsection 3.6.1 and renumber the rest of the subsections accordingly.

Finally, staff is proposing to replace "will request" with "may ask" and add "additional" in front of "information to explain the discrepancy" in subsection 3.6.2, renumbered as 3.6.1.

Rationale for Proposed Amendments to Section 94515(a)(2)(3.6)

The proposed changes to section 3.6.1 will clarify that the criteria to be used to determine whether further analyses and testing are required is the Executive Officer's scientific judgment, which reflects what CARB actually does and is generally accepted as a basis for requiring additional information. Replacing "will" with "may" clarifies that the Executive Officer has the option to conduct further analyses and testing, but that it is not required and will not automatically happen.

Section 3.6.1 is proposed to be removed because it is misleading and unneeded. CARB may take enforcement action on many bases, and has enforcement discretion to do so, and this subsection as written may give the false impression that if this one basis is resolved, no enforcement action will be taken at all.

Because section 3.6.1 is proposed to be removed, existing section 3.6.2 will become section 3.6.1, and existing section 3.6.3 will become section 3.6.2, to keep them in numerical order.

Replacing "will request" with "may ask" clarifies that the Executive Officer has discretion to request such information, but need not. Adding "additional" in front

of “information to explain the discrepancy” in renumbered subsection 3.6.1 clarifies that this information is additional to other information CARB can request of the responsible party under the regulations and Method 310, and that CARB can use other information it has to explain the discrepancy, too.

Purpose of Proposed Amendments to Section 94515 Authority and Reference

CARB is proposing to add Health and Safety Code sections 39515, 39516, 41503.5, and 41700 to the authority for section 94515. CARB is proposing to add Health and Safety Code sections 39000, 39003, 39602, 39701, 41503.5, and 41700 to the references for section 94515.

Section 39515 provides authority for CARB to appoint an executive officer, and to delegate statutory duties to the executive officer. Section 39516 provides that the executive officer can redelegate to a subordinate anything delegated to the executive officer. Section 41503.5 requires CARB to ensure that every reasonable action is taken to achieve State ambient air quality standards for ozone by the earliest practicable date. Section 41700 prohibits persons from discharging air contaminants or materials that cause negative impacts on, or danger to the comfort, health, or safety, of a consideration number of persons.

Health and Safety Code section 39000 memorializes the Legislature’s findings and declarations that Californians have an interest in the quality of their environment, which is being degraded by pollution, endangering the health, safety, and welfare of Californians. Section 39003 designates CARB as the State agency charged with coordinating efforts to attain and maintain air quality standards and researching air pollution, among other things. Section 39602 designates CARB as the air pollution control agency for all purposes of federal law, including for preparing the State Implementation Plan required by the federal Clean Air Act.

Rationale of Proposed Amendments to Section 94515 Authority and Reference

CARB proposes to add sections 39515 and 39516 to the authority for this regulatory provision because section 94515 delegates responsibilities to the Executive Officer, who re-delegates them to the appropriate CARB staff under the Executive Officer. This delegation is necessary to ensure that the emission reductions goals of section 94515 are met, by ensuring there are enough staff working on it to actually implement and enforce the Consumer Products Regulations using the procedures in 94515 and CARB Method 310.

CARB proposes to add Health and Safety Code section 41503.5 to the authority for section 94515 because section 94515 takes action to ensure that California achieves air standards for ozone by the earliest practical date, implementing section 41503.5.

Finally, CARB proposes to add section 41700 to the authority for section 94515 because section 94515 implements this section by helping to control the emission of VOCs, which contribute to ozone and associated air quality and health impacts.

CARB proposes to add Health and Safety Code sections 39000, 39003, 39602, 41503.5, and 41700 to the references for section 94515 to provide context for the need for the regulatory changes and CARB authority to make them. CARB proposes to add section 39602 to the references for section 94515 because CARB is proposing this regulation to help achieve ozone reductions needed under federal law, and which CARB committed to obtaining in the 2016 State SIP Strategy.

C. Aerosol Coating Products Regulation

Purpose of Proposed Amendments to Section 94521 Authority and Reference

CARB is proposing to add Health and Safety Code sections 39515, 39516, 41503.5, and 41511, to the authority for section 94521. CARB is proposing to add Health and Safety Code sections 39000, 39003, 39602, 41503.5, 41511, and 41700 to the references for section 94521.

Section 39515 provides authority for CARB to appoint an executive officer, and to delegate statutory duties to the executive officer. Section 39516 provides that the executive officer can redelegate to a subordinate anything delegated to the executive officer. Section 41503.5 requires CARB to ensure that every reasonable action is taken to achieve State ambient air quality standards for ozone by the earliest practicable date. Section 41511 allows the State Board to require the owner or the operator of any air pollution emission source to take such action as the state board or the district may determine to be reasonable for the determination of the amount of such emission from such source.

Health and Safety Code section 39000 memorializes the Legislature's findings and declarations that Californians have an interest in the quality of their environment, which is being degraded by pollution, endangering the health, safety, and welfare of Californians. Section 39003 designates CARB as the State agency charged with coordinating efforts to attain and maintain air quality standards and researching air pollution, among other things. Section 39602 designates CARB as the air pollution control agency for all purposes of federal law, including for preparing the State Implementation Plan required by the federal Clean Air Act. Section 41700 prohibits persons from discharging air contaminants or materials that cause negative impacts on, or danger to the comfort, health, or safety, of a consideration number of persons.

Rationale of Proposed Amendments to Section 94521 Authority and Reference

CARB proposes to add Health and Safety Code sections 39515 and 39516 to the authority for this section to reflect CARB's specific authority to adopt a regulation that delegates its legal powers and duties to the executive officer, who may then redelegate to a subordinate, which this regulation is implementing.

CARB proposes to add Health and Safety Code section 41503.5 to the authority for section 94521 because section 94521 takes action to ensure that California achieves air standards for ozone by the earliest practical date, implementing section 41503.5.

CARB proposes to add Health and Safety Code section 41511 to the authority for section 94521 because section 94521 requires consumer product manufacturers to take action to help the Board determine the amount of emissions from consumer products, implementing section 41511.

CARB proposes to add Health and Safety Code sections 39000, 39003, 39602, 41503.5, 41511, and 41700 as references for this section, to reflect that these sections are also to be referenced when reading this section, as background for understanding the regulation and its context, and to provide context for the need for the regulatory changes and CARB authority to make them.

Purpose for Proposed Amendments to Section 94522(c)

Staff is proposing to delete subsection 94522(c), which does not allow aerosol coating products to qualify for alternative control plans.

Rationale for Proposed Amendments to Section 94522(c)

Subsection (c) states that "The Alternative Control Plan Regulation (sections 94540-94555) does not apply to aerosol coating products." An Alternative Control Plan is a plan that offers the Responsible Party an alternative to comply with the VOC standards for consumer products and aerosol coating products. However, in 2000, the Aerosol Coating Products Regulation was amended to establish reactivity limits based on the MIR scale; and beginning in June 2002 for General Coating categories and January 2003 for Specialty Coating categories, mass-based percent by weight VOC standards were no longer applicable except for the transition period from mass-based VOC standards to reactivity-based limits. As a result, subsection (c) was added to section 94522 to clarify that the ACP does not apply to aerosol coating products. In this rulemaking, staff is proposing to delete outdated language related to aerosol coating products in the Alternative Control Plan Regulation. Thus, the subsection (c) is no longer needed and therefore should be deleted to streamline the regulation.

Purpose for Proposed Amendments to Section 94522(d) through (i)

Proposed amendments to these sections would renumber sections 94522(d) through (i) to become sections 94522(c) through (h), and re-number internal references in these sections.

Rationale for Proposed Amendments to Section 94522 (c) through (h)

Amendments to these sections are needed to accommodate the deletion of subsection (c) from section 94522, as described above, while keeping internal references within those renumbered subsections correct still.

Purpose of Proposed Amendments to Section 94522 Authority and Reference

CARB is proposing to add Health and Safety Code sections 39515, 39516, 41503.5, 41511, and 41700 to the authority for section 94522. CARB is proposing to add

Health and Safety Code sections 39000, 39003, 39602, 39607, 39701, 41503.5, 41504, 41511, and 41700 to the references for section 94522.

Section 39515 provides authority for CARB to appoint an executive officer, and to delegate statutory duties to the executive officer. Section 39516 provides that the executive officer can redelegate to a subordinate anything delegated to the executive officer. Section 41503.5 requires CARB to ensure that every reasonable action is taken to achieve State ambient air quality standards for ozone by the earliest practicable date. Section 41511 allows the State Board to require the owner or the operator of any air pollution emission source to take such action as the state board or the district may determine to be reasonable for the determination of the amount of such emission from such source. Section 41700 prohibits persons from discharging air contaminants or materials that cause negative impacts on, or danger to the comfort, health, or safety, of a consideration number of persons.

Health and Safety Code section 39000 memorializes the Legislature's findings and declarations that Californians have an interest in the quality of their environment, which is being degraded by pollution, endangering the health, safety, and welfare of Californians. Section 39003 designates CARB as the State agency charged with coordinating efforts to attain and maintain air quality standards and researching air pollution, among other things. Section 39602 designates CARB as the air pollution control agency for all purposes of federal law, including for preparing the State Implementation Plan required by the federal Clean Air Act. Section 39607 requires CARB to establish a program to secure data on air quality in each air basin, as well as to inventory sources of air pollution with the air basins and determine the kinds and amount of air pollution to the extent feasible. Section 39701 requires CARB to coordinate and collect research data on air pollution.

Section 41504 allows CARB to establish regulations it deems necessary to enable a district to achieve and maintain State ambient air quality standards where CARB finds a district's rules aren't enough to achieve and maintain the State ambient air quality standards.

Rationale of Proposed Amendments to Section 94522 Authority and Reference

CARB proposes to add sections 39515 and 39516 to the authority for this regulatory provision because section 94522 delegates responsibilities to the Executive Officer, who re-delegates them to the appropriate CARB staff under the Executive Officer. This delegation is necessary to ensure that the emission reductions goals of section 94522 are met, by ensuring there are enough staff working on it to actually implement and enforce section 94522.

CARB proposes to add Health and Safety Code section 41503.5 to the authority for section 94522 because section 94522 takes action to ensure that California achieves air standards for ozone by the earliest practical date, implementing section 41503.5.

CARB proposes to add Health and Safety Code section 41511 to the authority for

section 94522 because section 94522 requires consumer product manufacturers to take action to help the Board determine the amount of emissions from consumer products, implementing section 41511.

Finally, CARB proposes to add section 41700 to the authority for section 94522 because section 94522 implements this section by controlling the emissions of VOC, which contribute to ozone and associated air quality and health impacts.

CARB proposes to add Health and Safety Code sections 39000, 39003, 39602, 39607, 39701, 41503.5, 41504, 41511, and 41700 to the references for section 94522 to provide context for the need for the regulatory changes and CARB authority to make them.

Purpose of Proposed Amendments to Section 94524 Authority and Reference

CARB is proposing to add Health and Safety Code sections 39515, 39516, 39607, 39701, 41503.5, and 41700 to the authority for section 94524. CARB is proposing to add Health and Safety Code sections 39000, 39003, 39602, 41504, and 41700 to the references for section 94524.

Section 39515 provides authority for CARB to appoint an executive officer, and to delegate statutory duties to the executive officer. Section 39516 provides that the executive officer can redelegate to a subordinate anything delegated to the executive officer. Section 39607 requires CARB to establish a program to secure data on air quality in each air basin, as well as to inventory sources of air pollution with the air basins and determine the kinds and amount of air pollution to the extent feasible. Section 39701 requires CARB to coordinate and collect research data on air pollution. Section 41503.5 requires CARB to ensure that every reasonable action is taken to achieve State ambient air quality standards for ozone by the earliest practicable date. Section 41700 prohibits persons from discharging air contaminants or materials that cause negative impacts on, or danger to the comfort, health, or safety, of a consideration number of persons.

Health and Safety Code section 39000 memorializes the Legislature's findings and declarations that Californians have an interest in the quality of their environment, which is being degraded by pollution, endangering the health, safety, and welfare of Californians. Section 39003 designates CARB as the State agency charged with coordinating efforts to attain and maintain air quality standards and researching air pollution, among other things. Section 39602 designates CARB as the air pollution control agency for all purposes of federal law, including for preparing the State Implementation Plan required by the federal Clean Air Act. Section 41504 allows CARB to establish regulations it deems necessary to enable a district to achieve and maintain State ambient air quality standards where CARB finds a district's rules aren't enough to achieve and maintain the State ambient air quality standards.

Rationale of Proposed Amendments to Section 94524 Authority and Reference

CARB proposes to add sections 39515 and 39516 to the authority for this regulatory provision because section 94524 delegates responsibilities to the

Executive Officer, who re-delegates them to the appropriate CARB staff under the Executive Officer. This delegation is necessary to ensure that the emission reductions goals of section 94524 are met, by ensuring there are enough staff working on it to actually implement and enforce section 94524.

CARB proposes to add Health and Safety Code sections 39607 and 39701 to the authority for this regulatory provision because section 94524 requires the reporting of data on consumer products that includes reporting on its ingredients, which can contribute to air pollution. By collecting this data, CARB is implementing sections 39607 and 39701.

CARB proposes to add Health and Safety Code section 41503.5 to the authority for section 94524 because section 94524 takes action to ensure that California achieves air standards for ozone by the earliest practical date, implementing section 41503.5.

Finally, CARB proposes to add section 41700 to the authority for section 94524 because section 94524 implements this section by controlling the emissions of VOC, which contribute to ozone and associated air quality and health impacts.

CARB proposes to add Health and Safety Code sections 39000, 39003, 39602, 41504, and 41700 to the references for section 94524 to provide context for the need for the regulatory changes and CARB authority to make them.

Purpose for Proposed Amendments to Section 94526(a)

Subsection (a) specifies the test methods to be used to determine compliance for products subject to Reactivity Limits. CARB is proposing to insert "California" before "Air Resources Board" and update the Method 310 applicable version in (a)(1); add ASTM D5381-93 as the test method by which the metal content of metallic aerosol coating products shall be determined in a new subsection (a)(2); add ASTM D523-08 as the test method by which the specular gloss of flat and non-flat coatings shall be determined in a new subsection (a)(3); and add ASTM D1613-06 as the test method by which the acid content of rust converters shall be determined in a new subsection (a)(4). All these new subsections set forth test methods to be used to determine Metal Content, Specular Gloss, and Acid Content of an "Aerosol Coating Product" and to subsequently confirm its product category.

Rationale for Proposed Amendments to Section 94526(a)

Proposed incorporation by reference of the test methods required to be used to determine the Metal Content, Specular Gloss, and Acid Content of aerosol coating products is necessary because they are being removed from Method 310 to here, where they are more applicable, as they are used to determine compliance of products with various requirements for aerosol coating products in section 94521. The reader may find more information in the section describing the rationale for removal of these test methods from CARB Method 310.

The Proposed Amendments would also refer to the most recent effective date for the CARB Method 310, which would be, if these amendments are approved, the effective date of the amendments. This is necessary to reflect amendments proposed in this rulemaking and to clarify that the updated CARB Method 310 will be used for compliance verification, not a previous version.

Finally, the proposed addition of "California" before "Air Resources Board" is needed to make the references to the agency consistent with how the agency refers to itself.

Purpose for Proposed Amendments to Section 94526(b)(1)(A)(5)

Staff is proposing to update the term "material safety data sheet" or "MSDS," to "safety data sheet" or "SDS."

Rationale for Proposed Amendments to Section 94526(b)(1)(A)(5)

The Occupational Safety and Health Administration (OSHA) standardized the format and simplified the name of "material safety data sheet" to "safety data sheet", resulting in a new acronym of SDS instead of MSDS to be consistent with the Globally Harmonized System of Classification and Labeling of Chemicals used in the European Union. SDS is a simpler and more effective way to communicate the hazards of the chemicals used. This conversion from MSDS to SDS had been completed prior to June 1, 2015, for manufacturers. The proposed modification is needed to provide consistency with the 2015 change, to reflect the standard terminology currently used.

Purpose of Proposed Amendments to Section 94526 Authority and Reference

CARB is proposing to add Health and Safety Code sections 39515, 39516, 39701, 41503.5, and 41700 to the authority for section 94526. CARB is proposing to add Health and Safety Code sections 39000, 39003, 39602, 41504, and 41700 to the references for section 94526.

Section 39515 provides authority for CARB to appoint an executive officer, and to delegate statutory duties to the executive officer. Section 39516 provides that the executive officer can redelegate to a subordinate anything delegated to the executive officer. Section 39701 requires CARB to coordinate and collect research data on air pollution. Section 41503.5 requires CARB to ensure that every reasonable action is taken to achieve State ambient air quality standards for ozone by the earliest practicable date. Section 41700 prohibits persons from discharging air contaminants or materials that cause negative impacts on, or danger to the comfort, health, or safety, of a consideration number of persons.

Health and Safety Code section 39000 memorializes the Legislature's findings and declarations that Californians have an interest in the quality of their environment, which is being degraded by pollution, endangering the health, safety, and welfare of Californians. Section 39003 designates CARB as the State agency charged with coordinating efforts to attain and maintain air quality standards and researching air pollution, among other things. Section 39602 designates CARB as the air pollution

control agency for all purposes of federal law, including for preparing the State Implementation Plan required by the federal Clean Air Act. Section 41504 allows CARB to establish regulations it deems necessary to enable a district to achieve and maintain State ambient air quality standards where CARB finds a district's rules aren't enough to achieve and maintain the State ambient air quality standards.

Rationale of Proposed Amendments to Section 94526 Authority and Reference

CARB proposes to add sections 39515 and 39516 to the authority for this regulatory provision because section 94526 delegates responsibilities to the Executive Officer, who re-delegates them to the appropriate CARB staff under the Executive Officer. This delegation is necessary to ensure that the emission reductions goals of section 94526 are met, by ensuring there are enough staff working on it to actually implement and enforce section 94526.

CARB proposes to add Health and Safety Code section 39701 to the authority for this regulatory provision because section 94526 requires the reporting of data on consumer products that includes reporting on its ingredients, which can contribute to air pollution. By collecting this data, CARB is implementing section 39701.

CARB proposes to add Health and Safety Code section 41503.5 to the authority for section 94526 because section 94526 takes action to ensure that California achieves air standards for ozone by the earliest practical date, implementing section 41503.5.

Finally, CARB proposes to add section 41700 to the authority for section 94526 because section 94526 implements this section by controlling the emissions of VOC, which contribute to ozone and associated air quality and health impacts.

CARB proposes to add Health and Safety Code sections 39000, 39003, 39602, 41504, and 41700 to the references for section 94526 to provide context for the need for the regulatory changes and CARB authority to make them.

D. Alternative Control Plan Regulation

Purpose for Proposed Amendments to Sections 94540, 94541, 94542, 94543, 94547, 94550, 94551, 94553

The Alternative Control Plan Regulation provides a Responsible Party with an alternative to comply with the VOC standards for consumer products. Staff is proposing to delete outdated language related to aerosol coating products and specific provisions "for aerosol coating products only" throughout the ACP Regulation.

CARB is also proposing to delete all references to "section 94522," "section 94523," and "sections 94520-94528" (the Aerosol Coating Products Regulation) throughout the ACP regulation. The ACP Regulation has not been amended since 1996, while the Aerosol Coatings Regulation (sections 94520-94528) has been amended several times. The reference to aerosol coatings in the ACP regulation is

no longer applicable.

As a result of these amendments, the title of the regulation would be also modified to delete reference to Aerosol Coating Products.

Rationale for Proposed Amendments to Sections 94540, 94541, 94542, 94543, 94547, 94550, 94551, 94553

As it currently states, the Alternative Control Plan Regulation applies to consumer products and aerosol coating products, which are subject to VOC standards specified in California Code of Regulations, title 17, sections 94509 and 94522. However, the mass-based VOC standards for aerosol coatings were phased out beginning in 2002, when the VOC standards for aerosol coatings were changed to reactivity-based limits. Therefore, all provisions specific to aerosol coatings in the ACP Regulation are no longer applicable or needed. In this rulemaking, staff is proposing to delete this outdated language related to aerosol coating products in the ACP Regulation. Deletion of this language will update the regulation to make it consistent with these previous aerosol coatings changes, and will clarify the applicability of the ACP Regulation.

Purpose for Proposed Amendments to the Alternative Control Plan Regulation Title

The current title, "Alternative Control Plan Regulation for Consumer Products and Aerosol Coating Products," would be modified to read "Alternative Control Plan Regulation for Consumer Products."

Rationale for Proposed Amendments to the Alternative Control Plan Regulation Title

Proposed amendments to the title reflect proposed changes described above. This is needed to clarify that the regulation is only applicable to consumer products, not to aerosol coating products anymore.

Purpose of Proposed Amendments to Section 94540

Staff is proposing to delete the phrase "Division 3, Chapter 1, Subchapter 8.5, Articles 2 and 3" because it is unnecessary language.

Rationale of Proposed Amendments to Section 94540

Deleting this language would help streamline the reference to the piece that a reader needs, just the section number, which makes it easier for a layperson to read and find the reference.

Purpose of Proposed Amendments to Section 94540 Authority and Reference

CARB is proposing to add Health and Safety Code sections 41503.5 and 41700 to the authority for section 94540. CARB is proposing to add Health and Safety Code sections 39000, 39003, 39602, 41503.5, 41504, 41511, and 41700 to the references for section 94540.

Health and Safety Code section 41503.5 requires CARB to ensure that every reasonable action is taken to achieve State ambient air quality standards for ozone by the earliest practicable date. Section 41700 prohibits persons from discharging air contaminants or materials that cause negative impacts on, or danger to the comfort, health, or safety, of a consideration number of persons.

Health and Safety Code section 39000 memorializes the Legislature's findings and declarations that Californians have an interest in the quality of their environment, which is being degraded by pollution, endangering the health, safety, and welfare of Californians. Section 39003 designates CARB as the State agency charged with coordinating efforts to attain and maintain air quality standards and researching air pollution, among other things. Section 39602 designates CARB as the air pollution control agency for all purposes of federal law, including for preparing the State Implementation Plan required by the federal Clean Air Act. Section 41504 allows CARB to establish regulations it deems necessary to enable a district to achieve and maintain State ambient air quality standards where CARB finds a district's rules aren't enough to achieve and maintain the State ambient air quality standards. Section 41511 allows CARB to adopt regulations to require the owner or the operator of any air pollution emission source to take actions CARB determines to be reasonable for the determination of the amount of such emission from such source.

Rationale of Proposed Amendments to Section 94540 Authority and Reference

CARB proposes to add Health and Safety Code section 41503.5 to the authority for section 94540 because section 94540 takes action to ensure that California achieves air standards for ozone by the earliest practical date, implementing section 41503.5.

Finally, CARB proposes to add section 41700 to the authority for section 94540 because section 94540 implements this section by helping to control the emissions of VOC, which contribute to ozone and the associated air quality and health impacts.

CARB proposes to add Health and Safety Code sections 39000, 39003, 39602, 41503.5, 41504, 41511, and 41700 to the references for section 94540 to provide context for the need for the regulatory changes and CARB authority to make them.

Purpose of Proposed Amendments to Section 94541

Staff is proposing to delete the following language "Consumer products and aerosol coating products shall not be included together in the same ACP."

Rationale of Proposed Amendments to Section 94541

As described above, all provisions specific to aerosol coatings in the ACP Regulation are no longer applicable. Therefore, this clarification is no longer needed. Deleting this language will update and streamline the regulation.

Purpose of Proposed Amendments to Section 94541 Authority and Reference

CARB is proposing to add Health and Safety Code sections 39515, 39516, 41503.5, 41511, and 41700 to the authority for section 94541. CARB is proposing to add Health and Safety Code sections 39000, 39003, 39602, 41504, 41511, and 41700 to the references for section 94541.

Health and Safety Code section 39515 provides authority for CARB to appoint an executive officer, and to delegate statutory duties to the executive officer. Section 39516 provides that the executive officer can redelegate to a subordinate anything delegated to the executive officer. Section 41503.5 requires CARB to ensure that every reasonable action is taken to achieve State ambient air quality standards for ozone by the earliest practicable date. Section 41511 allows the State Board to require the owner or the operator of any air pollution emission source to take such action as the state board or the district may determine to be reasonable for the determination of the amount of such emission from such source. Section 41700 prohibits persons from discharging air contaminants or materials that cause negative impacts on, or danger to the comfort, health, or safety, of a consideration number of persons.

Health and Safety Code section 39000 memorializes the Legislature's findings and declarations that Californians have an interest in the quality of their environment, which is being degraded by pollution, endangering the health, safety, and welfare of Californians. Section 39003 designates CARB as the State agency charged with coordinating efforts to attain and maintain air quality standards and researching air pollution, among other things. Section 39602 designates CARB as the air pollution control agency for all purposes of federal law, including for preparing the State Implementation Plan required by the federal Clean Air Act. Section 41504 allows CARB to establish regulations it deems necessary to enable a district to achieve and maintain State ambient air quality standards where CARB finds a district's rules aren't enough to achieve and maintain the State ambient air quality standards.

Rationale of Proposed Amendments to Section 94541 Authority and Reference

CARB proposes to add sections 39515 and 39516 to the authority for this regulatory provision because section 94541 delegates responsibilities to the Executive Officer, who re-delegates them to the appropriate CARB staff under the Executive Officer. This delegation is necessary to ensure that the emission reductions goals of the ACP Regulation are met, by ensuring there are enough staff working on it to actually implement and enforce section the ACP Regulation.

CARB proposes to add Health and Safety Code section 41503.5 to the authority for section 94541 because section 94541 takes action to ensure that California achieves air standards for ozone by the earliest practical date, implementing section 41503.5.

CARB proposes to add Health and Safety Code section 41511 to the authority for section 94541 because section 94541 requires consumer product manufacturers who wish to take advantage of the ACP option to take certain actions to help

determine the emissions from the consumer products, limiting those products subject to the ACP and implementing section 41511.

Finally, CARB proposes to add section 41700 to the authority for section 94541 because section 94541 implements this section by creating and defining a program that will help to control the emissions of VOC, which contribute to ozone and associated air quality and health impacts.

CARB proposes to add Health and Safety Code sections 39000, 39003, 39602, 41504, 41511, and 41700 to the references for section 94541 to provide context for the need for the regulatory changes and CARB authority to make them.

Purpose for Proposed Amendments to Section 94542(a)(2)

Staff is proposing to delete the reference to “the data obtained from the February 25, 1993 Air Resources Board Aerosol Paint Survey.”

Rationale for Proposed Amendments to Section 94542(a)(2)

As described above, all provisions specific to aerosol coatings in the ACP Regulation are no longer applicable. Therefore, this reference to the old survey is no longer needed. Deleting this language will update and streamline the regulation.

Purpose for Proposed Amendments to Section 94542(a)(14)

Staff is proposing to modify the definition of “LVP” or “LVP Compound” to the same definition as that of “LVP-VOC” in the Consumer Products Regulation, section 94508(a). The existing definitional provisions regarding low vapor pressure are proposed to be deleted.

Rationale for Proposed Amendments to Section 94542(a)(14)

This proposed modification is needed to provide clarity and consistency with the Consumer Products Regulation: Since the ACP regulation applies only to Consumer Products, the definitions applicable to the Consumer Products Regulation and the ACP Regulation should be the same. The definitional provisions regarding low vapor pressure are stated in the definition of “LVP-VOC” in the Consumer Products Regulation and are no longer needed.

Purpose for Proposed Amendments to Section 94542 Authority and Reference

CARB staff is proposing to add Health and Safety Code sections 39515, 39516, 39607, 39701, 41503.5, and 41511 to the authority for this section 94542. Section 39515 provides authority for CARB to appoint an executive officer, and to delegate statutory duties to the executive officer. Section 39516 provides that the executive officer can redelegate to a subordinate anything delegated to the executive officer. Section 39607 requires CARB to establish a program to secure data on air quality in each air basin, as well as to inventory sources of air pollution with the air basins and determine the kinds and amount of air pollution to the extent feasible. Section

39701 requires CARB to coordinate and collect research data on air pollution. Section 41503.5 requires CARB to ensure that “every reasonable action is taken to achieve the state ambient air quality standards for ozone, carbon monoxide, nitrogen dioxide, and sulfur dioxide at the earliest practicable date.” Finally, section 41511 allows CARB to “require the owner or the operator of any air pollution emission source to take such action as the state board or the district may determine to be reasonable for the determination of the amount of such emission from such source.”

CARB staff is proposing to add Health and Safety Code sections 39000, 39003, 39602, 41504, 41511, and 41700 to the reference for this section 94542. Section 39000 lays out the Legislature’s findings and declaration that Californians have an interest in State environmental quality, and that quality is being degraded by pollution, adversely impacting the health, safety, welfare and sense of well-being of Californians. Section 39003 provides that CARB is charged with, among other things, coordinating efforts to attain and maintain ambient air quality standard, and researching the causes of and solutions to air pollution. Section 39602 designates CARB as the air pollution control agency for all purposes of federal law, including for preparing the State Implementation Plan required by the federal Clean Air Act. Section 41504 allows CARB to establish regulations it deems necessary to enable a district to achieve and maintain State ambient air quality standards where CARB finds a district’s rules aren’t enough to achieve and maintain the State ambient air quality standards. Section 41700 prohibits the discharge of any air contaminant or other material causing injury, nuisance, or danger to the public.

Rationale for Proposed Amendments to Section 94542 Authority and Reference

CARB proposes to add Health and Safety Code sections 39515 and 39516 to the authority for this section 94542 to reflect CARB’s specific authority to adopt a regulation that delegates its legal powers and duties to the executive officer, who may then redelegate to a subordinate, which this regulation is implementing. CARB proposes to add Health and Safety Code sections 39607 and 39701 to the authority for this regulatory provision because section 94542 requires the reporting of data that it defines on consumer products that can contribute to air pollution; by defining this data, it allows CARB to collect it, implementing sections 39607 and 39701. Section 94542 also establishes necessary definitions to create a program that will result in ozone reductions, implementing sections 41503.5 and 41511.

Further, CARB proposes to add Health and Safety Code sections 39000, 39003, 39602, 41504, 41511, and 41700 as references for this section 94542, to reflect that these sections are also to be referenced when reading this section, as background for understanding the regulation and its context, and to provide context for the need for the regulatory changes and CARB authority to make them.

Purpose for Proposed Amendments to Section 94543 Authority and Reference

CARB staff is proposing to add Health and Safety Code sections 39515, 39516,

39607, 39701, and 41503.5 to the authority for this section 94543. Section 39515 provides authority for CARB to appoint an executive officer, and to delegate statutory duties to the executive officer. Section 39516 provides that the executive officer can redelegate to a subordinate anything delegated to the executive officer. Section 39607 requires CARB to establish a program to secure data on air quality in each air basin, as well as to inventory sources of air pollution with the air basins and determine the kinds and amount of air pollution to the extent feasible. Section 39701 requires CARB to coordinate and collect research data on air pollution. Section 41503.5 requires CARB to ensure that “every reasonable action is taken to achieve the state ambient air quality standards for ozone, carbon monoxide, nitrogen dioxide, and sulfur dioxide at the earliest practicable date.”

CARB staff is proposing to add Health and Safety Code sections 39000, 39003, 39602, 41504, and 41700 to the reference for this section 94543. Section 39000 lays out the Legislature’s findings and declaration that Californians have an interest in State environmental quality, and that quality is being degraded by pollution, adversely impacting the health, safety, welfare and sense of well-being of Californians. Section 39003 provides that CARB is charged with, among other things, coordinating efforts to attain and maintain ambient air quality standard, and researching the causes of and solutions to air pollution. Section 39602 designates CARB as the air pollution control agency for all purposes of federal law, including for preparing the State Implementation Plan required by the federal Clean Air Act. Section 41504 allows CARB to establish regulations it deems necessary to enable a district to achieve and maintain State ambient air quality standards where CARB finds a district’s rules aren’t enough to achieve and maintain the State ambient air quality standards. Section 41700 prohibits the discharge of any air contaminant or other material causing injury, nuisance, or danger to the public.

Rationale for Proposed Amendments to Section 94543 Authority and Reference

CARB proposes to add Health and Safety Code sections 39515 and 39516 to the authority for this section 94543 to reflect CARB’s specific authority to adopt a regulation that delegates its legal powers and duties to the executive officer, who may then redelegate to a subordinate, which this regulation is implementing. CARB proposes to add Health and Safety Code sections 39607 and 39701 to the authority for this regulatory provision because section 94543 requires the reporting of data that it defines on consumer products that can contribute to air pollution; by defining this data, it allows CARB to collect it, implementing sections 39607 and 39701. Section 94543 also establishes necessary requirements for the ACP program that will result in ozone reductions, implementing sections 41503.5 and 41511.

Further, CARB proposes to add Health and Safety Code sections 39000, 39003, 39602, 41504, and 41700 as references for this section 94543, to reflect that these sections are also to be referenced when reading this section, as background for understanding the regulation and its context, and to provide context for the need for the regulatory changes and CARB authority to make them.

Purpose for Proposed Amendments to Section 94544 Authority and Reference

CARB staff is proposing to add Health and Safety Code sections 39515, 39516, 39607, 39701, and 41503.5 to the authority for this section 94544. Section 39515 provides authority for CARB to appoint an executive officer, and to delegate statutory duties to the executive officer. Section 39516 provides that the executive officer can redelegate to a subordinate anything delegated to the executive officer. Section 39607 requires CARB to establish a program to secure data on air quality in each air basin, as well as to inventory sources of air pollution with the air basins and determine the kinds and amount of air pollution to the extent feasible. Section 39701 requires CARB to coordinate and collect research data on air pollution. Section 41503.5 requires CARB to ensure that “every reasonable action is taken to achieve the state ambient air quality standards for ozone, carbon monoxide, nitrogen dioxide, and sulfur dioxide at the earliest practicable date.”

CARB staff is proposing to add Health and Safety Code sections 39000, 39003, 39602, 41504, and 41700 to the reference for this section 94543. Section 39000 lays out the Legislature’s findings and declaration that Californians have an interest in State environmental quality, and that quality is being degraded by pollution, adversely impacting the health, safety, welfare and sense of well-being of Californians. Section 39003 provides that CARB is charged with, among other things, coordinating efforts to attain and maintain ambient air quality standard, and researching the causes of and solutions to air pollution. Section 39602 designates CARB as the air pollution control agency for all purposes of federal law, including for preparing the State Implementation Plan required by the federal Clean Air Act. Section 41504 allows CARB to establish regulations it deems necessary to enable a district to achieve and maintain State ambient air quality standards where CARB finds a district’s rules aren’t enough to achieve and maintain the State ambient air quality standards. Section 41700 prohibits the discharge of any air contaminant or other material causing injury, nuisance, or danger to the public.

Rationale for Proposed Amendments to Section 94544 Authority and Reference

CARB proposes to add Health and Safety Code sections 39515 and 39516 to the authority for this section 94544 to reflect CARB’s specific authority to adopt a regulation that delegates its legal powers and duties to the executive officer, who may then redelegate to a subordinate, which this regulation is implementing. CARB proposes to add Health and Safety Code sections 39607 and 39701 to the authority for this regulatory provision because section 94544 requires the reporting of data on consumer products that can contribute to air pollution, implementing sections 39607 and 39701. Section 94544 also establishes necessary requirements for the ACP program that will result in ozone reductions, implementing sections 41503.5.

Further, CARB proposes to add Health and Safety Code sections 39000, 39003, 39602, 41504, and 41700 as references for this section 94544, to reflect that these sections are also to be referenced when reading this section, as background for

understanding the regulation and its context, and to provide context for the need for the regulatory changes and CARB authority to make them.

Purpose for Proposed Amendments to Section 94545 Authority and Reference

CARB staff is proposing to add Health and Safety Code sections 39515, 39516, 39607, 39701, and 41503.5 to the authority for this section 94545. Section 39515 provides authority for CARB to appoint an executive officer, and to delegate statutory duties to the executive officer. Section 39516 provides that the executive officer can redelegate to a subordinate anything delegated to the executive officer. Section 39607 requires CARB to establish a program to secure data on air quality in each air basin, as well as to inventory sources of air pollution with the air basins and determine the kinds and amount of air pollution to the extent feasible. Section 39701 requires CARB to coordinate and collect research data on air pollution. Section 41503.5 requires CARB to ensure that “every reasonable action is taken to achieve the state ambient air quality standards for ozone, carbon monoxide, nitrogen dioxide, and sulfur dioxide at the earliest practicable date.”

CARB staff is proposing to add Health and Safety Code sections 39000, 39003, 39602, 41504, and 41700 to the reference for this section 94544. Section 39000 lays out the Legislature’s findings and declaration that Californians have an interest in State environmental quality, and that quality is being degraded by pollution, adversely impacting the health, safety, welfare and sense of well-being of Californians. Section 39003 provides that CARB is charged with, among other things, coordinating efforts to attain and maintain ambient air quality standard, and researching the causes of and solutions to air pollution. Section 39602 designates CARB as the air pollution control agency for all purposes of federal law, including for preparing the State Implementation Plan required by the federal Clean Air Act. Section 41504 allows CARB to establish regulations it deems necessary to enable a district to achieve and maintain State ambient air quality standards where CARB finds a district’s rules aren’t enough to achieve and maintain the State ambient air quality standards. Section 41700 prohibits the discharge of any air contaminant or other material causing injury, nuisance, or danger to the public.

Rationale for Proposed Amendments to Section 94545 Authority and Reference

CARB proposes to add Health and Safety Code sections 39515 and 39516 to the authority for this section 94545 to reflect CARB’s specific authority to adopt a regulation that delegates its legal powers and duties to the executive officer, who may then redelegate to a subordinate, which this regulation is implementing. CARB proposes to add Health and Safety Code sections 39607 and 39701 to the authority for this regulatory provision because section 94545 requires the reporting upon request of data on consumer products that can contribute to air pollution, implementing sections 39607 and 39701. Section 94545 also establishes necessary requirements for the ACP program that will result in ozone reductions, implementing sections 41503.5.

Further, CARB proposes to add Health and Safety Code sections 39000, 39003, 39602, 41504, and 41700 as references for this section 94545, to reflect that these

sections are also to be referenced when reading this section, as background for understanding the regulation and its context, and to provide context for the need for the regulatory changes and CARB authority to make them.

Purpose for Proposed Amendments to Section 94546(h)

Staff proposes to replace the existing section 94546(h) with a new section 94546(h) that specifies that failure to comply with each provision of Method 310 or any other required test method, or to supply information required by a test method, is a separate violation of this article.

Rationale for Proposed Amendments to Section 94546(h)

This proposed modification clarifies that failing to perform the applicable provisions of Method 310 or any other test method this regulation requires, or to provide CARB information required by Method 310 or any other test method this regulation requires, is a violation of this regulation, for which penalties may be levied. This provision is needed to ensure that regulated entities are aware of the consequences associated with failing to follow the prescribed test methods and requests for information under those test methods. Such provisions need to be enforceable in order to make sure that CARB can rely on the testing and its ability to obtain information necessary to ensure that the emissions reductions are being achieved.

Purpose for Proposed Amendments to Section 94546(h)

Staff proposes to update the subsections to which this provision applies from (a)-(g) to (a)-(h).

Rationale for Proposed Amendments to Section 94546(h)

This modification is necessary to account for the new subsection (h) proposed to be added to section 94546, to clarify that the circumstances in in Health and Safety Code section 42403(b) shall be taken into consideration for Test Method violations, too.

Purpose for Proposed Amendments to Section 94546(h), (i), and (j)

Staff propose to renumber existing sections 94546(h), (i), and (j) to sections 94546(i), (j), and (k).

Rationale for Proposed Amendments to Section 94546(h), (i), and (j)

This modification is necessary to account for the new subsection (h) proposed to be added to section 94546, which more appropriately goes after subsection (g) than

after all the existing subsections, since subsections (h), (i), and (j) are general and apply to all preceding subsections of this provision.

Purpose for Proposed Amendments to Section 94546 Authority and Reference

CARB staff is proposing to add Health and Safety Code sections 39515, 39516, 41503.5, and 41511 to the authority for this section 94546. Section 39515 provides authority for CARB to appoint an executive officer, and to delegate statutory duties to the executive officer. Section 39516 provides that the executive officer can redelegate to a subordinate anything delegated to the executive officer. Section 41503.5 requires CARB to ensure that "every reasonable action is taken to achieve the state ambient air quality standards for ozone, carbon monoxide, nitrogen dioxide, and sulfur dioxide at the earliest practicable date." Section 41511 allows the State Board to require the owner or the operator of any air pollution emission source to take such action as the state board or the district may determine to be reasonable for the determination of the amount of such emission from such source.

CARB staff is proposing to add Health and Safety Code sections 39000, 39003, 39602, 41504, 41511, and 41700 to the reference for this section 94546. Section 39000 lays out the Legislature's findings and declaration that Californians have an interest in State environmental quality, and that quality is being degraded by pollution, adversely impacting the health, safety, welfare and sense of well-being of Californians. Section 39003 provides that CARB is charged with, among other things, coordinating efforts to attain and maintain ambient air quality standard, and researching the causes of and solutions to air pollution. Section 39602 designates CARB as the air pollution control agency for all purposes of federal law, including for preparing the State Implementation Plan required by the federal Clean Air Act. Section 41504 allows CARB to establish regulations it deems necessary to enable a district to achieve and maintain State ambient air quality standards where CARB finds a district's rules aren't enough to achieve and maintain the State ambient air quality standards. Section 41700 prohibits the discharge of any air contaminant or other material causing injury, nuisance, or danger to the public.

Rationale for Proposed Amendments to Section 94546 Authority and Reference

CARB proposes to add Health and Safety Code sections 39515 and 39516 to the authority for this section 94546 to reflect CARB's specific authority to adopt a regulation that delegates its legal powers and duties to the executive officer, who may then redelegate to a subordinate, which this regulation is implementing. Section 94546 also establishes necessary requirements for the ACP program that will result in ozone reductions, implementing sections 41503.5 and 41511.

Further, CARB proposes to add Health and Safety Code sections 39000, 39003, 39602, 41504, 41511, and 41700 as references for this section 94546, to reflect that these sections are also to be referenced when reading this section, as background for understanding the regulation and its context, and to provide context for the need for the regulatory changes and CARB authority to make them.

Purpose for Proposed Amendments to Section 94547(b)(10)

CARB is proposing to specify a threshold for products to qualify for credit under the ACP. The proposed amendments would prohibit a company with an approved Alternative Control Plan from using products that are not more than a defined threshold below the applicable VOC standard to generate ACP credits for the purposes of offsetting emissions from products that exceed VOC standards. In other words, products that are not more than the proposed threshold below the VOC standard applicable to that product, as specified in new proposed Table 94547(b)(10), would not be able to generate ACP credits under a company's ACP anymore under this proposed modification.

This section 94547(b)(10) would replace existing section 94547(b)(10) which prohibited trading of Surplus Reduction Credits between an ACP for consumer products and an ACP for aerosol coating products.

Rationale for Proposed Amendments to Section 94547(b)(10)

An increasing number of products that generate ACP credit fall just below the applicable VOC standard. It can be difficult to verify that a product is generating VOC credit if the difference between a product's VOC content and the required standard exceeds the laboratory testing protocol's margin of error. In addition, if a product's VOC content is nearly identical to the applicable VOC standard, natural variability of product ingredient concentrations could result in some products generating credits when they actually exceed the standard. In both of the above cases, the proximity of an ACP product's VOC content to the applicable standard can present compliance verification challenges. Therefore, CARB seeks to identify a threshold above which CARB can be sure that an ACP product's VOC content varies enough that the difference between the VOC content and the standard is great enough that it is clear that its proposed amendment would increase the likelihood that the ACP credits generated under an ACP are real and will result in environmental benefits.

Finally, it is necessary to delete the existing section 94547(b)(1) because, as previously discussed, VOC standards for aerosol coatings were phased out beginning in 2002, when the standards for aerosol coatings were changed to reactivity-based limits. Therefore, all provisions specific to aerosol coatings in the ACP Regulation are no longer applicable or needed. Since aerosol coating products are no longer eligible for an ACP, provisions restricting trading of Surplus Reduction Credits for aerosol coating products are no longer needed.

Purpose for Proposed Amendments to Section 94547 Authority and Reference

CARB staff is proposing to add Health and Safety Code sections 39515, 39516, 39607, 39701, and 41503.5, to the authority for this section 94547. Section 39515 provides authority for CARB to appoint an executive officer, and to delegate statutory duties to the executive officer. Section 39516 provides that the executive officer can redelegate to a subordinate anything delegated to the executive officer. Section 39607 requires CARB to establish a program to secure data on air quality in each air basin, as well as to inventory sources of air pollution with the air basins and determine the kinds and amount of air pollution to the extent feasible. Section

39701 requires CARB to coordinate and collect research data on air pollution. Section 41503.5 requires CARB to ensure that “every reasonable action is taken to achieve the state ambient air quality standards for ozone, carbon monoxide, nitrogen dioxide, and sulfur dioxide at the earliest practicable date.”

CARB staff is proposing to add Health and Safety Code sections 39000, 39003, 39602, 41504, and 41700 to the reference for this section 94547. Section 39000 lays out the Legislature’s findings and declaration that Californians have an interest in State environmental quality, and that quality is being degraded by pollution, adversely impacting the health, safety, welfare and sense of well-being of Californians. Section 39003 provides that CARB is charged with, among other things, coordinating efforts to attain and maintain ambient air quality standard, and researching the causes of and solutions to air pollution. Section 39602 designates CARB as the air pollution control agency for all purposes of federal law, including for preparing the State Implementation Plan required by the federal Clean Air Act. Section 41504 allows CARB to establish regulations it deems necessary to enable a district to achieve and maintain State ambient air quality standards where CARB finds a district’s rules aren’t enough to achieve and maintain the State ambient air quality standards. Section 41700 prohibits the discharge of any air contaminant or other material causing injury, nuisance, or danger to the public.

Rationale for Proposed Amendments to Section 94547 Authority and Reference

CARB proposes to add Health and Safety Code sections 39515 and 39516 to the authority for this section 94547 to reflect CARB’s specific authority to adopt a regulation that delegates its legal powers and duties to the executive officer, who may then redelegate to a subordinate, which this regulation is implementing. CARB proposes to add Health and Safety Code sections 39607 and 39701 to the authority for this regulatory provision because section 94547 requires the reporting upon request of data on consumer products that can contribute to air pollution, implementing sections 39607 and 39701. Section 94547 also establishes necessary requirements for the ACP program that will result in ozone reductions, implementing sections 41503.5 and 41511.

Further, CARB proposes to add Health and Safety Code sections 39000, 39003, 39602, 41504, and 41700 as references for this section 94547, to reflect that these sections are also to be referenced when reading this section, as background for understanding the regulation and its context, and to provide context for the need for the regulatory changes and CARB authority to make them.

Purpose for Proposed Amendments to Section 94548(c)(2)

Staff is proposing to delete subsection 94548(c)(2).

Rationale for Proposed Amendments to Section 94548(c)(2)

Subsection 94548(c) states that all shortfalls shall be completely reconciled by “using of hairspray emission reduction credit (HERCs), as specified in section

94567(c), Title 17, California Code of Regulations” as one of the two options. The Hairspray Credit Program expired January 1, 2010, and was repealed from the California Code of Regulations effective January 1, 2015. Thus, the subsection (c) is no longer applicable and therefore should be deleted.

Purpose for Proposed Amendments to Section 94548 Authority and Reference

CARB staff is proposing to add Health and Safety Code sections 39515, 39516, 39607, 39701, 41503.5, and 41511 to the authority for this section 94548. Section 39515 provides authority for CARB to appoint an executive officer, and to delegate statutory duties to the executive officer. Section 39516 provides that the executive officer can redelegate to a subordinate anything delegated to the executive officer. Section 39607 requires CARB to establish a program to secure data on air quality in each air basin, as well as to inventory sources of air pollution with the air basins and determine the kinds and amount of air pollution to the extent feasible. Section 39701 requires CARB to coordinate and collect research data on air pollution. Section 41503.5 requires CARB to ensure that “every reasonable action is taken to achieve the state ambient air quality standards for ozone, carbon monoxide, nitrogen dioxide, and sulfur dioxide at the earliest practicable date.” Section 41511 allows the State Board to require the owner or the operator of any air pollution emission source to take such action as the state board or the district may determine to be reasonable for the determination of the amount of such emission from such source.

CARB staff is proposing to add Health and Safety Code sections 39000, 39003, 39602, 41504, 41511, and 41700 to the reference for this section 94548. Section 39000 lays out the Legislature’s findings and declaration that Californians have an interest in State environmental quality, and that quality is being degraded by pollution, adversely impacting the health, safety, welfare and sense of well-being of Californians. Section 39003 provides that CARB is charged with, among other things, coordinating efforts to attain and maintain ambient air quality standard, and researching the causes of and solutions to air pollution. Section 39602 designates CARB as the air pollution control agency for all purposes of federal law, including for preparing the State Implementation Plan required by the federal Clean Air Act. Section 41504 allows CARB to establish regulations it deems necessary to enable a district to achieve and maintain State ambient air quality standards where CARB finds a district’s rules aren’t enough to achieve and maintain the State ambient air quality standards. Section 41700 prohibits the discharge of any air contaminant or other material causing injury, nuisance, or danger to the public.

Rationale for Proposed Amendments to Section 94548 Authority and Reference

CARB proposes to add Health and Safety Code sections 39515 and 39516 to the authority for this section 94548 to reflect CARB’s specific authority to adopt a regulation that delegates its legal powers and duties to the executive officer, who may then redelegate to a subordinate, which this regulation is implementing. CARB proposes to add Health and Safety Code sections 39607 and 39701 to the authority for this regulatory provision because section 94548 requires the reporting

of VOCs in ACP consumer products that can contribute to air pollution, implementing sections 39607 and 39701. Section 94548 also establishes necessary requirements for the ACP program that will result in ozone reductions, implementing sections 41503.5 and 41511.

Further, CARB proposes to add Health and Safety Code sections 39000, 39003, 39602, 41504, 41511, and 41700 as references for this section 94548, to reflect that these sections are also to be referenced when reading this section, as background for understanding the regulation and its context, and to provide context for the need for the regulatory changes and CARB authority to make them.

Purpose for Proposed Amendments to Section 94549 Authority and Reference

CARB staff is proposing to add Health and Safety Code sections 39515, 39516, 39607, 39701, 41503.5, and 41511 to the authority for this section 94549. Section 39515 provides authority for CARB to appoint an executive officer, and to delegate statutory duties to the executive officer. Section 39516 provides that the executive officer can redelegate to a subordinate anything delegated to the executive officer. Section 39607 requires CARB to establish a program to secure data on air quality in each air basin, as well as to inventory sources of air pollution with the air basins and determine the kinds and amount of air pollution to the extent feasible. Section 39701 requires CARB to coordinate and collect research data on air pollution. Section 41503.5 requires CARB to ensure that "every reasonable action is taken to achieve the state ambient air quality standards for ozone, carbon monoxide, nitrogen dioxide, and sulfur dioxide at the earliest practicable date." Section 41511 allows the State Board to require the owner or the operator of any air pollution emission source to take such action as the state board or the district may determine to be reasonable for the determination of the amount of such emission from such source.

CARB staff is proposing to add Health and Safety Code sections 39000, 39003, 39602, 41504, 41511, and 41700 to the reference for this section 94549. Section 39000 lays out the Legislature's findings and declaration that Californians have an interest in State environmental quality, and that quality is being degraded by pollution, adversely impacting the health, safety, welfare and sense of well-being of Californians. Section 39003 provides that CARB is charged with, among other things, coordinating efforts to attain and maintain ambient air quality standard, and researching the causes of and solutions to air pollution. Section 39602 designates CARB as the air pollution control agency for all purposes of federal law, including for preparing the State Implementation Plan required by the federal Clean Air Act. Section 41504 allows CARB to establish regulations it deems necessary to enable a district to achieve and maintain State ambient air quality standards where CARB finds a district's rules aren't enough to achieve and maintain the State ambient air quality standards. Section 41700 prohibits the discharge of any air contaminant or other material causing injury, nuisance, or danger to the public.

Rationale for Proposed Amendments to Section 94549 Authority and Reference

CARB proposes to add Health and Safety Code sections 39515 and 39516 to the authority for this section 94549 to reflect CARB's specific authority to adopt a regulation that delegates its legal powers and duties to the executive officer, who may then redelegate to a subordinate, which this regulation is implementing. CARB proposes to add Health and Safety Code sections 39607 and 39701 to the authority for this regulatory provision because section 94549 requires the reporting of VOCs in ACP consumer products that can contribute to air pollution, implementing sections 39607 and 39701. Section 94549 also establishes necessary requirements for the ACP program that will result in ozone reductions, implementing sections 41503.5 and 41511.

Further, CARB proposes to add Health and Safety Code sections 39000, 39003, 39602, 41504, 41511, and 41700 as references for this section 94549, to reflect that these sections are also to be referenced when reading this section, as background for understanding the regulation and its context, and to provide context for the need for the regulatory changes and CARB authority to make them.

Purpose for Proposed Amendments to Section 94550 Authority and Reference

CARB staff is proposing to add Health and Safety Code sections 39515, 39516, 39607, 39701, 41503.5, and 41511 to the authority for this section 94550. Section 39515 provides authority for CARB to appoint an executive officer, and to delegate statutory duties to the executive officer. Section 39516 provides that the executive officer can redelegate to a subordinate anything delegated to the executive officer. Section 39607 requires CARB to establish a program to secure data on air quality in each air basin, as well as to inventory sources of air pollution with the air basins and determine the kinds and amount of air pollution to the extent feasible. Section 39701 requires CARB to coordinate and collect research data on air pollution. Section 41503.5 requires CARB to ensure that "every reasonable action is taken to achieve the state ambient air quality standards for ozone, carbon monoxide, nitrogen dioxide, and sulfur dioxide at the earliest practicable date." Section 41511 allows the State Board to require the owner or the operator of any air pollution emission source to take such action as the state board or the district may determine to be reasonable for the determination of the amount of such emission from such source.

CARB staff is proposing to add Health and Safety Code sections 39000, 39003, 39602, 41504, 41511, and 41700 to the reference for this section 94550. Section 39000 lays out the Legislature's findings and declaration that Californians have an interest in State environmental quality, and that quality is being degraded by pollution, adversely impacting the health, safety, welfare and sense of well-being of Californians. Section 39003 provides that CARB is charged with, among other things, coordinating efforts to attain and maintain ambient air quality standard, and researching the causes of and solutions to air pollution. Section 39602 designates CARB as the air pollution control agency for all purposes of federal law, including for preparing the State Implementation Plan required by the federal Clean Air Act.

Section 41504 allows CARB to establish regulations it deems necessary to enable a district to achieve and maintain State ambient air quality standards where CARB finds a district's rules aren't enough to achieve and maintain the State ambient air quality standards. Section 41700 prohibits the discharge of any air contaminant or other material causing injury, nuisance, or danger to the public.

Rationale for Proposed Amendments to Section 94550 Authority and Reference

CARB proposes to add Health and Safety Code sections 39515 and 39516 to the authority for this section 94550 to reflect CARB's specific authority to adopt a regulation that delegates its legal powers and duties to the executive officer, who may then redelegate to a subordinate, which this regulation is implementing. CARB proposes to add Health and Safety Code sections 39607 and 39701 to the authority for this regulatory provision because section 94550 requires the reporting of VOCs in ACP consumer products that can contribute to air pollution, implementing sections 39607 and 39701. Section 94550 also establishes necessary requirements for the ACP program that will result in ozone reductions, implementing sections 41503.5 and 41511.

Further, CARB proposes to add Health and Safety Code sections 39000, 39003, 39602, 41504, 41511, and 41700 as references for this section 94550, to reflect that these sections are also to be referenced when reading this section, as background for understanding the regulation and its context, and to provide context for the need for the regulatory changes and CARB authority to make them.

Purpose for Proposed Amendments to Section 94551 Authority and Reference

CARB staff is proposing to add Health and Safety Code sections 39515, 39516, and 41503.5 to the authority for this section 94551. Section 39515 provides authority for CARB to appoint an executive officer, and to delegate statutory duties to the executive officer. Section 39516 provides that the executive officer can redelegate to a subordinate anything delegated to the executive officer. Section 41503.5 requires CARB to ensure that "every reasonable action is taken to achieve the state ambient air quality standards for ozone, carbon monoxide, nitrogen dioxide, and sulfur dioxide at the earliest practicable date."

CARB staff is proposing to add Health and Safety Code sections 39000, 39003, 39602, 41504, 41700, and 42404.5 to the reference for this section 94551. Section 39000 lays out the Legislature's findings and declaration that Californians have an interest in State environmental quality, and that quality is being degraded by pollution, adversely impacting the health, safety, welfare and sense of well-being of Californians. Section 39003 provides that CARB is charged with, among other things, coordinating efforts to attain and maintain ambient air quality standard, and researching the causes of and solutions to air pollution. Section 39602 designates CARB as the air pollution control agency for all purposes of federal law, including for preparing the State Implementation Plan required by the federal Clean Air Act. Section 41504 allows CARB to establish regulations it deems necessary to enable a district to achieve and maintain State ambient air quality standards where CARB finds a district's rules aren't enough to achieve and maintain the State ambient air

quality standards. Section 41700 prohibits the discharge of any air contaminant or other material causing injury, nuisance, or danger to the public.

Rationale for Proposed Amendments to Section 94551 Authority and Reference

CARB proposes to add Health and Safety Code sections 39515 and 39516 to the authority for this section 94551 to reflect CARB's specific authority to adopt a regulation that delegates its legal powers and duties to the executive officer, who may then redelegate to a subordinate, which this regulation is implementing. These Proposed Amendments to section 94551 also establish necessary requirements for the ACP program that will result in ozone reductions, implementing sections 41503.5.

Further, CARB proposes to add Health and Safety Code sections 39000, 39003, 39602, 41504, and 41700 as references for this section 94551, to reflect that these sections are also to be referenced when reading this section, as background for understanding the regulation and its context, and to provide context for the need for the regulatory changes and CARB authority to make them.

Purpose for Proposed Amendments to Section 94552 Authority and Reference

CARB staff is proposing to add Health and Safety Code sections 39515 and 39516 to the authority for this section 94552. Section 39515 provides authority for CARB to appoint an executive officer, and to delegate statutory duties to the executive officer. Section 39516 provides that the executive officer can redelegate to a subordinate anything delegated to the executive officer.

Rationale for Proposed Amendments to Section 94552 Authority and Reference

CARB proposes to add Health and Safety Code sections 39515 and 39516 to the authority for this section 94552 to reflect CARB's specific authority to adopt a regulation that delegates its legal powers and duties to the executive officer, who may then redelegate to a subordinate, which this regulation is implementing.

Purpose for Proposed Amendments to Section 94553(d)

CARB staff is proposing to delete section 94553(d), which states that "The provisions of this article notwithstanding, the requirements of the Bay Area Air Quality Management District Rule 8-49 shall remain in effect for all aerosol coating products sold, supplied, offered for sale, applied, or manufactured for use in the Bay Area Air Quality Management District (as defined in section 40200 of the Health and Safety Code)."

Purpose for Proposed Amendments to Section 94553(d)

As described above, all provisions specific to aerosol coatings in the ACP Regulation are no longer applicable. Therefore, this provision is no longer needed. Deleting this language will update and streamline the regulation.

Purpose for Proposed Amendments to Section 94553 Authority and Reference

CARB staff is proposing to add Health and Safety Code sections 39515, 39516, and 41503.5 to the authority for this section 94553. Section 39515 provides authority for CARB to appoint an executive officer, and to delegate statutory duties to the executive officer. Section 39516 provides that the executive officer can redelegate to a subordinate anything delegated to the executive officer. Section 41503.5 requires CARB to ensure that “every reasonable action is taken to achieve the state ambient air quality standards for ozone, carbon monoxide, nitrogen dioxide, and sulfur dioxide at the earliest practicable date.”

CARB staff is proposing to add Health and Safety Code sections 39000, 39003, 39602, 41504, and 41700 to the reference for this section 94553. Section 39000 lays out the Legislature’s findings and declaration that Californians have an interest in State environmental quality, and that quality is being degraded by pollution, adversely impacting the health, safety, welfare and sense of well-being of Californians. Section 39003 provides that CARB is charged with, among other things, coordinating efforts to attain and maintain ambient air quality standard, and researching the causes of and solutions to air pollution. Section 39602 designates CARB as the air pollution control agency for all purposes of federal law, including for preparing the State Implementation Plan required by the federal Clean Air Act. Section 41504 allows CARB to establish regulations it deems necessary to enable a district to achieve and maintain State ambient air quality standards where CARB finds a district’s rules aren’t enough to achieve and maintain the State ambient air quality standards. Section 41700 prohibits the discharge of any air contaminant or other material causing injury, nuisance, or danger to the public.

Rationale for Proposed Amendments to Section 94553 Authority and Reference

CARB proposes to add Health and Safety Code sections 39515 and 39516 to the authority for this section 94553 to reflect CARB’s specific authority to adopt a regulation that delegates its legal powers and duties to the executive officer, who may then redelegate to a subordinate, which this regulation is implementing. Section 94553 also establishes necessary requirements for the ACP program that will result in ozone reductions, implementing sections 41503.5.

Further, CARB proposes to add Health and Safety Code sections 39000, 39003, 39602, 41504, and 41700 as references for this section 94553, to reflect that these sections are also to be referenced when reading this section, as background for understanding the regulation and its context, and to provide context for the need for the regulatory changes and CARB authority to make them.

Purpose for Proposed Amendments to Section 94554 Authority and Reference

CARB staff is proposing to add Health and Safety Code sections 39515 and 39516 to the authority for this section 94554. Section 39515 provides authority for CARB to appoint an executive officer, and to delegate statutory duties to the executive

officer. Section 39516 provides that the executive officer can redelegate to a subordinate anything delegated to the executive officer.

Rationale for Proposed Amendments to Section 94554 Authority and Reference

CARB proposes to add Health and Safety Code sections 39515 and 39516 to the authority for this section 94554 to reflect CARB's specific authority to adopt a regulation that delegates its legal powers and duties to the executive officer, who may then redelegate to a subordinate, which this regulation is implementing.

Purpose for Proposed Amendments to Section 94555 Authority and Reference

CARB staff is proposing to add Health and Safety Code sections 39515 and 39516 to the authority for this section 94555. Section 39515 provides authority for CARB to appoint an executive officer, and to delegate statutory duties to the executive officer. Section 39516 provides that the executive officer can redelegate to a subordinate anything delegated to the executive officer.

Rationale for Proposed Amendments to Section 94555 Authority and Reference

CARB proposes to add Health and Safety Code sections 39515 and 39516 to the authority for this section 94555 to reflect CARB's specific authority to adopt a regulation that delegates its legal powers and duties to the executive officer, who may then redelegate to a subordinate, which this regulation is implementing.

E. Tables of MIR Values

Purpose for Proposed Amendments to Section 94700

Staff is proposing to add the three following reactive organic compounds to the Tables of Maximum Incremental Reactivity Values, MIR Values for Compounds: "Diethyl Carbonate," "1-Chloro-3,3,3-trifluoropropene; HFO-1233zd," and "Alkane Mixed - Minimally 90% C13 and higher carbon number." Adding them to the table will allow them to be used in aerosol coating products under section 94522, and in "Multi-purpose Lubricant" products qualified for an alternate compliance option under section 94509.

Rationale for Proposed Amendments to Section 94700

The proposed addition would provide manufacturers additional flexibility to formulate aerosol coating and "Multi-purpose Lubricant" products. The three reactive organic compounds proposed for addition have relatively low MIR values as compared to the default value, which is what manufacturers must use because these compounds are not listed in the MIR Table. This change is necessary to allow for use of a greater number of low reactive ingredients in formulating these and other potential products. Ingredients without a specific MIR value are given a high default MIR value. Providing MIR values for these three compounds, which have extremely low MIR values, may encourage their use in more products (since they

will be assigned lower MIRs, which makes them more appealing when attempting to comply with a reactivity limit), resulting in products which produce less ozone.

Purpose for Proposed Amendments to Section 94700 Footnote

CARB staff is proposing to add a new footnote to indicate the date when these three new ROCs were added to the Tables of MIR Values and the effective date they may be used.

Rationale for Proposed Amendments to Section 94700 Footnote

This new footnote would allow to easily identify the three added ROCs and specify [date of amendment] as the effective day after which using the MIR Value for the new ROC shall be used to calculate the PWMIR for aerosol coating products.

Purpose for Proposed Amendments to Section 94700 Authority and Reference

CARB staff is proposing to add Health and Safety Code sections 39515, 39516, 41503.5, and 41511 to the authority for this section 94700. Section 39515 provides authority for CARB to appoint an executive officer, and to delegate statutory duties to the executive officer. Section 39516 provides that the executive officer can redelegate to a subordinate anything delegated to the executive officer. Section 41503.5 requires CARB to ensure that "every reasonable action is taken to achieve the state ambient air quality standards for ozone, carbon monoxide, nitrogen dioxide, and sulfur dioxide at the earliest practicable date." Section 41511 allows the State Board to require the owner or the operator of any air pollution emission source to take such action as the state board or the district may determine to be reasonable for the determination of the amount of such emission from such source.

CARB staff is proposing to add Health and Safety Code sections 39000, 39003, 39602, 41504, 41511, and 41700 to the reference for this section 94700. Section 39000 lays out the Legislature's findings and declaration that Californians have an interest in State environmental quality, and that quality is being degraded by pollution, adversely impacting the health, safety, welfare and sense of well-being of Californians. Section 39003 provides that CARB is charged with, among other things, coordinating efforts to attain and maintain ambient air quality standard, and researching the causes of and solutions to air pollution. Section 39602 designates CARB as the air pollution control agency for all purposes of federal law, including for preparing the State Implementation Plan required by the federal Clean Air Act. Section 41504 allows CARB to establish regulations it deems necessary to enable a district to achieve and maintain State ambient air quality standards where CARB finds a district's rules aren't enough to achieve and maintain the State ambient air quality standards. Section 41700 prohibits the discharge of any air contaminant or other material causing injury, nuisance, or danger to the public.

Rationale for Proposed Amendments to Section 94700 Authority and Reference

CARB proposes to add Health and Safety Code sections 39515 and 39516 to the authority for this section 94700 to reflect CARB's specific authority to adopt a regulation that delegates its legal powers and duties to the executive officer, who

may then redelegate to a subordinate, which this regulation is implementing. Section 94700 also establishes necessary requirements for the Consumer Products program that will result in ozone reductions, implementing sections 41503.5.

Further, CARB proposes to add Health and Safety Code sections 39000, 39003, 39602, 41504, 41511, and 41700 as references for this section 94700, to reflect that these sections are also to be referenced when reading this section, as background for understanding the regulation and its context, and to provide context for the need for the regulatory changes and CARB authority to make them.

F. Method 310 Summary

Method 310 sets forth procedures to be followed to determine compliance with the VOC content standards for various consumer products and the reactive organic compound (ROC) content as it relates to the product-weighted maximum incremental reactivity (PWMIR) limits for aerosol coating products under the Consumer Products program. This section contains a summary of the proposed amendments to Method 310 and the rationale for the proposed modifications.

Purpose of General Amendment to Method 310

Staff proposes minor non-substantive word modifications to various subsections of Method 310, such as rearranging sentence structure without changing its content and replacing certain words with synonyms, such as replacing "will" with "may" or "can." Staff also proposes to delete language that is no longer necessary, and to make grammatical and typographical changes for consistency. Finally, staff proposes to renumber certain sections due to text deletions and insertions. For example, proposed deletion of sections 1.2 and 1.3 would result in renumbering section 1.4 to section 1.2.

Rationale of General Amendment to Method 310

Method 310 sets forth the analytical procedures and processes used to determine the VOC and ROC content of consumer products. To make those procedures and their applications clearer, staff made grammatical and typographical changes throughout Method 310. Also, renumbering as needed to add or delete certain language is to improve the flow and organization of Method 310.

Purpose for Proposed Amendments to Section 1.1

Staff is proposing to clarify that Method 310 refers to CARB Method 310 by replacing "this method" with "CARB Method 310" in section 1.1.

Staff is proposing to remove the phrase "the percent by weight of" in section 1.1 and add the phrase "each of the following" to introduce the list of things Method 310 is used to determine.

Staff is also proposing to incorporate previously-enumerated sections 1.2 and 1.3 as subsections into section 1.1. As a consequence, the existing section 1.4 would become new section 1.2, and the existing section 1.5 would become section 1.3.

More detail on this is given below.

Staff is proposing to modify and reorganize the following subsections of section 1.1 to revise specific terms and references to the California Consumer Products Regulations:

- In subsection 1.1(1), staff is proposing to streamline the regulatory reference to include only the title, code, and section number and add the specific applicable Article and section numbers.
- In subsection 1.1(2), staff is proposing to remove the phrase “low vapor pressure volatile organic compounds” and leave the shorthand, “LVP-VOC.” Staff is also proposing to remove the reference to subsection (a) of section 94508.
- Staff is proposing to add a new subsection 1.1(3) to specify that Method 310 applies to the determination of volatile components of a product that do not meet the definition of a volatile organic compound, and to compounds that are exempted under listed sections of the California Consumer Products Regulations. This subsection partially replaces the previous section 1.3, which is discussed in the purpose and rationale for the proposed changes to subsection 1.3. Section 1.1 lists what Method 310 applies to. Therefore, parts of previous section 1.3 should be incorporated under section 1.1 rather than as a stand-alone section.
- Staff is proposing to add a new subsection 1.1(4) to specify that Method 310 applies to the determination of specific components that are prohibited under sections 94509 and 94522 of the California Consumer Products Regulations. This subsection partially replaces the previous section 1.3, which is discussed in the purpose and rationale for the proposed changes to subsection 1.3. Section 1.1 lists what Method 310 applies to. Therefore, parts of previous section 1.3 should be incorporated under section 1.1 rather than as a stand-alone section.
- Staff is also proposing to add a new subsection 1.1(5) to specify that Method 310 applies to the determination of reactive organic compound content under sections 94509 and 94520-94528 of California Consumer Products Regulations, for the purposes of calculating PWMIR only. This subsection partially replaces the previous section 1.3, which is discussed in the purpose and rationale for the proposed changes to section 1.3. Section 1.1 lists what Method 310 applies to. Therefore, previous section 1.2 and parts of 1.3 should be incorporated under section 1.1 rather than as a stand-alone section.

Rationale for Proposed Amendments to Section 1.1

Replacing “this method” with “CARB Method 310” in section 1.1 will make it unambiguous that Method 310 is developed by the California Air Resources Board (CARB), and will clarify that the “Method 310” shorthand in the parentheses refers to the entire method document.

The California Consumer Products Regulations (section 94509) sets VOC standards in percent by weight. However, the VOC standard for "Fabric Softener - Single Use Dryer Product" is in grams of VOC per sheet. The proposed removal of "the percent by weight" clarifies that the VOC content of "Fabric Softener - Single Use Dryer Product" and other potential product categories will be reported in a different format than in the format of percent by weight, which will expand the flexibility that the EO has to report data, per the Consumer Products Program regulations.

Staff is proposing to reorganize subsection 1.1 to clearly outline the applicability of CARB Method 310 in the form of a list, making it more easily readable up front what this Method 310 applies to, and to easily reference each point of that list to specific sections of the California Consumer Products Regulations. These proposed modifications will make it easier for regulated entities to understand how Method 310 applies to them.

In subsection 1.1(2), staff is proposing to remove the phrase "low vapor pressure volatile organic compound" and leave in the LVP-VOC acronym to be consistent with the definition of LVP-VOC as stated in the California Consumer Products Regulations. This revision makes it easier for stakeholders to understand, because the same terms are used consistently throughout.

Purpose for Proposed Amendments to Sections 1.2 and 1.3

Staff is proposing to delete sections 1.2 and 1.3, which will cause renumbering of sections 1.4 and 1.5 to 1.2 and 1.3, respectively.

Rationale for Proposed Amendments to Sections 1.2 and 1.3

Staff is proposing these amendments because the renumbering will allow the paragraphs to continue in numerical order, making the document easier to read.

Purpose for Proposed Amendments to Section 1.5

Staff is proposing to modify section 1.5 to delete the definition of "Executive Officer" and add three new definitions: of chemical "compound," chemical "mixture," and "content." Each definition is proposed to reside in its own subsection: chemical "compound" in subsection 1.3.1, chemical "mixture" in subsection 1.3.2, and "content" in subsection 1.3.3. The term chemical "compound" is proposed to be defined as "a molecule of definite chemical formula and isomeric structure." The term chemical "mixture" is proposed to be defined as "a substance comprised of two or more chemical compounds." The term "content" is proposed to be defined as "the weight of a compound or a mixture in a product expressed as a percentage of the product weight (exclusive of the container or packaging)."

Rationale for Proposed Amendments to Section 1.5

Terms such as “content,” “compound,” “material,” and “mixture” occur throughout the text of Method 310 without being defined. Staff is proposing to replace those terms with three defined terms, “compound,” “mixture,” and “content,” and to refer to them as applicable in Method 310. All three definitions are based on terms that already appear in the California Consumer Products Regulations. The terms chemical “compound” and chemical “mixture” are defined within the definition of “LVP-VOC,” and the term “content” is a modified definition of “VOC content” in which “VOC” is replaced with “a compound or a mixture.” This amendment is necessary because it will clarify and harmonize the use of scientifically accepted descriptor terminology throughout Method 310, making it easier for regulated entities to understand and comply with it, and easier for CARB to implement it. For consistency and clarity for the regulated entities, all three terms will be used throughout Method 310, will have the meanings given here, and will replace words with similar meanings but which are not defined.

Method 310 is part of the Consumer Products Regulations, so all of the definitions in the Consumer Products Regulations apply to Method 310 terms. The definition of “Executive Officer” already appears in the California Consumer Products Regulations and does not have to be repeated in Method 310.

Purpose for Proposed Amendments to Section 2, References

Staff is proposing to revise the title of section 2 from Reference Methods to References.

Rationale for Proposed Amendments to Section 2, References

The new section title will better reflect its purpose because, in addition to reference methods, this section will include other references. Reference methods include all of the resources necessary to conduct analyses, and are the basis for the analytical process of Method 310.

Purpose for Proposed Amendments to Section 2.1

Staff is proposing to create new section 2.1 with a list of the Reference Methods in alpha-numerical order. Each reference will have its own separate paragraph number.

Staff is also proposing to:

- add the following reference methods: NIOSH 1300, NIOSH 1401, NIOSH 1402, and NIOSH 1403;
- update the version date of the following reference method citations: ASTM D5443, ASTM D5580, and ASTM D5381, and
- remove the following reference methods: ASTM D3710 – 95(2004), U.S. EPA Method 602, U.S. EPA 8015B and U.S. EPA 8020A.

Rationale for Proposed Amendments to Section 2.1

Currently, Method 310 references 40 methods that span several pages. Reference methods have been added during various prior amendments to Method 310, but without any clear order, making it difficult for regulated entities to read and find specific methods. This new amendment is proposed because this reorganization will allow for an orderly way of finding each reference method, making it easier for regulated entities to use Method 310. Any references that are not mentioned as new, added, or updated, (as underline would imply) but simply appear that way because of the restructure, have been incorporated in previous amendments to Method 310. Thus, these references do not require to be re-incorporated.

CARB proposes to add Test method NIOSH 1300 as a new reference method for ketone analysis, which is necessary to include additional compounds that may need to be analyzed and was not previously included in Method 310. To date, Method 310 has listed only NIOSH 1400, implying an all-inclusive series, when in fact these are four separate reference methods. Thus, the proposal to add NIOSH 1401, NIOSH 1402, and NIOSH 1403, in addition to NIOSH 1400, would make it clear that all four separate reference methods apply.

Updating the dates of reference method citations for ASTM D5443 and ASTM D5580 to make it clear which versions of these methods apply under Method 310 will make Method 310 consistent with the completion of Monitoring and Laboratory Division's (MLD's) method development and the United States Environmental Protection Agency's recommendation to update test methods to the most recent revised editions. Updating reference methods to current versions will clarify which versions of the methods can be used by stakeholders to conduct the analysis under Method 310.

Updating the date of reference method citation for ASTM D 5381 to make it clear which versions of these methods apply under Method 310 will be consistent with the U.S. EPA recommendation to update test methods to the most recent version as applicable.

With the completion of MLD's method development for reactivity-based analysis of aerosol coatings, the following reference methods: ASTM D3710 – 95(2004), U.S. EPA Method 602, U.S. EPA 8015B, and U.S. EPA 8020A will no longer be utilized per Method 310 analysis. Removing these reference methods will clarify that these methods will not be used for any CARB analysis.

Giving each reference its own separate paragraph number will make it easier to refer to them, and easier for regulated entities to find them when using Method 310.

Purpose for Proposed Amendments to Footnote 1

Staff is proposing to relocate Footnote 1 from section 3.3 to section 3. This footnote states that alternative testing methods for determining VOC may be used, and refers the reader to Section 8 of Method 310.

Rationale for Proposed Amendments to Footnote 1

This change is proposed because the alternative reference methods included in Footnote 1 apply to the entire section 3, not just to section 3.3, so it more properly belongs early enough that it's clear it covers the whole section 3.

Purpose for Proposed Amendments to Section 3.1

Staff is proposing to delete the phrase "Testing begins when" from the first sentence and add the phrase "After selection of the product" to the beginning of the second sentence. Further, staff is proposing to clarify that the Executive Officer has discretion to choose a product for Method 310 testing by adding "may" to the first sentence.

Staff is proposing to add "under" before "Method 310," replace "will" with "shall" when referring to the chain of custody, and add that the chain of custody is for the product selected. Staff is also proposing to clarify that the Executive Officer will ensure that this product is kept in a secure location.

Rationale for Proposed Amendments to Sections 3.1

These proposed changes will better reflect initial steps taken by the Executive Officer at the onset of product testing under Method 310. The Executive Officer has discretion to select a product, so adding "may" makes that discretion clear. Replacing "by" with "under Method 310" is a grammatical correction to make it more clear that the analysis of the product is done using Method 310. Adding "after selection of a product" provides a better description of the steps taken by CARB, since the chain of custody can only begin after choosing a product. Changing "will" to "shall" and adding "for that product" in lieu of "sample" both make it more clear that the Executive Officer must maintain a chain of custody for the product selected for analysis under Method 310. Removing "selection and" makes it clear that the chain of custody begins after the product is selected, not during selection, which makes more sense, since chain of custody cannot start until a product has been chosen and purchased. Adding "including by ensuring that the product is kept in a secure location" clarifies that the chain of custody requires that only authorized staff have access to the product, to maintain the accuracy of the testing and legitimacy of the testing results.

Purpose for Proposed Amendments to Section 3.2

Staff is proposing to replace "is" with "shall" throughout the section and strike the phrase "for exempt or prohibited compounds by."

Rationale for Proposed Amendments to Sections 3.2

The proposed change will make clear that U.S. EPA Method 18 is used to analyze the propellant for any compounds and not only those that are exempt or prohibited.

This better indicates that the U.S. EPA Method 18 analysis applies to all Article 1 and Article 2 categories for VOC-based analysis. Further, replacing "is" with "shall" makes it more clear that the action is mandatory, rather than a description of what is done.

Purpose for Proposed Amendments to Section 3.3

Staff is proposing to modify section 3.3 and subsections 3.3.1 to 3.3.8 to describe Method 310's process for non-aerosol or the non-propellant portion of an aerosol consumer products sample, as related to VOC content mass-based analysis.

Staff is also proposing to:

- In section 3.3:
 - replace "material" with "content;"
 - add "components that are" before exempt;
 - remove "or" from before "prohibited;"
 - add the phrase "or volatile but do not meet the definition of a VOC in the California Consumer Products Regulations";
- replace "is" with "shall" throughout section 3.3;
- add the phrases: "as applicable," "one or more of the following;" and "using either" throughout section 3.3;
- In subsection 3.3.1, remove "gravimetric analysis of samples to determine the weight percent of total volatile material" and replace it with "Total volatile content determination, using one or more of the following;"
- add the following reference methods to subsection 3.3.4: NIOSH 1300, NIOSH 1401, NIOSH 1402, and NIOSH 1403;
- add the following reference methods to subsection 3.3.5: NIOSH 1300, NIOSH 1401, NIOSH 1402, and NIOSH 1403;
- add the following reference methods to subsection 3.3.7: NIOSH 1300, NIOSH 1401, NIOSH 1402, and NIOSH 1403;
- add updated reference methods ASTM D5443 and ASTM D5580 in subsection 3.3.5;
- specify this subsection's applicability by adding "for products with low level VOC (<5%)" to subsection 3.3.7, and

- update the following reference method citations: ASTM D5443 and ASTM D5580 in Subsection 3.3.8; and
- remove the following reference method citations from subsection 3.3.8: ASTM D3710-95, U.S. EPA Method 602, U.S. EPA SW-846 Method 8020A, and U.S. EPA Modified Method 8015.

Rationale for Proposed Amendments to Sections 3.3

Staff is proposing to add the phrase “or volatile but do not meet the definition of a VOC in the Consumer Products Regulations” to explain that the initial testing encompasses all analytics required by the California Consumer Products Regulations. Method 310 as currently written leaves out an entire group of compounds that need to be identified – namely those that volatilize during the process, but do not meet the definition of a VOC. CARB is proposing to replace “material” with “content” because it describes a quantitative determination, so it is a better descriptor, so the term “content” will now be defined and used throughout Method 310 instead.

Addition of phrases such as “as applicable,” “one or more of the following;” and “using either” clarifies that not all methods need to be employed to test products for VOC content. Replacing “is” with “shall” makes it more clear that the action is mandatory, rather than a description of what is done.

As noted in the Rationale for Proposed Amendments to section 2.1, test method NIOSH 1300 is a new reference method added for ketone analysis. To date, Method 310 has listed only NIOSH 1400, implying an all-inclusive series, when in fact, these are four independent reference methods. Thus, adding NIOSH 1401, NIOSH 1402, and NIOSH 1403 throughout section 3.3 and its subsections would make this clear.

CARB is proposing the changes to subsection 3.3.1, 3.3.2, and 3.3.3 because we are harmonizing the paragraph structure of all subsections of section 3.3.

CARB is proposing the changes to subsection 3.3.4 because we are harmonizing the paragraph structure of all subsections of section 3.3. We are also adding methods NIOSH 1300, NIOSH 1401, NIOSH 1402, and NIOSH 1403 because they are applicable to alcohol and ketone content determination.

Adding updated reference methods ASTM D5443 and ASTM D5580 to subsection 3.3.5 will clarify that those methods can be used to test for content of exempt and prohibited content in products that undergo testing under Method 310. Replacing “compounds” with content determination and removing “analysis of” would harmonize the paragraph structure of section 3.3. We are also adding methods NIOSH 1300, NIOSH 1401, NIOSH 1402, and NIOSH 1403 because they are applicable to an exempt and prohibited content determination.

CARB is proposing the changes to subsection 3.3.6 because we are harmonizing the paragraph structure of section 3.3.

Specifying that low-level VOC indicates less than 5 percent (<5%) in subsection 3.3.7 reflects a specific value in the California Consumer Products Regulations is to correct inconsistencies between Method 310 and the California Consumer Products Regulations. We are also adding methods NIOSH 1300, NIOSH 1401, NIOSH 1402, and NIOSH 1403 because they are allowed to be used to calculate VOC content.

Updating the reference method citations to ASTM D5443 and ASTM D5580 in subsection 3.3.8 makes this subsection consistent with the completion of MLD's method development and the U.S. EPA recommendation to update test methods to the most recent revised editions. Methods ASTM D3710-95, U.S. EPA Method 602, U.S. EPA SW-846 Method 8020A, and U.S. EPA Modified Method 8015 are proposed to be removed because they are no longer applicable to hydrocarbon content determination, and so should no longer be in this subsection.

Purpose for Proposed Amendments to Section 3.4

Staff is proposed to change section 3.4 to make it clear that the Executive Officer has discretion to make a VOC content determination, if it applies to the specific product being tested, and that, if done, the VOC content determination shall be done pursuant to sections 3.2 and 3.3.

Staff is also proposing to replace "will" with "shall."

Staff is proposing to replace "formula" with "equation" in subsection 3.4.1. Also, in subsection 3.4.1, staff is proposing to add references to replace the generic reference to "CARB regulations" with references to specific sections of the California Consumer Products Regulations that specify the VOC standards for consumer products that are regulated by CARB.

In subsection 3.4.2 staff is proposing to make the following changes:

- replace "will" with "may;"
- add a timeline of 25 working days from an Executive Officer request for a responsible party to supply product formulation data when the product does not meet the applicable VOC standards;
- clarify how the Executive Officer shall treat confidential information and streamline references to CARB's confidentiality regulations, including by deleting "CCR, Division 3, Chapter 1, Subchapter 4 (Disclosure of Public Records);" and
- add the sentence "Failure to respond to an Executive Officer request for this information is a violation."

In subsection 3.4.3, staff is proposing to replace "If the information supplied by the responsible party shows that the product does not meet the applicable VOC standards, then the Executive Officer will take appropriate enforcement action" with "If the Executive Officer determines, based on testing, information they may receive from the responsible party, and any other applicable evidence, that the

product does not comply with the applicable VOC standard, the Executive Officer may take appropriate enforcement action.”

Staff is proposing to delete subsection 3.4.4.

Rationale for Proposed Amendments to Sections 3.4

Adding “if” clarifies that not all testing will require CARB to make a VOC determination, depending upon the product being tested and what CARB is testing for. The rest of the proposed changes to the first paragraph of section 3.4 makes it grammatically work with the addition of “if,” and makes it more clear that CARB will use sections 3.2 and 3.3 to make a VOC content determination. Replacing “will” with “shall” makes it more clear that this it is mandatory.

Replacing “formula” with “equation” in subsection 3.4.1 is necessary because it would correctly reflect that the VOC content is calculated using mathematical equations that manipulate various parameters to arrive at a VOC content of the analyzed product.

According to the California Consumer Products Regulations, categories of consumer products that are regulated by CARB are required to remain below or meet the percent VOC by weight standards. Those standards are in sections 94502 and 94509 of the California Consumer Products Regulations (title 17 of the California Code of Regulations). Staff is proposing to reference those specific sections in subsection 3.4.1 of Method 310 to explicitly state that when an Executive Officer determines whether a product meets the applicable VOC standards, the Executive Officer refers to VOC standards presented in the abovementioned sections. Replacing a generic reference to CARB regulations with the specific sections will make it easier for a regulated entity reading Method 310 to know what to reference and more clear what standards they are being held to under Method 310, too.

According to the California Consumers Products Regulations, the Executive Officer may request a responsible party to submit formulation data within 25 working days and CARB is required to handle the formulation data as confidential as allowed under law. Failure to submit the requested formulation data is a violation. Staff is proposing to add that information to subsection 3.4.2 of Method 310 to remain consistent with the California Consumer Products Regulations, so that all the information is in here, too, instead of making the reader go back and forth, and so that the specific requirements, as well as the fact that it’s a violation not to provide the requested data on time, are clear to regulated entities.

Staff is proposing to delete the phrase “CCR, Division 3, Chapter 1, Subchapter 4 (Disclosure of Public Records)” from subsection 3.4.2 because it is unnecessary language. Deleting is helps streamline the reference to the pieces that a reader needs, just the title, CCR, and section number, which makes it easier for a layperson to read and find the reference. Deleting the reference to the “confidentiality procedures” removes unnecessary language, to help make it more clear and thus easier to read and understand this section.

Staff is proposing to modify subsection 3.4.3 to reflect that CARB can determine that a consumer product has violated VOC standards based not only on information provided by the responsible party, but also based on testing and any other applicable evidence. This change brings Method 310 up to date with how CARB actually conducts enforcement, based on all available information.

Staff is proposing to strike subsection 3.4.4 because the clarifications made to subsection 3.4.3 make this subsection redundant and no longer needed.

Purpose for Proposed Amendments to Section 3.5

Staff is proposing to add the phrases “or boiling point, or both are” and “which are incorporated by reference herein” to subsection 3.5.1. Staff is also proposing to delete the list of ASTM references from subsection 3.5.1.

Staff is proposing to add subsections 3.5.1.1 and 3.5.1.2 to specify what reference methods could be used to determine the vapor pressure and, separately, which reference methods could be used to determine the boiling point.

Staff is also proposing to add reference method ASTM D1782-08 to subsection 3.5.1.1.

Finally, staff is proposing to replace the first “will” with “may” and the later “will” with “shall” in subsection 3.5.2.

Rationale for Proposed Amendments to Sections 3.5

Section 3.5 appears verbatim in the California Consumer Products Regulations. The phrases “and/or boiling point are” and “which are incorporated by reference herein” are included in the California Consumer Products Regulations, but were inadvertently omitted from Method 310. Thus, these proposed amendments will harmonize the California Consumer Products Regulations with Method 310, as originally intended.

Staff is proposing and move all of the ASTM references from subsection 3.5.1 to subsections 3.5.1.1 and 3.5.1.2, because we are proposing to split the sections and they more clearly belong in the subsections.

Adding subsections 3.5.1.1 and 3.5.1.2 would point out explicitly what reference methods apply to which criterion of this exemption, making it easier for regulated entities to know which specific methods apply to which determination, making it easier to comply.

Reference method ASTM D1782-08 was always listed in section 2 but now would be placed in subsection 3.5.1.1, as another alternative, where it can be used to determine vapor pressure, so that all methods related to vapor pressure are in 3.5.1.1

Replacing “will” with “may” in the first sentence of subsection 3.5.2 clarifies that the Executive Officer has discretion to test a sample of LVP-VOC and is not required to do so. Replacing “will” with “shall” in the final sentence of subsection 3.5.2 makes it more clear that this is mandatory and not just a description of what is done.

Purpose for Proposed Amendments to Section 3.6

Staff is proposing to add that the Executive Officer may use their scientific judgment to perform additional analyses if the product’s VOC compliance is not resolved under sections 3.4 and 3.5.

Staff is also proposing to delete subsection 3.6.1 and renumber the rest of the subsections accordingly.

Finally, staff is proposing to replace “will request” with “may ask” and add “additional” in front of “information to explain the discrepancy” in subsection 3.6.2, renumbered as 3.6.1.

Rationale for Proposed Amendments to Sections 3.6

The proposed changes to section 3.6.1 will clarify that the criteria to be used to determine whether further analyses and testing are required is the Executive Officer’s scientific judgment, which reflects what CARB actually does and is generally accepted as a basis for requiring additional information. Replacing “will” with “may” clarifies that the Executive Officer has the option to conduct further analyses and testing, but that it is not required and will not automatically happen.

Section 3.6.1 is proposed to be removed because it is misleading and unneeded. CARB may take enforcement action on many bases, and has enforcement discretion to do so, and this subsection as written may give the false impression that if this one basis is resolved, no enforcement action will be taken at all.

Because section 3.6.1 is proposed to be removed, existing section 3.6.2 will become section 3.6.1, and existing section 3.6.3 will become section 3.6.2, to keep them in numerical order.

Replacing “will request” with “may ask” clarifies that the Executive Officer has discretion to request such information, but need not. Adding “additional” in front of “information to explain the discrepancy” in renumbered subsection 3.6.1 clarifies that this information is additional to other information CARB can request of the responsible party under the regulations and Method 310, and that CARB can use other information it has to explain the discrepancy, too.

Purpose for Proposed Amendments to Section 4

Staff is proposing to strike the introductory paragraph and Footnote 2.

Staff is also proposing to subdivide section 4 into two parts: Section 4.1 – Article 1. Antiperspirants and Deodorants, and Section 4.2 – Article 2. Consumer Products.

Rationale for Proposed Amendments to Section 4

The introductory paragraph is removed because it is no longer applicable as written; some of this language is being added to new subsection 4.1, where it is now more appropriate.

Footnote 2 is removed because it does not apply to this section anymore.

Subdividing section 4 into two parts is necessary because it would clearly separate equations used to determine the VOC content of products that are categorized either as Article 1 or Article 2 products. Article 1 and Article 2 products undergo the same type of testing, but their VOC is calculated differently using equations that are specific for each category.

Purpose for Proposed Amendments to Section 4.1

Staff is proposing to add a new section containing all the equations used for calculating the Medium Volatility Organic Compound (MVOC) and High Volatility Organic Compound (HVOC) for Article 1 samples, as those equations were not included in previous versions of Method 310.

Rationale for Proposed Amendments to Sections 4.1

The previous revision of Method 310 did not adequately explain how to calculate the MVOC and HVOC of Article 1 products. This new section will rectify that problem and will contain, in separate subsections, all equations used to calculate MVOC and HVOC for Article 1 samples, for both aerosols and non-aerosol products, making it more clear for regulated entities and thus easier for them to comply. Increased compliance will ensure that CARB continues to get the intended emission reductions from the Consumer Products Regulations.

Purpose for Proposed Amendments to Section 4.2

Staff is proposing to move the existing language and equations of section 4 to the new section 4.2.

Staff is also proposing to add the correct placement of parentheses and brackets in each equation.

Staff is proposing to add the phrase “consumer products with VOC embedded within a delivery substrate” in subsection 4.2.3 per the inclusion of the dryer sheet category and potential future categories of consumer products, such as potpourri and scented candles. The VOC standards for these categories are calculated as grams of VOC per use.

In subsection 4.2.5, staff is proposing to add “<” in front of 5% to reflect a specific value stated in the California Consumer Products Regulations. Staff is also proposing to replace “non-exempted VOCs” with “VOC.”

Rationale for Proposed Amendments to Sections 4.2

The new section 4.2 is added because it would make clear that this part of Method 310 only applies to Article 2 samples and would contain all correctly formatted equations used to calculate VOC content of Article 2 samples, making it more clear for regulated entities and thus easier for them to comply and CARB to get the intended emission reductions from the Consumer Products Regulations. Section 4.2 is broken out as proposed to cover aerosol products, non-aerosol products, consumer products with VOCs embedded within a delivery substrate, multi-purpose solvent and paint thinners sold in the South Coast Air Quality Management District, and consumer products subject to low VOC limits.

The California Consumer Products Regulation sets forth VOC standards in the format of “percent by weight.” The VOC standard for “Fabric Softener - Single Use Dryer Product” is in the format of “grams of VOC per sheet.” The proposed modification of subsection 4.2.3 would clarify that the VOC content of “Fabric Softener - Single Use Dryer Product” and other potential product categories would be reported in a different format than in the format of “percent by weight.” For those categories, VOC would be calculated as grams of VOC per use, to be consistent with the Consumer Products Regulations weights.

The addition of “<” in front of 5% is necessary because “<5%” is explicitly stated in the California Consumer Products Regulations, and now it will appear in Method 310, making both documents consistent with one another. The entire section was re-written to reflect a brand new process following MLD’s method development. Up until now, Method 310 only described a process that verified formulation data. This is proposed to be replaced with an analytical process similar to section 3.

Purpose for Proposed Amendments to Section 5

Staff is proposing to revise the entire section 5 to provide a uniform description of ROC determination under Method 310.

Also, staff is proposing to relocate Footnote 2 to the beginning of section 5 following the introduction in subsection 5.1.

Rationale for Proposed Amendments to Section 5

Staff is proposing to include non-substantive changes to section 5 to make the language of this section parallel in structure to section 3. This amendment is proposed because it will make Method 310 easier to navigate and use.

The relocation of Footnote 2 is proposed because the alternative reference methods included in Footnote 2 apply to the entire section 5. This footnote was formerly Footnote 3 but becomes Footnote 2 because the preceding footnote was removed.

Purpose for Proposed Amendments to Section 5.1

Staff is proposing to strike the phrase "Testing begins when" from the first sentence, adding "may" and "under this Method 310, and adding the phrase "After selection of the product" to the beginning of the second sentence.

Staff is proposing to clarify that the chain of custody refers to a product that will undergo the analytical process. Staff is also proposing to clarify that the chain of custody includes ensuring that the product selected for testing is kept in a secure location to which only authorized people have access.

Staff is also proposing to keep the first two sentences of section 5.1 and strike the remainder of that section.

Rationale for Proposed Amendments to Sections 5.1

Proposed changes will better reflect the initial steps taken by the Executive Officer at the onset of product testing under Method 310. These changes also parallel changes made to section 3, and are made for the same reasons.

The text that is proposed to be removed from section 5.1 is moved to section 5.4, where the rights of the Executive Officer and duties of the responsible party are stated, putting it in a more logical place and thus making it easier for regulated entities to find it and comply.

Purpose for Proposed Amendments to Section 5.2

Staff is proposing to replace "is" with "shall" throughout the section and restate the following two terms as shown:

- ROC(s) replaces ROCs;
- Compound(s) replaces compounds.

Rationale for Proposed Amendments to Sections 5.2

The proposed change will make clear that Method 310 looks for as many ROC(s) and compound(s) as present in the product being analyzed thus allowing the

Executive Officer more flexibility. Further, replacing “is” with “shall” makes it more clear that the action is mandatory, rather than a description of what is done.

Purpose for Proposed Amendments to Section 5.3

Staff is proposing to modify section 5.3 and subsections 5.3.1 to 5.3.9 to describe Method 310’s process for non-aerosol or the non-propellant portion of an aerosol consumer products sample, as related to ROC content and for reactivity-based analysis.

Staff is also proposing to:

- In section 5.3, replace “material” with “content;”
- replace “is” with “shall” throughout section 5.3;
- add the phrases: “as applicable,” “one or more of the following;” and “using either” throughout section 5.3.

Staff is proposing to add the following reference methods to subsection 5.3.4: NIOSH 1300, NIOSH 1401, NIOSH 1402, and NIOSH 1403.

Staff is proposing to add the following reference methods to subsection 5.3.5: NIOSH 1300, NIOSH 1401, NIOSH 1402, and NIOSH 1403.

Staff is proposing to add updated reference methods ASTM D5443 and ASTM D5580 to subsection 5.3.5.

Staff is proposing to remove subsection 5.3.6: Determination of metal content, ASTM D5381-93.

Staff is proposing to remove subsection 5.3.7: Determination of specular gloss, ASTM D523-08.

Staff is proposing to remove subsection 5.3.8: Determination of acid content, ASTM D1613-06.

Subsection 5.3.9 is proposed to be renumbered to subsection 5.3.6, and staff is proposing to add updated reference methods ASTM D5443 and ASTM D5580 to the renumbered 5.3.6

Rationale for Proposed Amendments to Sections 5.3

The proposed changes to section 5.3 are put forward because they will provide a more uniform description of the various analytical methodologies available for ROC content determination.

The proposed addition of phrases “as applicable,” “one or more of the following,” and “using either” clarifies that not all methods need to be employed to test products for ROC content.

CARB is proposing the changes to subsection 5.3.4 because to date, Method 310 has listed only NIOSH 1400, implying an all-inclusive series, when in fact these are four separate reference methods. Thus, adding NIOSH 1401, NIOSH 1402, and NIOSH 1403 to subsection 5.3.4 would make this clear for ketone and alcohol content determination.

CARB is proposing the changes to subsection 5.3.5 because to date, Method 310 has listed only NIOSH 1400, implying an all-inclusive series, when in fact these are four separate reference methods. Thus, adding NIOSH 1401, NIOSH 1402, and NIOSH 1403 to subsection 5.3.4 would make this clear for prohibited content determination. CARB is proposing to update reference method ASTM D5443 and add reference method ASTM D5580 to subsection 5.3.5 for the purpose of prohibited content determination.

Staff is proposing to remove subsection 5.3.6: Determination of metal content, ASTM D5381-93. The reference methods included in previous subsection 5.3.6 would generate data that is not used in the PWMIR calculation. Although deleted from this section, this reference method would remain in section 2 of Method 310, and would be included in Article 3 of the California Consumer Products Regulations (section 94526), where it is more appropriate.

Staff is proposing to remove subsection 5.3.7: Determination of specular gloss, ASTM D523-08. The reference methods included in previous subsection 5.3.7 would generate data that is not used in the PWMIR calculation. Although deleted from this section, this reference method would remain in section 2 of Method 310, and would be included in Article 3 of the California Consumer Products Regulations (section 94526), where it is more appropriate.

Staff is proposing to remove subsection 5.3.8: Determination of acid content, ASTM D1613-06. The reference methods included in previous subsection 5.3.8 would generate data that is not used in the PWMIR calculation. Although deleted from this section, this reference method would remain in section 2 of Method 310, and would be included in Article 3 of the California Consumer Products Regulations (section 94526), where it is more appropriate.

Subsection 5.3.9 is proposed to be renumbered to subsection 5.3.6. Renumbering it is necessary to account for deleted subsections and keep the section in numerical order, making it easier to read and reference. Adding reference methods ASTM D5443 and ASTM D5580 to this renumbered subsection 5.3.6 will clarify that those methods can be used to test for hydrocarbon content.

Purpose for Proposed Amendments to Section 5.4

Staff is proposing to change the section title from "Initial Determination and Verification of ROC Content" to "Initial Determination of ROC Content."

Staff is also proposing to remove "by verifying formulation data" from the introduction to this section, replace "will determine the" with "if...makes a," add "they shall do so," and replace "will" with "shall."

Staff is proposing to replace “Based on formulation data and the analysis conducted under section 5” with “Using the equation specified in section 6” in subsection 5.4.1, replace “will” with “shall”, and replace a generic reference to “CARB regulations” with a reference to the specific sections of the California Consumer Products Regulations that specify the applicable requirements for CARB-regulated consumer products.

Staff is proposing to add new subsection 5.4.2 that states the following:

- when the product does not meet the applicable stand, the Executive Officer may ask the responsible party to supply product formulation data specified in section 94526 of the California Consumer Products Regulations, and the responsible party shall supply that product formulation data within 25 working days;
- the Executive Officer shall handle confidential information in accordance with Title 17, CCR, sections 91000 to 91022, and
- failure to respond to an Executive Officer request for formulation data is a violation.

Staff is proposing to add new subsection 5.4.3 that states the following: “If the Executive Officer determines, based on testing, information they may receive from the responsible party, and any other applicable evidence, that the product does not comply with the applicable Reactivity Limit, the Executive Officer may take appropriate enforcement action.”

Rationale for Proposed Amendments to Sections 5.4

Modifying the title better describes the applicability of section 5.4, which makes it easier for readers to understand the section and its purpose.

Following the ROC content method development, the phrase “by verifying formulation data” is proposed to be moved from the introduction of section 5.4 to subsection 5.4.2 to express that the ROC content would be validated analytically and not solely through the formulation data. The proposal to replace “will determine the” with “if...makes a” clarifies that the Executive Officer has the option to determine ROC content, and that not every product has an ROC content, so it is not always done, better reflecting what CARB actually does. The proposal to add “they shall do so” clarifies that when CARB does choose to determine the ROC content, CARB will do so using sections 5.2 and 5.3 of Method 310. The proposal to replace “will” with “shall” makes it more clear that this is mandatory, not just a description of what is done.

In subsection 5.4.1, staff is proposing to replace “Based on formulation data and the analysis conducted under section 5” with “Using the equation specified in section 6” to better reflect that following the analytical steps outlined in sections 5.2 and 5.3, ROC content is determined analytically and subsequently used in the equation described in section 6 to determine the PWMIR of the tested product.

According to the California Consumer Products Regulations, categories of consumer products that are regulated by CARB are required to remain below or meet the VOC standards or reactivity limits. Those VOC standards and reactivity limits are specified in sections 94509 and 94522, respectively, of the California Consumer Products Regulations. Staff is proposing to reference those sections in Method 310 to explicitly state that when an Executive Officer determines whether a product meets the applicable VOC emission standards or reactivity limits, the Executive Officer refers to VOC standards and reactivity limits presented in the abovementioned sections. Replacing the generic reference with this specific reference to the specific sections makes it easier for a reader to understand this section and find the outside references.

Subsection 5.4.2 is added to parallel section 3. It clearly states that according to the California Consumers Products Regulations, the Executive Officer may ask a responsible party for formulation data, and the responsible party is required to respond within 25 working days. Further, it provides peace of mind to regulated entities by clarifying that CARB is required to handle the confidential data according to CARB's confidentiality procedures, in the specified regulations. Formulation data will usually be treated as confidential, as allowed by law. This section also makes clear to the regulated entities that failure to submit the requested formulation data within the required time period is a violation, so they understand there are potential consequences of such a failure. Staff is proposing to add this information to Method 310 to remain consistent with the California Consumer Products Regulations.

Staff is proposing to add subsection 5.4.3 to reflect that CARB can determine that a consumer product has violated applicable reactivity limits based on testing, the information provided by the responsible party, and any other applicable evidence. This change brings Method 310 up to date with how CARB actually conducts enforcement, based on all available information.

Purpose for Proposed Amendments to Section 5.5

Staff is proposing to add that if a product's status is not satisfactorily resolved under sections 5.1 - 5.4, the Executive Officer may conduct additional analyses and testing as necessary based on the Executive Officer's scientific judgment to verify formulation data.

Staff is proposing to replace "will request" with "may ask" in subsection 5.5.1.

Staff is proposing to strike subsections 5.5.2 and 5.5.3, and renumber subsection 5.5.4 to 5.5.2.

Rationale for Proposed Amendments to Sections 5.5

Adding that the Executive Officer can perform additional analyses and testing according to their scientific judgment clarifies that the criteria to be used to determine whether further analyses and testing are required is the Executive

Officer's scientific judgment, which reflects what CARB actually does and is generally accepted as a basis for requiring additional information.

Replacing "will request" with "may ask" in subsection 5.5.1 clarifies that the Executive Officer has the option to ask the responsible party for additional information to explain a discrepancy if unable to verify the accuracy of supplied formulation data, but that the Executive Officer does not have to do so.

Staff is proposing to strike subsection 5.5.2 because the content of this section is incorporated into the proposed new subsection 5.4.3, where it more appropriately belongs, so it is no longer needed here. Subsection 5.5.3 is proposed to be struck because the description of establishing a violation is now described in the proposed new subsection 5.4.2, where it more appropriately belongs, so it is no longer needed here.

As a consequence of proposing to delete subsections 5.5.2 and 5.5.3, the existing subsection 5.5.4 would become subsection 5.5.2. This proposed change keeps the subsections in numerical order, making it easier to read and reference them.

Purpose for Proposed Amendments to Section 6

Staff is proposing to insert a new section 6 to specify the equation used to calculate the PWMIR using ROC content for products subject to reactivity-based limits.

Rationale for Proposed Amendments to Section 6

Following the completion of MLD's method development for ROC content determination, staff developed an equation that shall be used to determine the PWMIR using ROC content for products subject to reactivity-based limits in the California Consumer Products Regulations, Article 2, section 94509, and Article 3, section 94521. This equation is placed in a separate section, section 6, to mirror the structure of sections 3 and 4, where section 3 describes how to determine VOC, and section 4 describes which equations are used to calculate VOC. In a parallel fashion, section 5 describes how to determine ROC content, and section 6 describes which equation to use to calculate the PWMIR using ROC content for products subject to reactivity-based limits. Putting each in separate sections makes it easier for regulated entities to read and understand each one of the sections. The equation in section 6 is based on the equations described in the California Consumer Products Regulations, section 94521.

Purpose for Proposed Amendments to Section 7, Method Precision and Accuracy

This section was previously numbered as section 6 and now proposed to be renumbered as section 7. There are no additional changes proposed to section 7.

Rationale for Proposed Amendments to Section 7, Method Precision and Accuracy

The addition of section 6 changed the number of this section to 7. It is kept as a separate section because it covers a separate topic.

Purpose for Proposed Amendments to Section 8

This section was previously numbered as section 7 and is now proposed to be renumbered as section 8. Staff is proposing to revise the title of this section from "Alternate Test Methods" to "Alternative Test Methods."

Staff is also proposing to delete language that is non-substantive and no longer necessary ("in antiperspirant/deodorants, consumer products, or aerosol coating products (or their emissions)"), and to add the following language: "as described in the Consumer Products Regulations, sections 94506, 94515, and 94526, respectively."

Rationale for Proposed Amendments to Section 8

The addition of section 6 changed the number of this section to 8, to keep it in order and keep it separate, since it covers a separate topic.

Staff is proposing to revise the title of section 8 from "Alternate Test Methods" to "Alternative Test Methods" to better reflect its purpose. The word "alternate" was incorrectly used in the previous revision on Method 310 and is now replaced by "alternative."

CARB proposes to replace "in antiperspirant/deodorants, consumer products, or aerosol coating products (or their emissions)" with references to the specific sections in the Consumer Products Regulation because it is more specific, and thus easier for a regulated entity to find the designated requirements and comply.

The proposed addition of the Consumer Products Regulations sections is proposed to clarify that the Executive Officer has the authority to approve the use of alternative test methods, as noted in those specific sections (Consumer Product Regulations sections 94506, 94515, and 94526), so that a reader can go directly to those and reference them easily when reading this section.

Purpose for Proposed Amendments to Appendix A

Staff is proposing to revise the title of section 3 of Appendix A from "Apparatus and Materials" to "Equipment and Supplies."

Staff is also proposing to delete Footnotes 1 and 2.

Staff is also proposing to non-substantially modify the text of section 4 of the Appendix, such as the following:

- place "aerosol" in front of the word "can" in section 4.1.3 of Appendix A;
- replace "is" with "shall be" in section 4.2.4 of Appendix A;

- strike “total grams propellant” from section 4.1.8 and 4.2.10 of Appendix A;
- insert “the” in front of many nouns used to describe the process throughout the process in Appendix A.

Rationale for Proposed Amendments to Appendix A

Staff is proposing to revise the title of Appendix A, section 3 from Apparatus and Materials to Equipment and Supplies because this new title will better reflect its purpose. This new language appears in the Standard Operating Procedures (SOPs) and other MLD related documents, and is reflected here for program consistency.

Staff is proposing to delete Footnotes 1 and 2 because the information contained in these footnotes was already incorporated into Figures 2 and 4, respectively, where it more appropriately goes, so it’s not needed here.

The proposed textual modifications to the procedure section of Appendix A will better explain the steps taken to collect the propellant, and will provide clear references to accompanying figures, making it easier to read and implement.

V. Air Quality

This chapter addresses the potential air quality impacts of the Proposed Amendments. It includes a discussion of the methodology staff used in developing the consumer product emission inventory and the emission inventory's results, such as product categories considered and selected for this regulatory proposal. This chapter also illustrates the VOC reductions that the Proposed Amendments would achieve Statewide and in the South Coast between 2023 and 2035. In this chapter we conclude with a discussion of potential impacts of the Proposed Amendments on the formation of secondary organic aerosols (SOA), which are precursors to fine particulate matter (PM_{2.5}).

A. Emissions Inventory Methods

The 2015 Consumer Products Survey data serves as the technical foundation for the current update to the Consumer Products Emission Inventory. The three-year survey was part of a larger, systematic effort by CARB to improve emission estimates for all major emission sources to support attainment of federal ambient air quality standards and clean, healthful air for all Californians. While the survey was conducted for products sold each year from 2013 to 2015, and data from all three years of the survey played a crucial role in updating the Emission Inventory, the 2015 calendar year data has been utilized for regulatory development purposes.

In 2014, CARB launched its extensive three-year survey for the purpose of gathering more current information on the sales and content of consumer products sold or supplied for use in California, to better understand the air quality implications of consumer products. The survey collected data for the years 2013, 2014, and 2015, and was sent out in September 2014, July 2015 and July 2016, respectively.

The surveys conducted over this period sought information about 491 consumer product categories. Of those 491 categories, 72 had never been surveyed by CARB before. In response to the three surveys, approximately 1,500 companies reported a total of about one million products and 8.45 million product ingredients. By comparison, the most extensive survey previously conducted was in 2003, which gathered information about approximately 250 product categories and, almost 26,000 products from 915 companies.

Fate and Transport Adjustments. CARB staff applied fate and transport adjustments to the emissions of a total of 63 survey categories. Fate and transport adjustments account for the expectation that a portion of certain ingredients in specific categories will go down the drain or get combusted, and therefore do not contribute to the amount of emissions that go into the air. The majority of the fate and transport adjustments were made to emissions of 38 categories of "Household and Institutional Products," 24 categories of "Personal Care Products," and one "Vehicle and Marine Vessel Aftermarket Product" category. More information regarding how these adjustments are applied can be found in the document

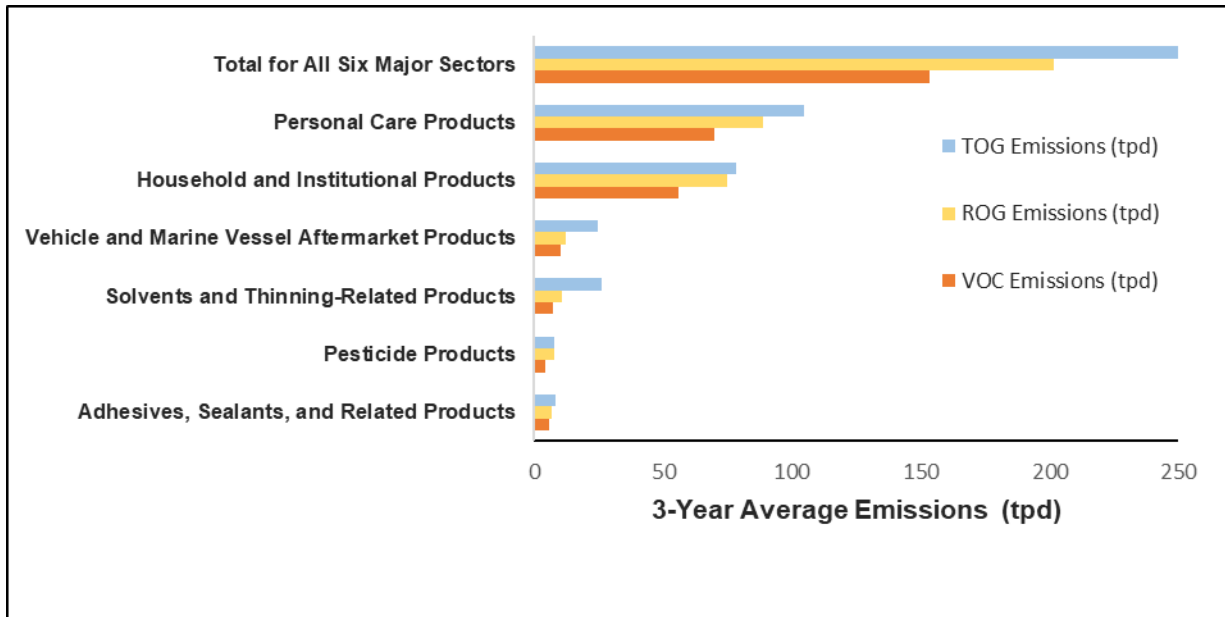
entitled *Survey Category Fate and Transport Adjustments* on the 2015 Consumer Products Survey webpage at <https://www.arb.ca.gov/consprod/survey/survey.htm>.

Market Adjustments. CARB typically applies a market adjustment factor to reported survey sales data product mass to reflect the potential underreporting of product sales in response to a survey. CARB comparison or reported sales data to independent sales data from Nielsen LLC, Mintel Group, and other independent sources indicated for all but one category, CARB's survey captured approximately 90 percent of product sales. This value is consistent with the market coverage identified for previous CARB surveys. Staff did find more significant underreporting for the "Dry Shampoo" category, however, where CARB's survey captured just 75 percent of product mass. As a result of this determination, CARB staff adjusted raw 2015 Consumer Products Survey sales data by dividing reported sales mass for categories other than "Dry Shampoo" by 0.90, and for "Dry Shampoo" by 0.75, to account for survey underreporting.

The 2015 Consumer Products Survey data indicate that consumer product ROG emissions are over 20 percent higher than found in CARB's existing consumer product emission inventory, predominantly due to higher-than-anticipated emissions from the "Personal Care Product" sector. ROG emissions are TOG emissions minus exempt VOC emissions; expressed otherwise, ROG emissions are VOC emissions plus LVP-VOC emissions. Possible explanations for the higher "Personal Care Product" sector emissions in the 2015 Consumer Products Survey data compared to CARB's existing consumer product emission inventory could include faster-than-anticipated growth in sales for the sector, different compliance pathways taken for regulated categories than those assumed in the existing inventory, or underrepresentation of sales in previous CARB survey responses that was not accounted for in calculating the market adjustment factor applied to those survey responses.

As shown in Figure V-1, "Personal Care Products," followed by "Household and Institutional Products," are the two sectors that dominate consumer product VOC, ROG, and TOG emissions. These two sectors represent about 80 percent of the total VOC and ROG emissions, and nearly 70 percent of the total TOG emissions from all surveyed consumer product categories.

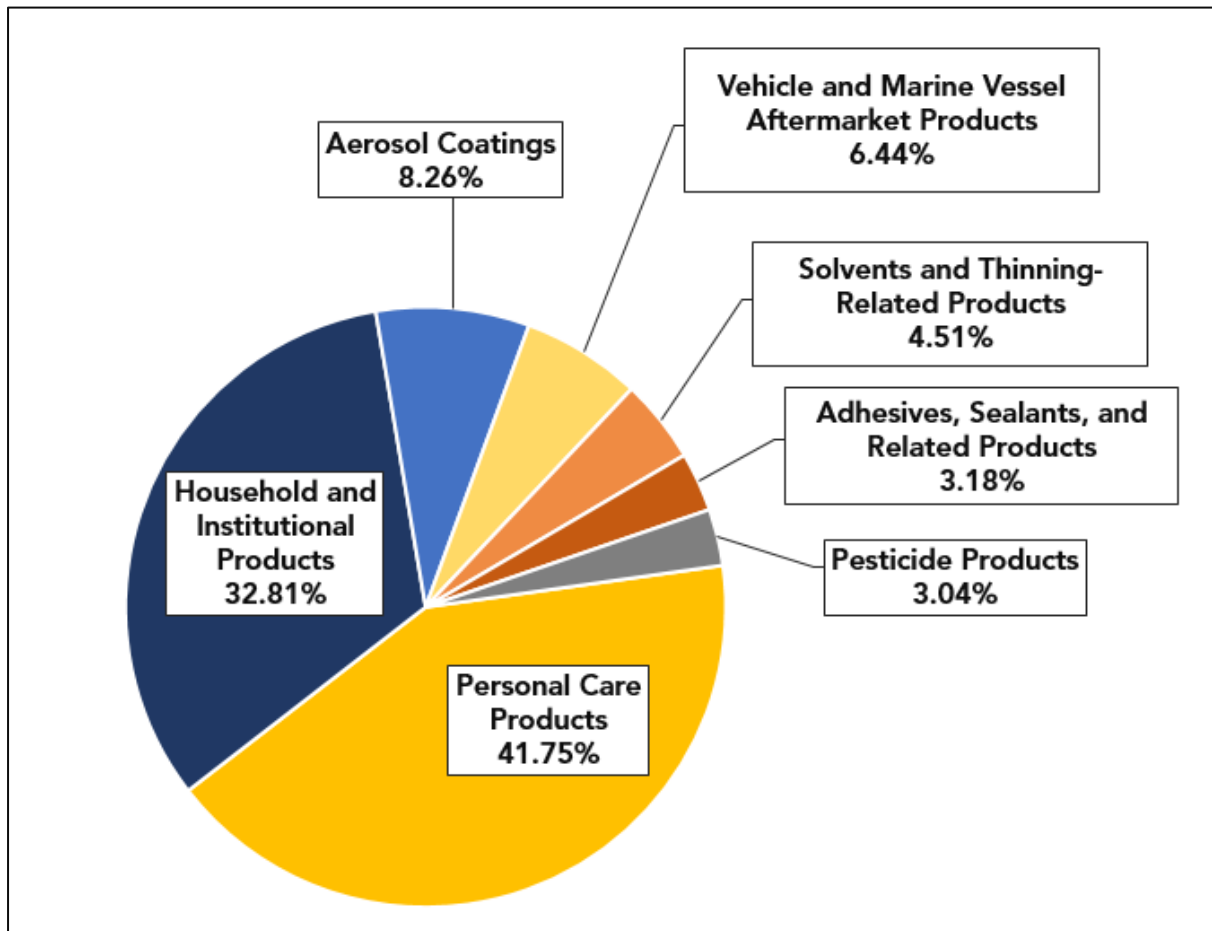
Figure V-1: Survey Three-Year Average Emissions by Major Sector



B. Consumer Products Emission Inventory

Total 2015 consumer product ROG emissions, including from the “Aerosol Coating Product” category, are approximately 260 tons per day. As shown in Figure VII-2, the “Personal Care Product” category is the largest source of ROG emissions from consumer products in the State, and accounts for almost 42 percent of consumer products ROG emissions in California. The second-largest ROG emission source is from “Household and Institutional Products,” at around 33 percent. Results from the 2015 emission inventory update demonstrate the increasing prominence of ROG emissions from the Personal Care Products sector, followed by the Household and Institutional Products sector. The increased ROG emissions from the Personal Care Products Sector represent 17 percent out of the total 21 percent increase for all sectors compared to the adjusted SIP inventory. Approximately 27 percent of the total ROG increase from surveyed sectors compared to the SIP comes from newly-surveyed categories in the “Personal Care Product” sector.

Figure V-2: 2015 Consumer Products Market Sector ROG Emissions



C. Emission Reductions

The Proposed Amendments achieve Statewide VOC reductions of 3.00 tpd in 2023 and 9.80 tpd in 2031. In the South Coast, VOC reductions from the Proposed Amendments total 1.25 tpd in 2023 and 4.03 tpd in 2031. The Proposed Amendments have targeted VOC reductions from the faster-growing “Personal Care Product” sector, with 65 percent of reductions coming from this sector in 2023, and 71 percent of reductions from this sector in 2031. Figures VII-3 and VII-4 illustrate the VOC reductions from Proposed Amendments Statewide and in the South Coast between 2023 and 2035.

Figure V-3: Proposed Amendment VOC Emissions Reductions in California (tpd)

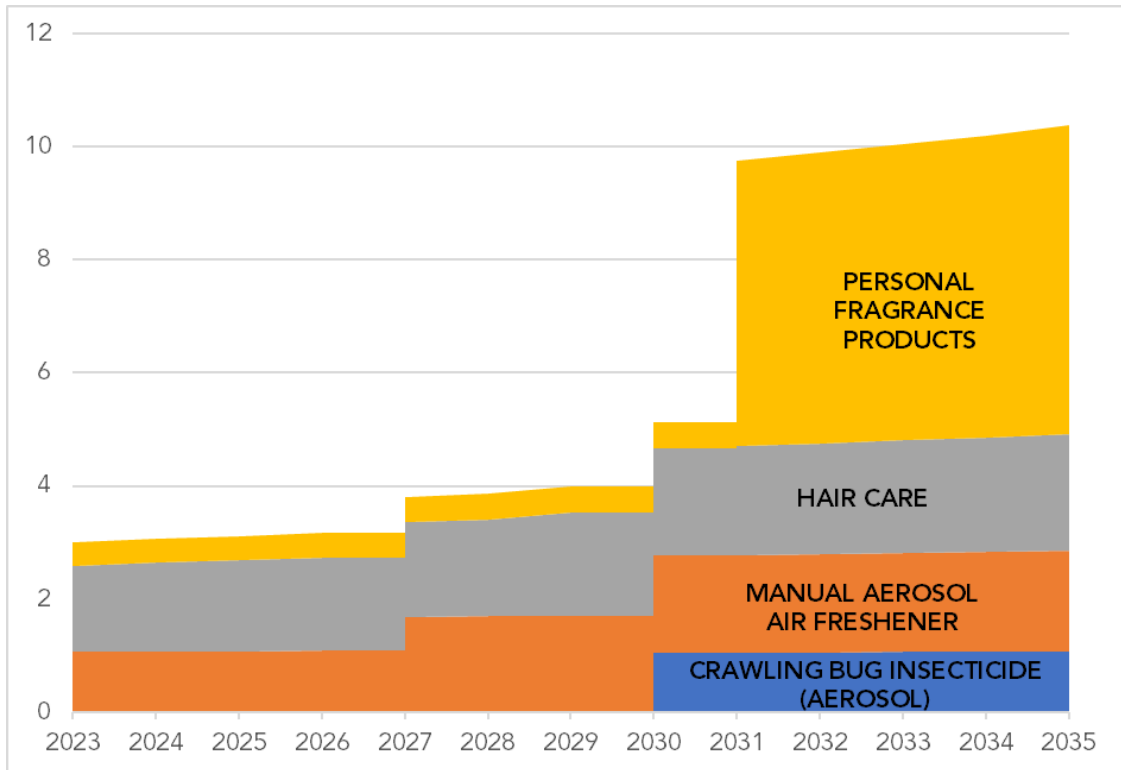
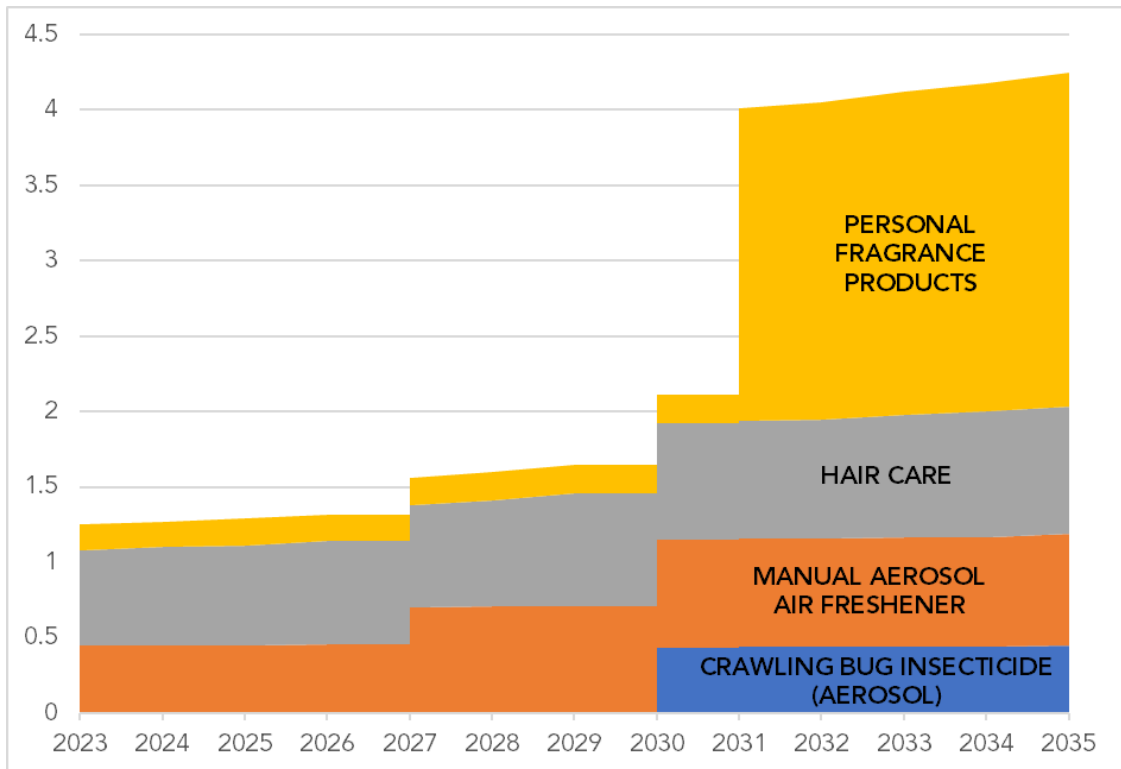


Figure V-4: Proposed Amendment VOC Emissions Reductions in the South Coast Air Basin (tpd)



D. Ozone

The Proposed Amendments are based upon staff's evaluation and prioritization of product categories that could achieve significant, feasible reductions in VOC emissions and ozone forming potential (OFP). Detailed product sales and speciation data collected in the 2015 Consumer Products Survey enabled CARB staff to determine category VOC, ROG, and TOG emissions, and OFP for each survey category. In initiating this rulemaking, CARB staff ranked the top categories of products for both VOC emissions and OFP, and began the process of assessing which consumer product categories could provide VOC reductions and OFP reductions. Staff considered for further rulemaking the top consumer products categories ranked for each VOC and OFP emissions, resulting in the identification of 47 total categories for possible regulatory action. The top 20 VOC emission categories are identified in Table V-1 below.

Table V-1: Characteristics of the Top Twenty VOC Consumer Product Categories, 2015¹

Category Name	VOC (tpd)	VOC Standard or Sales Weighted Average VOC Content (%)	Ozone Forming Potential (tpd)	Sales Weighted Average PWMIR (grams ozone per grams product)
Anti-microbial Dry Hand Wash (Hand Sanitizer)	11.9	63.7	18.2	0.97
Personal Fragrance Product with 20% or less fragrance ²	11.1	71.4	13.1	1.24
Hair Finishing Spray ²	10.4	53.1	15.1	0.77
Rubbing Alcohol	9.2	68.2	5.8	0.43
Disinfectant (aerosol)	6.3	64.0	9.7	0.99
General Purpose Cleaner (nonaerosol)	5.4	0.5	25.9	0.06
Sunscreen (hair or body) (aerosol)	3.5	62.9	5.4	0.97
Dual Purpose Air Freshener/Disinfectant (aerosol)	2.7	61.9	4.1	0.95
Laundry Detergent	2.7	1.0	23.3	0.02
Air Freshener, Single Phase Aerosol ²	2.0	9.3	3.6	0.17
Charcoal Lighter Material	2.0	54.1	1.4	0.04
Multi-purpose Lubricant (including solid and semisolid products)	2.0	22.7	0.97	0.36
Air Freshener, Double Phase Aerosol ²	1.8	19.1	1.9	0.20
Deodorant Body Spray ²	1.8	71.8	2.7	1.10
Crawling Bug Insecticide (aerosol) ²	1.7	12.3	3.2	0.23
Denatured Alcohol	1.7	97.4	1.8	1.04
Aerosol Cooking Spray	1.6	17.5	1.4	0.15
Antiperspirant	1.5	6.7	3.4	0.15
Floor Wax Stripper	1.4	15.2	8.2	0.88
Mouthwash/Rinse	1.4	11.9	3.2	0.03

1 - Unadjusted VOC emissions as reported in "2015 Consumer and Commercial Products Survey - Final Data Summaries" (CARB, 2019)

2 - Products In this category would be subject to lower VOC standards pursuant to the Proposed Amendments.

CARB staff evaluated multiple variables related to commercial and technical feasibility, potential reformulation cost, enforceability, and other factors to identify which product categories would be most promising for potential rulemaking. These factors included category total emissions and OFP; category emission trends; market share (both mass-based and number of products) of low-VOC products; category average VOC content; number of total unique product formulations and manufacturers in a category; whether product reformulation flexibility may be restricted due to other regulatory requirements or required product efficacy (particularly for health benefit products); potential GHG emission impacts; potential for increased use of a harmful ingredients; and ingredient volatility and fate and transport considerations.

CARB staff also carefully evaluated anticipated reformulation pathways for promising categories, including potential for utilization of more reactive LVP-VOCs in complying (lower VOC) products. Categories with potential for this reformulation dynamic, or where lower VOC standards could result in negligible OFP reductions, were excluded from consideration for lower VOC standards. This evaluation process, based upon staff's evaluation of 2015 Consumer Products Survey data and discussions with public stakeholders, helps ensure that the Proposed Amendments will reduce ozone forming potential and help California meet state and federal health-based ozone standards.

E. Particulate Matter

Ambient particulate matter (PM) is a mix of heterogeneous components that varies greatly by season and by region. PM particles vary in size and composition, with each having different health impacts. A large fraction of fine PM mass, which is composed of PM particles of 2.5 microns ($PM_{2.5}$), is composed of organic compounds, which are either directly emitted (primary organic aerosol, or POA) into the atmosphere, or are formed through oxidation reactions involving gas-phase precursors (secondary organic aerosol, or SOA). SOA precursors are emitted by many natural and anthropogenic sources, such as motor vehicles, petrochemical industries, biomass burning, wildfires, consumer products, and food cooking. Significant advances have been made in the theoretical and experimental studies of the formation of SOA in recent years.

1. Secondary Organic Aerosol Formation

SOAs are a major component of fine particle pollution, which has been found to cause lung and heart problems, and other health effects. As a result, U.S. EPA has established levels for these particles in the atmosphere to protect public health. As emissions from more dominant mobile sources continue to decrease, it becomes more important to focus on less prominent SOA precursor sources to achieve future SOA reduction and attainment of the $PM_{2.5}$ standards. It is important to understand the atmospheric evolution of the physical and chemical properties of organic compounds emitted from different sources, and many emission sources still remain poorly characterized.

In general, chemicals that react fast enough in the atmosphere will generate sufficient amounts of low volatility products to form aerosols. In general terms, the

potential to form SOA among classes of VOCs commonly-used in consumer products could be described by the following order, with the lower molecular weight alkanes and ketones being least likely:

Least Likely: Lower molecular weight alkanes & ketones (7 carbons or less). Higher molecular weight aromatics (polysubstituted benzenes)

More Likely: Lower molecular weight aromatics (C7 & C8 compounds)

LVP-VOCs, which are exempt from the calculation of a product's VOCs for the purpose of determining whether a product has met its VOC standard due to their low evaporation rates, have been confirmed to play a role in ambient SOA and ozone formation. Li et al. categorized the effect of select LVP-VOCs on ozone formation and SOA formation (Li et al., 2018). SOA formation from the individual compounds studied varied widely, with nearly half of the LVP-VOCs explored not forming measurable SOA, while others produce appreciable SOA. Benzyl alcohol, one of the ingredients used in consumer products, was found to have a large SOA formation potential (Li et al., 2018; Charan et al., 2020).

Chemical structure was found to be a significant driver of SOA formation (Li et al., 2018), and further studies are required to determine the functional groups of other compound types, to improve forecasting of the ability of other types of VOCs and LVP-VOCs to form SOA. Additional work is under way to evaluate and improve SOA mechanisms used for scientific and regulatory modeling applications. CARB is currently funding a research project designed to characterize SOA precursors released from a variety of consumer products. This work includes the review of existing large environmental chamber databases from the University of California, Riverside, and California Institute of Technology, and performance of matched experiments in the two chambers, with a goal of improving existing SOA mechanisms.

Results of recent studies indicate a mechanistic linkage between ozone formation and SOA formation of VOCs and LVPs. Because of this relationship, the Proposed Amendments may also affect the SOA formation potential of consumer products. As stated above, alkanes containing less than seven carbons (C7) are not expected to make SOA products, and alkanes larger than C15, as well as other large hydrocarbon molecules were also not qualified as POA or SOA precursors. Recent studies (Tkacik et al., 2012; Cappa et al., 2013; Zhao et al., 2014; Akherati et al., 2019) show that alkanes with hydrocarbon chain lengths of C10 to C30 could contribute significantly to atmospheric SOA in carbonaceous particles. These C12-C25+ alkane molecules may have an expected role in SOA formation given their ubiquity in hydrocarbon fuels, but observations in urban areas are consistent with the more oft-studied aromatic SOAs. Highly substituted aromatic compounds make up an important group of aromatic compounds, as they tend to have high SOA yields (Li et al., 2016; Zaytsev et al., 2019).

2. Impact of Proposed Amendments

The analysis of the potential impact on PM formation of the proposed VOC standards assumes that to meet the proposed limits will require replacing 9.80 tons per day of VOC ingredients with 9.80 tons per day of non-VOCs or exempt VOCs.

In order to meet the proposed VOC standards, manufacturers generally have the following reformulation options: use of exempt VOCs; use of LVP-VOC solvents; use of water; increasing "solids" content; or use of non-VOC propellants. It is difficult to predict which reformulation pathway or combination of reformulation pathways manufacturers will take. Substitution of water for VOCs such as ethanol in personal fragrance products and hair finishing spray products would likely result in a small reduction in SOA formation. One of the suggested reformulation pathways for Manual Aerosol Air Freshener products is substitution of typical hydrocarbon (VOC) propellants with compressed gases, which would also likely result in a reduction in SOA formation. Similarly, a small reduction in SOA formation would be expected from increasing the "solids" content of the reformulated products.

Due to the many potential manufacturer reformulation pathways, as well as the evolving science behind SOA formation, staff is unable to fully determine the impact of the proposed VOC standards on SOA formation, and thus the impact on PM emissions. However, based upon our evaluation of 2015 Consumer Products Survey data, including product formulations that already comply with the proposed standards, as well as staff's evaluation of the most likely reformulation pathways, staff believes a slight decrease in SOA formation is likely, and that an increase in SOA formation is unlikely. CARB staff will continue to monitor implementation of the regulation, and reassess the impacts as the science evolves and more data becomes available.

VI. Benefits of the Proposed Amendments

The primary purpose of the Proposed Amendments is to lower the impacts that VOC emissions from the use of consumer products have on the formation of ground-level ozone to attain federal ambient air quality standards. By helping to expedite attainment of State and federal health-based air quality standards, the Proposed Amendments provide health and wellness benefits for California residents. This section describes the deleterious effects of ground-level ozone, which proposed VOC reductions would help to address, and identifies other benefits of the Proposed Amendments.

A. Ozone Adversely Impacts Health

Ground-level ozone is a colorless gas and the chief component of urban smog. Ozone formation in the lower atmosphere results from a series of chemical reactions between ROG and nitrogen oxides in the presence of sunlight. The rate of ozone generation is related closely to both the amount and reactivity of ROG emissions, as well as to the amount of NO_x emissions available in the atmosphere (Seinfeld and Pandis, 1998).

Ozone is one of the State's more persistent air quality problems. Ninety-three percent of Californians, or almost 37 million people, live in the State's 18 areas designated as being in nonattainment with the federal eight-hour ozone standard. Levels of ozone vary between nonattainment areas. California has 10 of the nation's 11 ozone nonattainment areas classified as "moderate" or higher for the 0.070 parts per million (ppm) national ambient air quality standard. Nationwide, California occupies the top four spots with the highest levels of ozone (2019 design values), and has eight out of the top ten areas with the highest ozone levels in the nation. Levels of ozone also vary within each nonattainment area. As of 2019, 53 percent of people living in California, and 68 percent of people living in the South Coast, reside in places that don't meet the national ozone standard. It has been estimated that each year, about 630 fewer people would die prematurely from exposure to ozone if California was to attain the State ambient air quality standard for ozone (Ostro et al., 2006). Additionally, it was estimated that attainment of ozone standards would result in 89 avoided premature deaths per year in the South Coast (SCAQMD, 2017).

Ozone is a strong irritant, and it has been well documented that ozone adversely affects the respiratory function of humans and animals. Ozone exposure can cause constriction of the muscle cells in the airways, resulting in symptoms such as coughing, chest tightness, shortness of breath, and increased asthma symptoms (U.S. EPA, 2020). Research has shown that, when inhaled, ozone can cause respiratory problems, aggravate asthma, impair the immune system, and increase the risk of premature death. In some animal studies, structural changes were seen with long-term exposure to ozone concentrations considerably above the ambient standard (Fanucchi et al., 2006; Plopper et al., 2007); some of these changes persisted even after resuming exposure to clean air (Plopper et al., 2007).

Human health studies have also shown that exposure to levels of ozone above the current ambient air quality standard can lead to lung inflammation and injury, and reduced lung function (Alexis et al., 2010; Frampton et al., 2017; Arjomandi et al., 2018). Even short-term exposures to ozone levels at the current standard of 70 ppb can negatively impact lung function (Schelegle et al., 2009), and levels below the standard may likewise still reduce lung function and cause inflammation (Kim et al., 2011). Prior evidence suggests that ozone may be linked to the onset of new asthma in very active children (McConnell et al., 2002). Ozone has also been associated with premature death (Turner et al., 2016; Wang et al., 2019). Ozone in sufficient doses can also increase the permeability of lung cells, rendering them more susceptible to toxins and microorganisms. Other health outcomes associated with ozone exposure include hospitalizations (Lin et al., 2008; Moore et al., 2008) and emergency department visits (Malig et al., 2016; Gharibi et al., 2019), primarily for asthma and other respiratory conditions. Of course, the greatest risk from ozone exposure is to those who are active outdoors during smoggy periods, such as children, athletes, and outdoor workers. For instance, a study of children in Southern California showed that ozone exposures led to an increased risk of asthma hospitalizations (Moore et al., 2008). The health effects of ozone on children can also lead to increased school absences, as reported by another study done in 12 communities in Southern California (Gilliland et al., 2001).

Not only does ozone adversely affect human and animal health, but it also affects vegetation, resulting in reduced yield and quality in agricultural crops, disfiguration or unsatisfactory growth in ornamental vegetation, and damage to native plants. For example, a recent California study demonstrated that yields of perennial crops like strawberries and grapes were negatively affected by ozone (Hong et al., 2020). During the summer, ozone levels are often highest in Southern California, including the high desert, the San Joaquin Valley, and the Sacramento metropolitan region, all of which are adjacent to the principal production areas in the State's multibillion-dollar agricultural industry (USDA, 2007). CARB studies indicate that ozone pollution's damage to crops is estimated to cost agriculture hundreds of millions of dollars annually. The Proposed Amendments will reduce ozone-forming emissions, helping the State's nonattainment areas to reach attainment with the federal ozone standard, thereby also helping to reduce the negative public health impacts of ozone.

B. Indoor Air Quality Improvement

To the extent that the proposed sunset of the Two Percent Fragrance Exemption for most consumer product categories would reduce consumer product fragrance content, the Proposed Amendments could also protect public health by improving indoor air quality. In a national survey, over 34 percent of respondents in the United States reported health problems, such as migraine headaches and respiratory difficulties, in response to exposure to fragranced products (Steinemann, 2016). Many of the VOCs in fragrances result in acute or chronic health effects. Numerous studies have identified fragrances emitted from consumer products as present in household dust, which results from the adsorption of gaseous fragrance chemicals onto particulate matter suspended in indoor air. Besides inhaling indoor air polluted by fragrance chemicals, people are secondarily

exposed to chemicals in fragrances through ingestion of contaminated house dust. This is a particular concern for infants and small children, who are especially vulnerable to exposure to chemicals in fragrances (Mercier et. al, 2011).

Exposure to fragrance chemicals in many consumer products has been linked to multiple chemical sensitivity (MCS). MCS is a medical condition that can result in health problems such as migraines, asthma, breathing difficulties, nausea and other acute or chronic symptoms. The primary cause of MCS is exposure to common chemicals emitted from consumer products, including fragranced household and personal care products. In 1995, a survey of 4,046 Californians, using questions developed by the California Department of Health Services (CDHS), found over 15 percent of respondents reported having sensitivities to chemicals in consumer products, including fragrances. A more recent survey of 1,137 Americans, conducted in 2016, found that over 25 percent of respondents reported chemical sensitivity, with fragrances being the most common trigger (Steinemann, 2018). Inhalation of fragrances emitted from consumer products was reported as causing health problems in 81 percent of respondents with self-identified chemical sensitivities. These results indicate that indoor air quality can be severely impacted by volatile fragrances emitted from a wide-range of consumer products, including air fresheners or deodorizers, scented laundry products, cleaning agents, perfumes and personal care products. Because the chemical composition of fragrances used in products is not typically reported by manufacturers, people with chemical sensitivities to fragranced products are often unable to protect themselves from inhalation exposure. The proposed sunset of the Two Percent Fragrance Exemption could have the potential co-benefit of helping to address these public health challenges.

C. Other Benefits of the Regulatory Proposals

As described in Chapters III and IV, several elements of the Proposed Amendments will provide a variety of other benefits, such as reducing toxic air contaminant emissions, encouraging innovation, and enhancing program effectiveness. These are summarized below.

- Staff's proposal to eliminate the Two Percent Fragrance Exemption for most regulated consumer product categories would also ensure up to three tpd VOC emissions do not occur in future years; encourage greater transparency in fragrance constituents that could lead to lower VOC content in fragrance; simplifying compliance determinations; reducing the need to determine if the "sole purpose" of an ingredient falls within the regulatory definition of "fragrance"; and discouraging excess use of a constituent with potential health impacts.
- Proposed Amendments to curtail "Energized Electrical Cleaner" sales to Automotive Maintenance and Repair Facilities could reduce TAC emissions and the associated health risk, particularly among those repairing or maintaining automobiles, as use in these applications is not necessary and would decline.
- Proposed IPE amendments related to compressed gas propellants are intended to encourage manufacturer formulation of innovative products that utilize this

zero-emission propellant, helping to reduce VOC emissions and helping to achieve ozone attainment in the State and the associated health benefits. Development of "Hair Finishing Spray," "Dry Shampoo," "Personal Fragrance Product" that utilize compressed gas could accelerate a shift away from HFC-152a propellant, which is a greenhouse gas, in the years ahead, helping the State achieve its climate change goals.

- Proposed MIR values for new, less reactive compounds will provide additional options for aerosol coating and multipurpose lubricant product manufacturers to develop less reactive products, and, if widely utilized, could enable more restrictive standards for these categories in future rulemakings, helping to achieve ozone attainment in the State and the associated health benefits.

VII. Environmental Analysis

A. Introduction

This chapter provides the basis for CARB's determination that no subsequent or supplemental environmental analysis is required for the Proposed Amendments. A brief explanation of this determination is provided in section D below. CARB's regulatory program, which involves the adoption, approval, amendment, or repeal of standards, rules, regulations, or plans for the protection and enhancement of the State's ambient air quality, has been certified by the California Secretary for Natural Resources under Public Resources Code section 21080.5 of the California Environmental Quality Act (CEQA) (14 CCR 15251(d)). Public agencies with certified regulatory programs are exempt from certain CEQA requirements, including but not limited to, preparing environmental impact reports, negative declarations, and initial studies. CARB, as a lead agency, prepares a substitute environmental document (referred to as an "Environmental Analysis," or "EA") as part of the Staff Report to comply with CEQA (17 CCR 6000060005). This EA serves as a substitute document equivalent to an addendum to the prior EA, entitled *Final Environmental Analysis for the Revised Proposed 2016 State Strategy for the State Implementation Plan* (CARB, 2017b), or Final EA, to explain CARB's determination that no additional environmental analysis is required for the proposed Consumer Products Regulation.

B. Prior Environmental Analysis

In March 2017, the Board adopted the 2016 State Strategy for the State Implementation Plan (2016 State SIP Strategy). The State Implementation Plan (SIP) is designed to reduce emissions of ozone-forming pollutants and PM_{2.5}, and describes the programmatic and regulatory mechanisms of the federal Clean Air Act requirements to meet federal air quality standards. CARB's 2016 State SIP Strategy describes twenty-seven specific measures and CARB's commitment to achieve the mobile source and consumer products emission reductions needed to meet federal air quality standards for the following 15 years. The measures included in the 2016 State SIP Strategy would:

- Establish more stringent engine performance standards for cleaner combustion technologies;
- Ensure that emissions control systems remain durable over the lifetime of vehicles;
- Increase the penetration of near-zero and zero-emission vehicle technology across a range of applications;
- Expand the requirements to achieve cleaner Low-Emission Diesel fuels;
- Conduct pilot studies to demonstrate new technologies;
- Incentivize the turnover of equipment and fleets to the cleanest technologies;
- Increase systems efficiencies; and
- Reduce emissions from consumer products.

When the 2016 State SIP Strategy was proposed for the Board's consideration in March 2017, it included as an appendix an EA prepared under CARB's certified regulatory program, referred to here as the Final EA (as mentioned above in Section A). The Final EA provided a programmatic analysis of the potentially significant adverse and beneficial environmental impacts resulting from implementation of the twenty-seven measures in the 2016 State SIP Strategy, and their associated reasonably foreseeable compliance responses.

The Final EA was based on the reasonably foreseeable compliance responses of the regulated entities that would be impacted by the aforementioned SIP measures. The Final EA concluded that implementation of the SIP measures could result in short-term and long-term beneficial impacts to air quality, energy demand, and greenhouse gases. The proposed measures would also result in less-than-significant impacts to: energy demand, hazards and hazardous materials, land use and planning, mineral resources, population and housing, public services, and recreational services. The twenty-seven proposed measures, when taken together, could lead to potentially significant and unavoidable adverse impacts to aesthetics, agriculture and forest resources, air quality, biological resources, cultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, noise, transportation/traffic, and utilities and service systems.

The potentially significant and unavoidable adverse impacts identified in the Final EA are primarily related to short-term, construction-related activities. While many of the identified potentially significant adverse impacts could be reduced to a less-than-significant level by mitigation that can and should be implemented by local lead agencies, authority to do so is beyond the purview of CARB. The authority to determine project-level impacts and require project-level mitigation lies with land use and/or permitting agencies for individual projects, causing inherent uncertainty in the degree of mitigation that may ultimately be implemented to reduce potentially significant impacts. Consequently, the Final EA took the conservative approach in its post-mitigation significance conclusion and disclosures of potentially significant and unavoidable adverse impacts for CEQA compliance purposes.

The Proposed Amendments, which implement the "Consumer Products Program" measure, would not constitute a substantial change or new information resulting in any significant effects, or a substantial increase in the severity of previously-identified significant effects.

The goal of the "Consumer Products Program" measure, as outlined in the 2016 State SIP Strategy and accompanying Final EA, is to help attain federal ambient air quality standards and to offset projected growth in ROG emissions from consumer products in light of California population growth. Based on staff evaluation of 2013-2015 reported consumer product data, the "Consumer Products Program" measure would identify strategies to maintain emission reductions achieved from the consumer products sector. This would involve adopting new ROG limits for categories that are currently unregulated, and lowering ROG limits for categories that are currently regulated. Staff would work with stakeholders to explore methods that would encourage the development, distribution, and sale of cleaner,

very low, or zero-emitting products.

The Final EA determined that reasonably foreseeable compliance responses under this measure would include continuing CARB's commitment to reducing ROG emissions from consumer products. Staff would continue to evaluate any and all opportunities for emissions reductions by using the sales and product formulations from comprehensive data reported by industry, trade journals, patents, and other technical information to propose mass-based ROG limits. The Final EA also concluded that no changes to the physical environment are anticipated that could result in adverse environmental effects from compliance responses associated with consumer products, as the proposed action would merely involve limiting ROG emissions from consumer products and would not require new manufacturing facilities. The Final EA determined that new consumer products regulations may change the types of chemicals currently used in consumer products, and that an evaluation would occur on a case-by-case basis, as data from industry must be reported and reviewed first to determine which categories may be subject to ROG reduction measures.

Taking into account all components of the SIP across all categories, the Final EA concluded that the potential adverse environmental impacts of the SIP were outweighed by the substantial air quality benefits that would result from its adoption and implementation. At the March 23, 2017, hearing, the Board adopted Resolution 17-7, certifying the Final EA, approving the written responses to comments on the Final EA, and adopting the findings and statement of overriding considerations. A Notice of Decision was filed with the Office of the Secretary of the Natural Resources Agency for public inspection.

C. Proposed Amendments

The Proposed Amendments are discussed in detail in Chapter III of this Staff Report. The Proposed Amendments, consistent with other Consumer Products Regulations amendments adopted over the past 30 years, focus on reductions in VOCs, which are the most volatile portion of ROG. VOCs are more likely than other ROG constituents to contribute to ozone formation and other atmospheric processes due to its higher propensity to evaporate. The 2016 State SIP Strategy commits CARB to reducing consumer product VOC emissions by 1-2 tons per day (tpd) by 2023 and 4-5 tpd by 2031 in the South Coast, and by 8-10 tpd statewide by 2031. CARB is proposing new and lower VOC standards for the following categories: Manual Aerosol Air Freshener, Hair Finishing Spray, Hair Shine, Temporary Hair Color, Dry Shampoo, Personal Fragrance (\leq 10% Fragrance), and Aerosol Crawling Bug Insecticide. The proposed VOC standards are shown in Table VII-1.

**Table VII-1
Proposed VOC Limits**

Category	Phase 1: 2023	Phase 2: 2027-31*
	Proposed VOC Standard	Proposed VOC Standard
Manual Aerosol Air Freshener	10%	5%
Hair Finishing Spray	50%	-
Dry Shampoo	55%	50%
Hair Shine	-	50%
Temporary Hair Color	-	50%
Personal Fragrance Product	70%**	50%***
Crawling Bug Insecticide (aerosol)	-	8%

*Proposed Phase 2 standards would be effective between 2027 and 2031, depending upon the category.

** Applies to "Personal Fragrance Product" with less than or equal to seven percent fragrance content.

*** Applies to "Personal Fragrance Product" with less than or equal to 10 percent fragrance content.

The Proposed Amendments also include several other measures to improve program transparency, enforceability, and effectiveness, such as:

- Eliminating the fragrance exemption for up to two percent of fragrance ingredients by weight (Two Percent Fragrance Exemption) for most consumer products categories;
- Prohibiting the use of chlorinated TACs methylene chloride, perchloroethylene, and trichloroethylene in the consumer product categories identified in Table VII-1;
- Prohibiting the use of PCBTF in consumer product categories identified in Table VII-1;
- Redefining "Energized Electrical Cleaner" to exclude products sold to establishments that perform automotive maintenance and repair, from the "Energized Electrical Cleaner" category;
- Creating a new special purpose aerosol adhesive category definition and applicable VOC standard for "Plastic Pipe Adhesive;"
- Creating a narrow exclusion from the definition of "Multi-purpose Solvent" for products used to maintain electric equipment owned by public utilities;
- Updating the ACP and IPE eligibility criteria, including a proposal to encourage the use of compressed gas propellant as an alternative to HFC-152a propellant in certain consumer product categories;
- Updates to the Tables of MIR Values; and
- Updates to Test Method 310.

The Proposed Amendments are necessary to help meet federal air quality standards and protect the health of California residents. Consumer product emissions constituted about 18 percent of California's ROG inventory from all anthropogenic sources as of 2015. ROG emissions from consumer products account for nearly one-

third of total non-mobile ROG emissions statewide. Without intervention, emissions resulting from the use of consumer products will continue to grow as California's population and associated consumer product usage increases. The Proposed Amendments are intended to mitigate these emission increases through a combination of lower VOC standards and measures to improve regulatory enforcement. The first phase of the Proposed Amendments will reduce VOC emissions by 1.25 tpd in the South Coast, with statewide VOC emission reductions of about three tpd by January 1, 2023. The second phase of the Proposed Amendments are estimated to reduce VOC emissions in South Coast by 4.03 tpd, with statewide VOC reductions of about 9.80 tpd by January 1, 2031.

Some stakeholders have preliminarily indicated that their reformulation pathway to comply with the proposed "Dry Shampoo," "Personal Fragrance Product," and "Hair Finishing Spray" VOC standards will result in an increased use of HFC-152a. HFC-152a is not considered a VOC for the purpose of determining compliance with Consumer Product Regulation VOC content limits due to its very low ozone-forming potential. However, HFC-152a is also a GHG, with a GWP of 124. CARB staff estimates that a potential increase in the use of HFC-152a as a compliance pathway could potentially result in a GHG emissions increase compared to the existing consumer products formulations. However, these GHG emissions would only amount to a minor decrease in the overall substantial GHG benefits provided by the overall project (i.e., the 2016 State SIP Strategy). Table VII-2 outlines a year-by-year comparison from 2023 through 2050 of the projected potential loss of GHG benefits from the increased use of HFC-152a compared to the modeled GHG emission reductions from the 2016 State SIP Strategy. Because consumer product reformulations tend to happen on the national level and not just for products sold in California, Table VII-2 provides information regarding this measure's potential loss of GHG benefits based on both California-only sales and national sales (the national sales include California). The 2016 State SIP Strategy only modeled the GHG reductions for California. Therefore, that is also reflected in Table VII-2. CARB staff calculated these figures from 2023 through 2050, because 2023 is the first year of physical changes to consumer products formulations under the Proposed Amendments, and 2050 represents a reasonable expected life for the Proposed Amendments, given that CARB tends to amend its Consumer Products Regulation on a regular basis. Thus, assuming a 28-year project life is a highly conservative estimate. Furthermore, it conservatively assumes no limitations on HFC-152a use (which could be added through future amendments; see subsection VII(D)(2) below).

**Table VII-2
Comparison of GHG Increases from the Proposed Amendments to the GHG
Reductions from the 2016 State SIP Strategy
(Measured in Million Metric Tons Carbon Dioxide Equivalent per Year
(MMT_{CO2E}/year))**

Year	2023	2024	2025	2026	2027	2028	2029	2030	2031
Projected Increases (California)	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.04
Projected Increases (Nationally)	0.27	0.28	0.29	0.29	0.30	0.30	0.31	0.31	0.32
2016 State SIP Strategy Projected Reductions	1.2	1.8	2.4	3.0	4.3	6.0	8.4	11.1	20.0

Year	2032	2033	2034	2035	2036	2037	2038	2039	2040
Projected Increases (California)	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.05
Projected Increases (Nationally)	0.33	0.33	0.34	0.34	0.35	0.36	0.36	0.37	0.37
2016 State SIP Strategy Projected Reductions	22.6	25.1	27.8	30.2	32.7	34.6	36.5	38	39.4

Year	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
Projected Increases (California)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Projected Increases (Nationally)	0.38	0.38	0.39	0.39	0.40	0.40	0.41	0.42	0.42	0.43
2016 State SIP Strategy Projected Reductions	40.9	42.1	43.3	44.3	45.2	46	46.7	47.4	48.1	48.8

As outlined in Table VII-2, for every year modeled, the projected GHG emission reductions from the 2016 State SIP Strategy are considerably higher than the projected loss in GHG benefits from the Proposed Amendments for both California

and nationally. Therefore, staff concludes no changes to the significance determinations evaluated in the Final EA would result from these Proposed Amendments, since the 2016 State SIP Strategy measures would continue to confer substantial GHG benefits, collectively and on a yearly basis.

D. Analysis

1. Legal Standards

When considering a subsequent action arising from a program for which a substitute document equivalent to an EIR or negative declaration had previously been prepared, CARB looks to the CEQA Guidelines for guidance on the requirements for subsequent or supplemental environmental review.

CEQA Guidelines section 15168 states, that, when a Program EIR has been prepared for a project:

(c) ...Later activities in the program must be examined in light of the program EIR to determine whether an additional environmental document must be prepared.

(1) If a later activity would have effects that were not examined in the program EIR, a new initial study would need to be prepared leading to either an EIR or a negative declaration. That later analysis may tier from the program EIR as provided in Section 15152.

(2) If the agency finds that pursuant to Section 15162, no subsequent EIR would be required, the agency can approve the activity as being within the scope of the project covered by the program EIR, and no new environmental document would be required.

(CEQA Guidelines § 15168(c).)

CEQA Guidelines section 15162, in turn, states:

(a) When an EIR has been certified or a negative declaration adopted for a project, no subsequent EIR shall be prepared for that project unless the lead agency determines, on the basis of substantial evidence in the light of the whole record, one or more of the following:...

(2) Substantial changes are proposed in the project which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;

(3) Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or

- (4) *New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the negative declaration was adopted, shows any of the following:*
- (A) *The project will have one or more significant effects not discussed in the previous EIR or negative declaration;*
 - (B) *Significant effects previously examined will be substantially more severe than shown in the previous EIR;*
 - (C) *Mitigation measures or alternatives previously found not to be feasible would in fact be feasible and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or*
 - (D) *Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.*

As described above, if an agency finds that pursuant to Section 15162, no subsequent EIR would be required, the agency can approve the activity as being within the scope of the project covered by the programmatic environmental analysis. In this case, CARB has determined that the Proposed Amendments are within the scope of the 2016 State SIP Strategy's Final EA. As described above, the Final EA expressly included the Proposed Amendments as one of its measures, and it considered the potential impacts of the Proposed Amendments.

2. Basis for Determination

As noted above, CARB has determined that the Proposed Amendments are within the scope of the SIP Strategy Final EA. The Final EA expressly included the Proposed Amendments as one of its measures, and it considered the potential impacts of the Proposed Amendments. CARB has also determined that the Proposed Amendments do not involve any changes that result in any new significant adverse environmental impacts or a substantial increase in the severity of the significant adverse impacts previously disclosed in the Final EA. Further, there are no changes in circumstances or new information that would otherwise warrant any subsequent or supplemental environmental review. The Final EA adequately addresses the implementation of the Consumer Products Regulation as modified by the Proposed Amendments, and no additional environmental analysis is required.

Applying the factors set forth in CEQA Guidelines section 15162, CARB's determination that none of the conditions requiring further environmental

review are triggered by the Proposed Amendments is based on the following analysis.

- (2) *There are no substantial changes to the Consumer Products Regulation measure previously analyzed in the Environmental Analysis which require major revisions to the Environmental Analysis involving new significant environmental effects or a substantial increase in the severity of previously identified effects.*

The Proposed Amendments establish the lowest technically feasible VOC standards, and include several other measures to improve program transparency, enforceability, and effectiveness, falling within the scope of the 2016 State SIP Strategy. The goal of the "Consumer Products Program" measure in the 2016 State SIP Strategy was to maintain the reduction of ROG emissions from consumer products in light of population growth, and the Proposed Amendments are projected to meet the 2016 State SIP Strategy VOC reduction commitment of 1-2 tpd by 2023 and 4-5 tpd by 2031 in the South Coast, and by 8-10 tpd statewide by 2031. As described in section VII(B) above, no new manufacturing facilities, construction, or infrastructure development would be needed to accommodate the changes resulting from these Proposed Amendments. The Proposed Amendments do not alter the reasonably foreseeable compliance responses stated in the Final EA.

- (3) *There are no substantial changes with respect to the circumstances under which the Consumer Products Regulation is being undertaken which require major revisions to the previous Environmental Analysis involving new significant environmental effects or a substantial increase in the severity of previously identified effects.*

There are no substantial changes to the environmental setting or circumstances in which the Proposed Amendments are being implemented compared to those analyzed for the consumer products measure in the Final EA. As previously stated, the Proposed Amendments will mitigate growth of consumer product ROG emissions as California's population increases. Evaluation of the 2015 Consumer and Commercial Products Survey data showed that consumer product ROG emissions are over 20 percent higher than the previous consumer product emissions inventory due to a higher-than-anticipated growth in sales of the "Personal Care Product" sector. The Proposed Amendments address growing consumer product emissions by proposing new or lower VOC standards for "Personal Care Product" categories that are responsible for significant VOC emissions, such as hair care categories and "Personal Fragrance Product."

HFC-152a may potentially be used as a reformulation pathway for "Dry Shampoo," "Personal Fragrance Product," and "Hair Finishing Spray," which could result in slightly increased GHG emissions, as discussed above in section C, compared to existing GHG emissions from the consumer products sector. However, as discussed in section C, this will

only result in minor decreases in the substantial GHG benefits provided by the 2016 State SIP Strategy overall (of which this proposed consumer products action is a part). As noted above, the Final EA determined that measures from the 2016 State SIP Strategy, when taken together, would have considerable long-term GHG reductions. Even with the Proposed Amendments, the 2016 State SIP Strategy would continue to achieve very substantial GHG benefits.

The Proposed Amendments also include a revision to the Innovative Product Exemption criteria to encourage the use of compressed gas propellants such as compressed air, carbon dioxide, and nitrogen propellants, which are responsible for negligible amounts of ozone formation due to their zero ozone-forming potential. These compressed gas propellants also have no toxicity and very low to zero global warming potential in comparison to HFC-152a, which has a GWP of 124. Many manufacturers are moving to minimize their carbon footprint, and have expressed interest in utilizing compressed gas propellants. This mechanism allows manufacturers to create a product that utilizes compressed gas propellant to exceed the applicable VOC standard (based on weight percent) if it can be demonstrated that the product emits an equivalent mass of VOC as a representative compliant product in the same category that utilizes an HFC-152a propellant. CARB's intent for this provision is to encourage manufacturer research, development, marketing, and consumer acceptance of a greater diversity of aerosol products utilizing compressed gas propellants, by addressing a disincentive, described in Chapter III, for their use under the current regulatory paradigm.

In order for California to meet its air quality and climate challenges in the years ahead, it will be critical to further develop innovative technologies that reduce both greenhouse gas and smog-forming emissions. While the technical challenges remain for many consumer product categories, compressed gas propellants have the potential over the next decade to become a feasible alternative to HFC-152a. A feasible zero-emission alternative to HFC-152a propellant would enable CARB to restrict or prohibit the use of HFC-152a as a propellant, while maintaining progress made in lowering consumer product VOC content.

- (4) *There is no new information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous Environmental Analysis was certified as complete, that changes the conclusions of the Environmental Analysis with regard to impacts, mitigation measures, or alternatives;*

The Proposed Amendments do not result in any changes to the conclusions found in the Final EA with regard to impacts, mitigation measures, or alternatives. Although the possible reformulation pathways for "Dry Shampoo," "Personal Fragrance Product," and "Hair Finishing Spray" have the potential to increase the use of HFC-152a, leading to

slightly increased GHG emissions, the Final EA determined that the 2016 State SIP Strategy would continue to have considerable long-term GHG reductions. Therefore, increased use of HFC-152a would only result in a slight decrease in the project's overall projected GHG reductions, as shown in Table VII-2. Thus, the 2016 State SIP Strategy would still result in a GHG benefit, as concluded in the Final EA.

No supplemental or subsequent environmental analysis is required for the Proposed Amendments because, as described above, the Proposed Amendments do not result in any new significant environmental impacts or in a substantial increase in the severity of the impacts previously disclosed for the Consumer Products Regulation in the Final EA. Further, there are no changes in circumstances or new information that would otherwise warrant any additional environmental review.

VIII. Environmental Justice

State law defines environmental justice as the fair treatment and meaningful involvement of people of all races, cultures, incomes, and national origins, with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies (Gov. Code, § 65040.12, subd. (e)(1)). Environmental justice includes, but is not limited to, all of the following: (A) The availability of a healthy environment for all people. (B) The deterrence, reduction, and elimination of pollution burdens for populations and communities experiencing the adverse effects of that pollution, so that the effects of the pollution are not disproportionately borne by those populations and communities. (C) Governmental entities engaging and providing technical assistance to populations and communities most impacted by pollution to promote their meaningful participation in all phases of the environmental and land use decision making process. (D) At a minimum, the meaningful consideration of recommendations from populations and communities most impacted by pollution into environmental and land use decisions (Gov. Code, § 65040.12, subd. (e)(2)). The Board approved its Environmental Justice Policies and Actions (Policies) on December 13, 2001, to establish a framework for incorporating environmental justice into CARB's programs consistent with the directives of State law (CARB 2001). These policies apply to all communities in California, but are intended to address the disproportionate environmental exposure burden borne by low-income communities and communities of color. Environmental justice is one of CARB's core values and fundamental to achieving its mission.

As described in Chapter VI, CARB, local air districts, and federal air pollution control programs have made substantial progress toward improving air quality in California over the past thirty years. Despite this progress, many areas in California still exceed federal health-based ozone standards. California has 10 of the nation's 11 ozone nonattainment areas classified "moderate" or higher for the 0.070 ppm NAAQS. The South Coast has the highest ozone levels in the nation, and is classified as "extreme" for the 0.70 ppm NAAQS. 2015 Consumer Products Survey data indicates that, as consumer product usage and resulting emissions continue to grow, consumer products have surpassed cars and light trucks as the largest source of ROG emissions in California. Additional strategies to reduce consumer product emissions are critical to ensure that all California communities – particularly those already disproportionately impacted by ozone pollution – make progress toward achieving federal health-based ozone standards.

Staff has determined that the amendments proposed in this rulemaking are consistent with CARB's environmental justice policies. The Proposed Amendments would achieve about 1.25 tpd VOC reductions by 2023 and 4.03 tpd reductions by 2031 in the South Coast. The primary purpose of proposed new or lower VOC standards is to expedite attainment of health-based ozone standards in the South Coast. The South Coast is home to 67 percent of California's 2,007 census tracts identified as disadvantaged communities, pursuant to the requirements of

California Senate Bill 535.⁹ Use of certain TACs and compounds with high GWP would also be prohibited in the seven categories subject to lower VOC standards.

Many of the proposals are also designed to improve compliance with the consumer products program as a whole, to ensure that the VOC reductions and associated health benefits are actually achieved. One of these proposals is geared to prevent sales of “Energized Electrical Cleaner” for use in automotive maintenance and repair activities. As described in Chapter III, this measure would reduce emissions of perchloroethylene and trichloroethylene by 8.9 to 39.4 tons per year, with these reductions anticipated to occur at automotive maintenance and repair facilities. These emission reductions could result in reduced health risk from air toxics inhalation, particularly among those repairing or maintaining automobiles. While the Proposed Amendments to restrict “Energized Electrical Cleaner” sales would provide benefits statewide, staff anticipates these benefits could be particularly pronounced in low-income communities with larger numbers of automotive maintenance and repair facilities.

Perchloroethylene and trichloroethylene also have the potential to seep into groundwater and impact drinking water safety. As off-label sales and uses of perchloroethylene and trichloroethylene decline due to the Proposed Amendments, a co-benefit of the Proposed Amendments could be that runoff automobile maintenance and repair activities could decline. Such a decline could provide benefits to disadvantaged communities. An evaluation of California census tracts with perchloroethylene and trichloroethylene maximum contaminant levels (MCL) that exceed National Primary Drinking Water Regulations standards indicate that water concentrations of these two contaminants exceeding MCLs disproportionately occur in disadvantaged communities (CalEnviroScreen 3.0; 2018). Of the 43 census tracts in the state with trichloroethylene concentrations above the MCL, 25 (or 58 percent) are SB 535 disadvantaged communities. Of the 35 census tracts that are above the MPL for perchloroethylene, 22 (or 63 percent) are SB 535 disadvantaged communities. Given that disadvantaged communities represent about 25 percent of the state’s census tracts, this analysis indicates that perchloroethylene and trichloroethylene levels in drinking water above the MCL occur disproportionately in disadvantaged communities.

Generally, use of consumer products is fairly uniform across the State, tracking with housing units, and their emissions are spread over the course of a day, rather than concentrated at a particular time of day. For these reasons, we believe that reducing emissions from the use of consumer products and aerosol coatings would benefit all Californians. We do not expect any communities, regardless of location, to be disproportionately impacted by adoption of the Proposed Amendments.

⁹ Disadvantaged communities are defined as the top 25 percent scoring areas (census tracts) from CalEnviroScreen 3.0, along with other areas with high amounts of pollution and low populations. (CalEnviroScreen 3.0, 2018).

IX. Economic Impact Assessment

This chapter describes the economic impacts that would be expected from implementation of the Proposed Amendments.

The Proposed Amendments would set new or lower VOC standards for seven categories of consumer products – “Manual Aerosol Air Freshener,” “Hair Finishing Spray,” “Dry Shampoo,” “Hair Shine,” “Temporary Hair Color,” “Personal Fragrance Product,” and aerosol “Crawling Bug Insecticide.” The Proposed Amendments would also sunset the Two Percent Fragrance Exemption for most products, and amend or add other provisions to improve program clarity and effectiveness, including amendments to Method 310, the testing procedure for the Consumer Products Regulations.

CARB staff’s economic analysis focuses on the estimated costs that may be incurred to comply with the Proposed Amendments, including the proposed new and lowered VOC standards and proposed sunset of the Two Percent Fragrance Exemption. Staff anticipated there are no costs associated with other provisions to improve program clarity and effectiveness, or with the Proposed Amendments to Method 310, because those modifications are administrative in nature.

Staff evaluated the estimated cost impacts of the Proposed Amendments on manufacturers of these products and other entities associated with the consumer products industry, and from that information, estimated the cost-effectiveness of the Proposed Amendments. Because cost-effectiveness is based on cost-per-ton of VOC reduced, staff has presented cost-effectiveness information in this metric.

Staff’s analysis also provides an estimate of the fiscal impacts of the Proposed Amendments on State and local agencies. These potential fiscal impacts would be costs incurred by State agencies to administer, enforce, or comply with the proposal. Staff does not expect the Proposed Amendments to impose any costs on local agencies. Both State and local agencies may achieve a slight fiscal benefit due to potential increased sales taxes, and savings associated with improved health from the Proposed Amendments.

Economic impact analyses are inherently imprecise, given the unpredictable behavior of companies in a highly competitive market like that of consumer products. While staff has quantified the economic impacts to the extent feasible, some projections are necessarily qualitative, and based on general observations and facts known about the consumer products industry. This analysis, therefore, serves to provide a general picture of the economic impacts typical businesses might encounter. Individual companies may experience different impacts than projected.

This Chapter provides the following information:

- A. Summary of Economic Impacts;
- B. Major Regulations;
- C. Regulatory Alternatives

- D. Cost of Compliance;
- E. Impacts on California Businesses, Consumers, and State and Local Agencies;
- F. Other Possible Economic Impacts of Regulatory Changes; and
- G. Mitigation of Potential Impacts.

This economic impacts analysis was conducted in accordance with the legal requirements of the Administrative Procedure Act (APA), as well as SB 617 and California Department of Finance (DOF) requirements (CLI, 2019b; and DGS, 2019).¹⁰ Similar methodologies and assumptions were used in past consumer products rulemakings and remain reasonable, because the facts giving rise to those assumptions have not changed (CARB, 2009; CARB, 2010; and CARB, 2013).

A. Summary of Economic Impacts

In this section, staff summarizes the economic impacts that would be expected from implementation of the Proposed Amendments. The analysis focuses on estimated costs associated with complying with the proposed VOC standards and sunset of the Two Percent Fragrance Exemption. Section F of this chapter describes additional potential cost impacts of Proposed Amendments to the definition of "Energized Electrical Cleaner." This chapter does not include cost estimates for other elements of the Proposed Amendments, as these are of an administrative nature and should not result in costs. The total estimated costs are for the Proposed Amendments as a whole.

Businesses that manufacture consumer products that do not already comply with the proposed VOC standards would incur costs to reformulate their products. The Proposed Amendments would require manufacturers of the seven categories for which staff propose to set new or lower VOC standards to reformulate to reduce the VOC content of their products and to comply with elimination of a longstanding exemption for up to two percent of fragrances above the standard in most consumer product categories.

Staff has estimated that the total cost to comply with the proposed standards is about \$18 million per year for all products covered by the proposed standards. The total cost to comply with the proposed standards amounts to approximately \$268 million (in 2020 dollars) over 15 years. This cost includes both recurring (e.g., raw materials) and non-recurring (e.g., research and development) costs, and is estimated based on calculations specific to each category and described further in Appendix D and Appendix E. Table IX-1 shows the estimated annual cost of the proposed amendments.

¹⁰ The current economic downturn is accounted for in the economic analysis based upon the U.S. Economic Outlook for 2020-2022 from the University of Michigan's Research Seminar in Quantitative Economics (UMich, 2020).

Table IX-1: Total Direct Recurring and Non-Recurring Cost of Proposed Amendments*

Year	Manual Aerosol Air Freshener	Hair Finishing Spray	Hair Shine	Temporary Hair Color	Dry Shampoo	Personal Fragrance Product	Aerosol Crawling Bug Insecticide	Sunset Two Percent Fragrance Exemption	Annual Total
2020	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2021	\$3,025,806	\$3,861,273	\$0	\$0	\$1,228,760	\$3,396,654	\$0	\$0	\$11,512,493
2022	\$3,025,806	\$3,861,273	\$0	\$0	\$1,228,760	\$3,396,654	\$0	\$0	\$11,512,493
2023	\$2,312,714	\$3,761,531	\$0	\$0	\$1,638,446	\$3,323,314	\$0	\$0	\$11,027,430
2024	\$2,312,714	\$3,761,531	\$0	\$0	\$1,638,446	\$3,323,314	\$0	\$0	\$11,027,430
2025	\$5,536,558	\$3,761,531	\$0	\$0	\$1,638,446	\$3,323,314	\$0	\$1,957,166	\$16,208,440
2026	\$5,536,558	\$3,761,531	\$0	\$0	\$1,638,446	\$3,323,314	\$0	\$1,957,166	\$16,208,440
2027	\$5,001,278	\$3,761,531	\$408,321	\$336,730	\$2,700,871	\$3,323,314	\$0	\$1,155,427	\$16,678,897
2028	\$5,001,278	\$3,761,531	\$408,321	\$336,730	\$2,700,871	\$3,323,314	\$1,519,725	\$1,155,427	\$18,198,622
2029	\$5,001,278	\$3,761,531	\$412,857	\$331,296	\$2,745,733	\$17,470,347	\$1,519,725	\$1,155,427	\$32,389,618
2030	\$5,001,278	\$3,761,531	\$412,857	\$331,296	\$2,745,733	\$17,470,347	\$1,134,213	\$1,155,427	\$32,004,106
2031	\$1,975,472	-\$99,742	\$412,857	\$331,296	\$1,516,972	\$12,806,970	\$1,134,213	\$1,155,427	\$19,224,890
2032	\$1,975,472	-\$99,742	\$412,857	\$331,296	\$1,516,972	\$12,806,970	\$1,134,213	\$1,155,427	\$19,224,890
2033	\$1,975,472	-\$99,742	\$412,857	\$331,296	\$1,516,972	\$12,806,970	\$1,134,213	\$1,155,427	\$19,224,890
2034	\$1,975,472	-\$99,742	\$412,857	\$331,296	\$1,516,972	\$12,806,970	\$1,134,213	\$1,155,427	\$19,224,890
2035	-\$1,248,372	-\$99,742	\$412,857	\$331,296	\$1,516,972	\$12,806,970	\$1,134,213	-\$801,739	\$14,043,880
TOTALS	\$48,408,781	\$37,316,084	\$3,706,643	\$2,992,532	\$27,489,374	\$125,708,735	\$9,844,729	\$12,356,007	\$267,711,410

*Reflects the total of annual recurring and annualized non-recurring costs identified in Tables IX-3 through IX-6. Annualized non-recurring costs are assumed to begin two years prior to the applicable implementation date and continue for ten years, while annual recurring costs are assumed to begin on the applicable implementation date and continue indefinitely. All costs are in 2020 dollars.

B. Major Regulations

In Health and Safety Code section 57005(b), the California Environmental Protection Agency (Cal EPA) defines a “major regulation” as any regulation that will have an economic impact on the State’s business enterprises in an amount exceeding \$10 million per year, as estimated by the board, department, or office within the agency proposing to adopt the regulation in the assessment required by Government Code section 11346.3(a). This proposal is not considered a major regulation under Cal EPA’s definition because staff does not expect the economic impact to the State’s economy to exceed \$10 million in any year.

Separately, in California Code of Regulations, title 1, section 2000(g), the Department of Finance (DOF) defines a major regulation as a regulation subject to Office of Administrative Law review that has an estimated economic impact on business enterprises and individuals located in or doing business in California exceeding \$50 million in any 12-month period between the date the regulation is estimated to be filed with the Secretary of State through 12 months after the regulation is estimated to be fully implemented, as estimated by the agency. This proposal is not considered a major regulation under DOF’s definition because staff

does not estimate an economic impact exceeding \$50 million in any 12-month period.

C. Regulatory Alternatives

Staff evaluated three alternatives: more stringent standards, less stringent standards, and standards based on reactivity for certain product categories (see Chapter X: Evaluation of Regulatory Alternatives). No alternative considered by the agency would be more effective in carrying out the purpose for which the amendments are proposed, or would be as effective as and less burdensome to affected private persons than the Proposed Amendments.

D. Costs of Compliance

The total cost to comply with the proposal requires an estimation of the recurring and nonrecurring costs that would be expended to reformulate and bring a product to market relative to the baseline of officially incorporated current regulations. Recurring costs for this analysis are those associated with the cost of the raw materials needed for reformulation and continued use of new formulas in consumer products. Nonrecurring costs are one-time costs associated with research, development, and plant changes that may be necessary to develop a reformulated complying product. Staff amortized nonrecurring costs over a project horizon of ten years. Summing the annual recurring and amortized nonrecurring costs represents the total cost to reformulate a product. Staff then uses the total recurring plus nonrecurring cost to estimate the potential cost per unit increase to the consumer and the cost effectiveness of the Proposed Amendments. All costs are in 2020 dollars, unless otherwise indicated.

There are many variables in producing a product for market, and assumptions about those variables will greatly affect the outcome of any cost analysis. For each assumption, staff applied a test of "reasonableness" to determine if this was a likely approach to take, or if the event had a high probability of occurring. The following section presents the estimated cost to comply with the Proposed Amendments.

1. Sunset of the Two Percent Fragrance Exemption

The proposed elimination of the Two Percent Fragrance Exemption differs from the category-specific VOC standards described above because it would require less extensive reformulation across a greater number of product categories. Staff's evaluation of 2015 Consumer Products Survey data indicates that the vast majority of regulated products do not use this exemption, and many of the products that do utilize the exemption use only a small fraction of the allowable two percent fragrance over the applicable standard (CARB Work Group Meeting, 2020). For more information, see Appendix B: Utilization of Two Percent Fragrance Exemption.

2. Recurring Costs

a. Methodology

Recurring costs to comply with the proposed VOC standards reflect the differential cost of product ingredients. Staff has determined that other potential recurring costs of the proposed VOC standards, such as packaging, distribution, or delivery system modifications, are negligible relative to baseline levels of these costs. Staff believes this assumption is valid because discussions with industry stakeholders suggest that the Proposed Amendments should not require significant packaging or delivery system modifications. Proposed Manual Aerosol Air Freshener VOC standards represent an exception to this assumption, as a transition to compressed gas propellants could result in different product packaging, labeling, storage, delivery, and other costs. However, staff discussions with industry leaders indicate that there is no clear net recurring cost differential for products that use compressed gas propellant relative to those using hydrocarbon propellant beyond lower product ingredient costs.

As part of the economic impact analysis, staff evaluated the expected raw material cost impacts from complying with the proposed VOC standards. Using the data from the 2015 Consumer Products Survey, staff identified typical compliant and noncompliant formulations in each category. For each category, staff estimated a "low cost" and "high cost" for product ingredients. To assign costs, distributor-level ingredient prices from *ICIS Chemical Business* website, chemical materials distributors, and industry stakeholders are used to calculate the total ingredient costs for baseline and compliant product formulations. Low and high ingredient cost scenarios are calculated for each category (ICIS, 2012). In the low-cost scenario, the cost per pound of product is calculated using the low end estimate of each ingredient cost. In the high-cost scenario, the high-end estimate of each ingredient cost is used.

b. Results

Information on estimated product ingredient costs and formulations evaluated (with individual weight fractions and unit prices per pound) are shown in Appendix D: Recurring Cost Estimates. The identified formulations are not exact compositions of existing noncompliant products and compliant products that will be marketed. Rather, staff evaluated formulations of complying and noncomplying products for each category for which a new VOC standard is proposed. These formulations were then used to develop example, non-confidential formulas that are representative of the category. Staff believes these to be reasonably representative for the purposes of this analysis. These representative complying and noncomplying formulas for each category are used to estimate the cost of raw materials to produce each formulation. The difference in cost between a pound of ingredients for a typical product that would not comply with the Proposed Amendments and a product that would comply is then calculated. These differential costs are shown in Table IX-2.

In some cases, the compliant formula is less expensive than the typical formula that would not comply with the proposed standard. This is true, for example, when a

more expensive VOC ingredient is replaced with a lower-cost LVP-VOC ingredient or with water, resulting in both a reduction in cost and VOC content.

Table IX-2: Estimated Change in Ingredient Costs per Unit*

Category	Ingredient Cost per Unit				Ingredient Cost Differential Per Unit	
	Noncomplying Low (A ₁)	Noncomplying High (A ₂)	Complying Low (B ₁)	Complying High (B ₂)	Low (C ₁ =B ₂ -A ₂)	High (C ₂ =B ₁ -A ₁)
Manual Aerosol Air Freshener - Tier 1	\$0.14	\$0.22	\$0.10	\$0.16	-\$0.06	-\$0.04
Manual Aerosol Air Freshener - Tier 2	\$0.10	\$0.16	\$0.07	\$0.12	-\$0.04	-\$0.03
Hair Finishing Spray	\$0.56	\$0.70	\$0.56	\$0.70	-\$0.01	\$0.00
Hair Shine (aerosol)	\$0.42	\$0.50	\$0.43	\$0.51	\$0.01	\$0.02
Temporary Hair Color	\$0.09	\$0.12	\$0.09	\$0.12	\$0.00	\$0.00
Dry Shampoo - Tier 1	\$0.26	\$0.40	\$0.44	\$0.56	\$0.16	\$0.17
Dry Shampoo - Tier 2	\$0.44	\$0.56	\$0.46	\$0.58	\$0.02	\$0.02
Personal Fragrance Products - Tier 1 (Aerosol)	\$0.19	\$0.28	\$0.17	\$0.26	-\$0.02	-\$0.01
Personal Fragrance Products - Tier 1 (Nonaerosol)	\$0.16	\$0.26	\$0.16	\$0.26	\$0.00	\$0.00
Personal Fragrance Products - Tier 2 (Aerosol)	\$0.17	\$0.26	\$0.22	\$0.31	\$0.04	\$0.05
Personal Fragrance Products - Tier 2 (Nonaerosol)	\$0.19	\$0.31	\$0.16	\$0.27	-\$0.04	-\$0.03
Aerosol Crawling Bug Insecticide	\$0.15	\$0.25	\$0.12	\$0.20	-\$0.05	-\$0.03

* The values in this table have been rounded for readability. However, the values used for calculations were not rounded.

Finally, the calculated average total recurring cost per proposed regulatory standard is calculated based upon the annual California unit sales multiplied by the average of the low end of incremental cost per formula that would comply with the proposed standard and the high end of the incremental cost per formula that would comply with proposed standards. These calculations are also illustrated in Table IX-3.

Table IX-3: Total Estimated Annual Recurring Cost*

Category	Annual California Noncomplying Unit Sales**	Total Annual Recurring Cost Per Category		
		Low	High	Average
	D	$E_1 = D \times C_1^{***}$	$E_2 = D \times C_2^{***}$	$E_3 = (E_1 + E_2)/2$
Manual Aerosol Air Freshener - Tier 1	14,836,771	-\$881,861	-\$544,324	-\$713,092
Manual Aerosol Air Freshener - Tier 2	16,470,155	-\$612,484	-\$458,076	-\$535,280
Hair Finishing Spray	23,278,831	-\$164,861	-\$34,624	-\$99,742
Hair Shine (aerosol)	337,998	\$3,393	\$5,678	\$4,536
Temporary Hair Color	2,026,596	-\$7,301	-\$3,567	-\$5,434
Dry Shampoo - Tier 1	2,424,177	\$397,376	\$421,996	\$409,686
Dry Shampoo - Tier 2	2,432,333	\$39,180	\$50,543	\$44,861
Personal Fragrance Products - Tier 1 (aerosol)	6,160,087	-\$103,605	-\$82,468	-\$93,037
Personal Fragrance Products - Tier 1 (nonaerosol)	29,180,685	-\$1,915	\$41,309	\$19,697
Personal Fragrance Products - Tier 2 (aerosol)	11,616,514	\$518,169	\$573,493	\$545,831
Personal Fragrance Products - Tier 2 (nonaerosol)	50,957,013	-\$2,122,872	-\$1,502,235	-\$1,812,554
Aerosol Crawling Bug Insecticide	9,961,540	-\$475,165	-\$295,858	-\$385,512

* The values in this table have been rounded for readability. However, the values used for calculations, were not rounded.

** Reflects sales in the first calendar year of proposed standard implementation. Sales are based on 2015 Consumer Products Survey results and grown based upon California Department of Finance growth factors for the applicable category.

*** Values for C1 and C2 are calculated in Table IX-2: Estimated Change in Ingredient Cost per Unit.

c. Recurring Costs of Fragrance Exemption Sunset

To determine anticipated recurring cost to sunset the Two Percent Fragrance Exemption, staff evaluated the potential cost differential of ingredient substitution anticipated to occur. Staff assumed that manufacturers that must reformulate due to the elimination of this exemption would either substitute fragrance ingredients classified as VOCs with non-VOC fragrance ingredients, or substitute non-fragrance VOC ingredients with non-fragrance non-VOC ingredients.

CARB utilized the results of the 2020 Cost Survey to inform this analysis. Thirty-seven percent of 2020 Cost Survey respondents indicated that they would comply with a fragrance exemption elimination by reducing fragrance ingredients, while 63 percent of respondents indicated that they would reduce other VOC content. Staff's analysis, whose results are shown in Table IX-4, below, indicate an annual cost savings of about \$800,000 (in 2020 dollars) due to lower average ingredient costs for complying products. This is due to the savings accrued by substitution of fragrance ingredients, typically the most costly ingredient in most consumer products, with a generic, less costly, non-VOC ingredient. These savings would be accrued by product manufacturers and potentially passed on to customers, and, to the extent that these fragrances derive from third party fragrance vendors, the \$800,000 in annual savings would represent potential lost fragrance sales for fragrance vendors.

The assumed low and high cost of fragrance and "Generic Non-VOC Ingredient," identified in Table IX-4, below, have been evaluated and determined to be reasonable by industry stakeholders.

Table IX-4: Recurring Cost to Sunset the Two Percent Fragrance Exemption

Component	Low Cost \$/lb.	High Cost \$/lb.
Fragrance VOC	\$7.00	\$17.00
Generic non-VOC Ingredient	\$1.00	\$1.50
Fragrance Incremental Cost (\$/lb)	-\$6.00	-\$15.50
Average Fragrance Incremental Cost (\$/lb) (A)	-\$10.75	
Mass Using Fragrance Exemption (lbs/yr) ¹ (B)	198,881	
Percent of Fragrance Using Exemption Replaced with Non-Fragrance ² (C)	37.50%	
Total Cost per Year (A x B x C)	-\$801,739	

1 – Based upon 2015 Consumer Products Survey Data.

2 – Based upon 2020 Cost Survey.

3. Nonrecurring Costs

CARB staff also evaluated the one-time costs associated with research, development, and infrastructure changes (i.e., up-front "non-recurring" costs) that may be necessary to develop a reformulated complying product. These are assumed to be costs incurred by product manufacturers once to reformulate

complying products and are independent of, and in addition to, the incremental cost of ingredients to produce a product (recurring costs).

a. Methodology

Technical literature and industry trade journals provide little information to estimate nonrecurring costs directly, due to competition in the consumer products industry, and production cost data specific to a company are closely guarded trade secrets. Given these challenges in identifying verifiable and unbiased cost data, CARB has utilized a hybrid of two complementary methodologies to estimate non-recurring costs for the Proposed Amendments.

The first methodology – the Chemical Engineering Plant Cost Index method - has been utilized to estimate nonrecurring cost to reformulate a product each time CARB has adopted or amended consumer product category VOC standards over the past 30 years. CARB has refined this approach over the years based on its program implementation experience and feedback from industry stakeholders, and this traditional approach to estimating non-recurring costs has been generally accepted by industry stakeholders, particularly over the past 15 years.

The second methodology used to inform recurring cost estimates reflects manufacturer-derived cost estimates based upon CARB surveys sent to product manufacturers in May and June 2020 (2020 Cost Survey). These more recent product development cost estimates are based upon a relatively small percentage of product manufacturers, and have not faced the same scrutiny as the traditional cost methodology. However, responses to the 2020 cost surveys provide the benefit of a more recent snapshot of potential non-recurring costs.

Staff used a low and high cost approach for estimating non-recurring costs for each product category proposed for new or lower VOC standards. Total amortized low cost estimates are calculated by multiplying the amortized low cost per product by the number of non-complying companies, and the total amortized high cost is calculated by multiplying the amortized high cost times the number of noncompliant products.

This approach reflects the fact that new product development does not occur in isolation. Few companies have only one product line; for those that have more than one product line, the formulations of the product lines can be very similar. Development and production tasks, from the initial concept through marketing, would proceed simultaneously on more than one product line, with a transfer of information, techniques, and work-sharing between the products. For these companies, this “technology transfer” would substantially reduce the cost of developing and marketing a new product on a per-product basis.

Staff amortized nonrecurring costs over 10 years using the Capital Recovery Method. This is a standard methodology, and it is recommended under guidelines issued by U.S. EPA (U.S. EPA, 2017). The equation below shows the derivation for the Capital Recovery Factor (CRF), which was used to calculate the amortized cost.

Annualized nonrecurring costs = (Nonrecurring Costs) X $[i(1 + i)^n / ((1 + i)^n - 1)]$

Where:

$i(1 + i)^n / ((1 + i)^n - 1)$ = Capital Recovery Factor (CRF)
i = discount interest rate over project horizon, %
n = number of years in project horizon
Nonrecurring Costs = total nonrecurring cost per product

CARB staff assumed a project horizon of 10 years, a commonly cited period for an investment's useful lifetime in the chemical processing industry. Staff also assumed a conservative fixed interest rate of five percent throughout the project horizon. Based on these assumptions, the Capital Recovery Factor (CRF), as shown below, is:

$$\begin{aligned} \text{CRF} &= 0.05(1+0.05)^{10} / ((1+0.05)^{10} - 1) \\ &= 0.05(1.63) / 0.63 \\ &= 0.081 / 0.263 \\ &= 0.1295 \text{ (rounded)} \end{aligned}$$

The equation below shows that for a given category, the estimated total nonrecurring costs per product is multiplied by the CRF to convert these costs into equal annual payments over a project horizon (i.e., the projected useful life of the investment) at a discount rate.

Using the low-cost estimate for aerosol "Crawling Bug Insecticide" from Appendix E: Non-Recurring Cost Estimates, the Amortized Low Cost in Table IX-4, Column A1 is:

$$\text{Amortized Cost: } \$116,917 \times 0.1295 = \$15,141$$

More information regarding how total non-recurring costs were derived and calculated can be found in Appendix E.

b. Results

Estimated non-recurring costs for compliance with each proposed VOC standard are illustrated in Table IX-5. Amortized nonrecurring costs for the low cost scenario range from almost \$2,000 to over \$17,000 per proposed VOC standard, while nonrecurring costs for the high cost scenario range from about \$16,500 to over \$40,000 per proposed VOC standard. Staff amortized nonrecurring costs over ten years, with a conservative interest rate of five percent.

The approach identified in Table IX-5, in which each company is assumed to incur a full product reformulation cost, is conservative, due to the presence of contract fillers. In this analysis and in the subsequent analyses on per-unit cost increases, staff has assumed that all manufacturers will conduct their own research and development, purchase their own equipment, and make all other expenditures and efforts necessary to reformulate their products. Essentially, each manufacturer and marketer is assumed to "reinvent the same wheel" and directly conduct all of their own reformulation and R&D efforts. However, contract fillers, who usually conduct

their own reformulation efforts in house, formulate and fill products for a large number of consumer product marketers, and are therefore able to avoid duplication of reformulation efforts by applying “technology transfer” between product lines of different companies. The full extent to which contract fillers make products for other companies under each proposed category is unknown. However, to the extent contract fillers are used by companies to make complying products, the actual cost to comply with the Proposed Amendments for the entire industry is likely to be less than predicted, resulting in more cost-effective emission reductions than indicated in this analysis.

Table IX-5: Summary of Projected Nonrecurring Costs*

Category	Amortized Cost, Low (A1)	Amortized Cost, High (A2)	Number of Companies (B)	Number of Products** (C)	Average Total Amortized Annual Nonrecurring Cost [(A1*B)+(A2*C)]/2
Manual Aerosol Air Freshener - Tier 1	\$17,590	\$40,100	34	136	\$3,025,806
Manual Aerosol Air Freshener - Tier 2	\$17,590	\$40,100	36	145	\$3,223,844
Hair Finishing Spray	\$4,609	\$17,665	62	421	\$3,861,273
Hair Shine (aerosol)	\$5,632	\$20,093	13	37	\$408,321
Temporary Hair Color	\$3,467	\$16,490	4	40	\$336,730
Dry Shampoo - Tier 1	\$5,876	\$19,582	35	115	\$1,228,760
Dry Shampoo - Tier 2	\$1,894	\$17,267	37	119	\$1,062,425
Personal Fragrance Products - Tier 1 (aerosol)	\$4,093	\$16,776	11	76	\$660,018
Personal Fragrance Products - Tier 1 (nonaerosol)	\$4,093	\$16,776	42	316	\$2,736,636

Category	Amortized Cost, Low (A1)	Amortized Cost, High (A2)	Number of Companies (B)	Number of Products** (C)	Average Total Amortized Annual Nonrecurring Cost $[(A1*B)+(A2*C)]/2$
Personal Fragrance Products - Tier 2 (aerosol)	\$12,866	\$26,806	17	122	\$1,744,520
Personal Fragrance Products - Tier 2 (nonaerosol)	\$12,866	\$26,806	57	898	\$12,402,512
Aerosol Crawling Bug Insecticide	\$15,141	\$42,841	14	66	\$1,519,725

* The values in this table have been rounded for readability. However, the values used for calculations, were not rounded.

** Reflects the number of number of non-complying product formulations.

c. Non-Recurring Costs of the Fragrance Exemption Sunset

To evaluate the non-recurring compliance cost to sunset the Two Percent Fragrance Exemption, staff analyzed the 2015 Consumer Products Survey data to identify the mass of fragrance equal to or less than two percent above the applicable VOC standard in all regulated consumer product categories, as well as the number of products, number of companies, and utilization rate of the exemption. As with the category-specific VOC standards described above, staff developed a low- and high-cost scenario, with costs based upon the 2020 manufacturer cost survey. Staff identified two possible compliance pathways, with a low- and high-cost scenario for each.

In the first compliance pathway, a manufacturer would need to request the VOC content of fragrance used in its products from its fragrance vendor. Staff discussions with fragrance suppliers and consumer product manufacturers indicate that fragrance vendors already do provide fragrance VOC content to purchasers when requested, and that more widespread provision of fragrance VOC content by vendors to their clients would not pose a significant cost or challenge. If the fragrance were determined to have a low enough VOC content, the product would still comply with the applicable VOC standard and no product reformulation would be necessary. Staff was able to estimate how many products and companies this scenario would apply to based upon the 2015 Consumer Products Survey data. Staff's determination is that fragrance in most categories is comprised, on average, of 25 percent VOC and 75 percent LVP-VOC.

In the second compliance scenario, a product's VOC content would dictate that it must be reformulated to continue to meet the applicable VOC standard. The 2020

cost survey is the source of the low and high product development, testing, marketing, and other nonrecurring costs utilized for our analysis. The total estimated recurring and nonrecurring costs are provided in Table IX-6.

**Table IX-6:
Non-Recurring Cost to Sunset the Two Percent Fragrance Exemption**

Type of Cost	Low (A1)	High (A2)	Number of Companies (B)	Number of Products (C)	Low	High	Average $\left[\frac{(A1 \times B) + (A2 \times C)}{2} \right]$
Cost to Identify VOC Content	\$1,000	\$5,000	19	134	\$19,000	\$670,000	\$344,500
<u>If Reformulation is Required:</u>							
Product Development	\$5,000	\$10,000	306	515	\$7,650,000	\$21,887,500	\$14,768,750
Testing	\$5,000	\$10,000					
Market Research & Advertising	\$10,000	\$15,000					
Other	\$5,000	\$7,500					
TOTAL	\$25,000	\$42,500					
Total							\$15,113,250
Amortized Cost							\$1,957,166

Staff experience evaluating multiple years of manufacturer survey data and implementing the ACP program indicate that many manufacturers reformulate products or replace existing products with new offerings on a regular basis, even when no regulatory driver exists. Staff anticipates that the extensive compliance timeline (until 2031) provides an opportunity for many manufacturers to comply with the proposed fragrance exemption elimination over the next ten years as new products are developed and existing products are reformulated anyway as part of typical business practices. To the degree that this occurs, compliance costs would be less than those identified in Table IX-6. These costs have been further reduced by staff's proposal to amend rather than repeal the Two Percent Fragrance Exemption for categories for which a full elimination would pose technically challenges.

4. Total Cost

This section provides additional description of the total direct cost of compliance for each consumer product category for which lower VOC standards are proposed, as well as for the proposed sunset of the Two Percent Fragrance Exemption. Detailed recurring and nonrecurring cost tables can be found in Appendix D: Recurring Cost Estimates and Appendix E: Non-Recurring Cost Estimates. As previously indicated, data regarding the number of companies, products, and product mass that exceeds the proposed standards within each proposed category

is derived from the 2015 Consumer Products Survey, while the estimated compliance cost for each proposal reflects the results of the 2020 Cost Survey and other compliance cost estimates provided by individual product manufacturers. Table IX-7 summarizes the total annualized compliance cost of proposed VOC standards and sunset of the Two Percent Fragrance Exemption.

Table IX-7: Annualized Cost of Proposed Measures

Category	Annual Recurring Cost Per Category	Annualized Nonrecurring Cost Per Category	Annualized Total Cost Per Category
Manual Aerosol Air Freshener - Tier 1	-\$713,092	\$3,025,806	\$2,312,714
Manual Aerosol Air Freshener - Tier 2	-\$535,280	\$3,223,844	\$2,688,564
Hair Finishing Spray	-\$99,742	\$3,861,273	\$3,761,531
Hair Shine (aerosol)	\$4,536	\$408,321	\$412,857
Temporary Hair Color	-\$5,434	\$336,730	\$331,296
Dry Shampoo - Tier 1	\$409,686	\$1,228,760	\$1,638,446
Dry Shampoo - Tier 2	\$44,861	\$1,062,425	\$1,107,286
Personal Fragrance Products - Tier 1 (aerosol)	-\$93,037	\$660,018	\$566,981
Personal Fragrance Products - Tier 1 (nonaerosol)	\$19,697	\$2,736,636	\$2,756,333
Personal Fragrance Products - Tier 2 (aerosol)	\$545,831	\$1,744,520	\$2,290,351
Personal Fragrance Products - Tier 2 (nonaerosol)	-\$1,812,554	\$12,402,512	\$10,589,959
Aerosol Crawling Bug Insecticide	-\$385,512	\$1,519,725	\$1,134,213
Sunset of Two Percent Fragrance Exemption	-\$801,739	\$1,957,166	\$1,155,427
TOTAL	-\$3,421,778	\$34,167,737	\$30,745,959

a. Cost-Effectiveness

The cost-effectiveness of a reduction strategy is generally defined as the ratio of total dollars to be spent to comply with the strategy (as an annual cost) to the mass

reduction of the pollutant(s) to be achieved by complying with that strategy (in annual pounds). The cost-effectiveness is calculated as shown by the following general equation:

$$\text{Cost-effectiveness} = \text{Total Annual Cost to Comply} / \text{Annual Mass Reduction in VOC}$$

Table IX-8 provides the estimated cost-effectiveness of the proposed measures, as well as estimated cost-effectiveness of the Proposed Amendments overall.

Table IX-8: Cost-Effectiveness of Proposed Measures

Product Category	Cost-Effectiveness (dollars/ton VOC reduced)
Manual Aerosol Air Freshener	
Tier 1	\$5,804
Tier 2	\$11,500
Total	\$7,910
Hair Care Products	
Hair Finishing Spray/Hair Shine*	\$10,201
Dry Shampoo/Temporary Hair Color*	\$10,559
Total	\$10,350
Personal Fragrance Products	
Tier 1	\$19,252
Tier 2	\$7,713
Total	\$8,795
Aerosol Crawling Bug Insecticide	\$3,827
Sunset of the Two Percent Fragrance Exemption	\$10,694
OVERALL	\$8,588

* Combined cost-effectiveness values provided due to potential product category overlap.

b. Cost Per Unit

This section provides staff's evaluation of the potential increased cost per unit of product if all costs of compliance were passed onto the consumer. For these estimates, staff assumed all recurring and nonrecurring costs are assessed only to the number of noncomplying units in each category. As shown in Table IX-9, the cost per unit differential range from a potential cost increase of up to \$0.23 per unit for "Dry Shampoo – Tier 1," to a potential \$0.02 per unit cost savings for "Aerosol Crawling Bug Insecticide" and "Manual Aerosol Air Freshener – Tier 1." The anticipated sales-weighted average cost per unit increase due to the Proposed Amendments across all seven product categories is about one cent.

For this rulemaking, as with previous proposed amendments for more stringent VOC standards, staff anticipates consumer products reformulated to meet the CARB standards will be marketed throughout the United States by product manufacturers. Manufacturer decisions to use national distribution networks makes

business sense, considering the number of other states that have, and are continuing to adopt, CARB's consumer product standards.

Staff knows from program implementation, enforcement experience, and stakeholder feedback that manufacturers typically manufacture and market California-compliant consumer products across the nation, rather than incur the additional cost of setting up and implementing a California-specific product distribution system. This is particularly true of the largest brands, which make up the bulk of consumer product sales. Major brands take care to ensure that customers experience the same product performance and functionality regardless of the state or region in which an iconic hair spray, perfume, or other product is purchased.

Pricing for these nationally-sold products is increasingly driven by retailer competition with Amazon and other national platforms whose prices do not discriminate by location. A growing body of research supports staff's expectation that prices would not increase disproportionately for California consumers due to this dynamic (Cavallo, 2018; and DellaVigna & Gentzkow, 2017).

Staff anticipates that potential increased product costs will therefore not be assessed only to products sold in California, but will be uniformly distributed across CARB-compliant products sold nationally. An expectation of national sales and uniform pricing of CARB-compliant products results in cost per unit estimates up to eight times lower (i.e., the current ratio of California to U.S. population, or 12.1 percent) than if California-compliant products were sold only in California (U.S. Census, 2019). Most previous rulemakings applied a similar California population ratio to non-recurring costs in calculating potential cost-per-unit impacts (CARB, 2013). This assumption that non-recurring costs per unit are applied nationally is reflected in the values in Column B (Annualized Nonrecurring Cost/Unit) in Table IX-9, below. This factor is not applied to any other costs previously described in this chapter, as they are indicative of estimated manufacturer compliance costs regardless of manufacturer location.

Because of the many confidential and unpredictable factors that go into each manufacturer's product pricing decisions, it is not possible to accurately determine the final retail price of products that will comply with the proposed standards when they become effective. This analysis is staff's best possible estimate, utilizing the information available. To the extent the cost impacts are not fully passed on to consumers, the final cost differential per unit may be lower than suggested by this analysis.

Table IX-9: Estimated Per-Unit Cost Increases from Annualized Nonrecurring and Annual Recurring Costs

Category	Annual California Noncomplying Unit Sales in CA*	Annualized Nonrecurring Cost/Unit**	Annualized Recurring Cost/Unit	Total Cost Differential /Unit
	A	B	C	(B+C)
Manual Aerosol Air Freshener - Tier 1	14,836,771	\$0.02	-\$0.05	-\$0.02
Manual Aerosol Air Freshener - Tier 2	16,470,155	\$0.02	-\$0.03	-\$0.01
Hair Finishing Spray	23,278,831	\$0.02	\$0.00	\$0.02
Hair Shine (aerosol)	337,998	\$0.14	\$0.01	\$0.16
Temporary Hair Color	2,026,596	\$0.02	\$0.00	\$0.02
Dry Shampoo - Tier 1	2,424,177	\$0.06	\$0.17	\$0.23
Dry Shampoo - Tier 2	2,432,333	\$0.05	\$0.02	\$0.07
Personal Fragrance Products - Tier 1 (aerosol)	6,160,087	\$0.01	-\$0.02	\$0.00
Personal Fragrance Products - Tier 1 (nonaerosol)	29,180,685	\$0.01	\$0.00	\$0.01
Personal Fragrance Products - Tier 2 (aerosol)	11,616,514	\$0.02	\$0.05	\$0.07
Personal Fragrance Products - Tier 2 (nonaerosol)	50,957,013	\$0.03	-\$0.04	-\$0.01
Aerosol Crawling Bug Insecticide	9,961,540	\$0.02	-\$0.04	-\$0.02

* Reflects sales in the first calendar year of proposed standard implementation.

** Includes 0.12 factor to account for anticipated national sales of California-compliant products.

*** The values in this table have been rounded for readability. However, the values used for calculations, were not rounded.

E. Impacts on California Businesses, Consumers, and State and Local Agencies

Section 11346.3 of the Government Code requires State agencies to assess the potential for adverse economic impacts on California business enterprises and individuals when proposing to adopt or amend any administrative regulation. The assessment must include a consideration of the impact of the Proposed Amendments on California jobs; business expansion, elimination or creation; and the ability of California business to compete with businesses in other states.

1. Potential Impact on California Businesses

Our profitability analysis shows an insignificant change in the average profitability of affected businesses that manufacture consumer products if they absorbed the entire cost of compliance. We believe that these manufacturers will pass through at least a portion of their compliance costs to maintain profitability. To the extent that businesses are able to pass on the increased cost to consumers, the adverse impact of the proposed measures would be less than projected in this analysis.

Furthermore, the projected impact will be less if businesses are able to improve their operational efficiency, thus reducing their costs. Passing on these costs will not make California products more expensive than those of other states because this will likely be happening nationwide, due to anticipated national sales of CARB-compliant products, as described above.

Nonetheless, the proposed measures may impose economic hardship on some businesses with very little or no margin of profitability. These businesses can seek relief under the variance provisions of the consumer products regulations for extensions of their compliance dates. Such extensions may provide sufficient time to minimize the cost impacts to these businesses. No product form would be eliminated by these proposed amendments.

2. Potential Impact on Business Creation, Elimination or Expansion

The Proposed Amendments would have no noticeable impact on the status of California businesses. Most affected businesses are expected to be able to pass on the bulk of the reformulation cost to consumers in terms of higher prices for their products. However, if any of the small California businesses that reported sales to CARB in surveys have little or no margin of profitability, they may lack the financial resources to reformulate their products on a timely basis. If the Proposed Amendments impose significant hardship on these businesses, temporary relief in the form of a compliance date extension under the variance provision may be warranted.

The Proposed Amendments may provide business opportunities for some California businesses, or result in the creation of some new businesses. California businesses which supply raw materials and equipment or provide consulting services to affected industries may benefit from increased industry spending on reformulation. However, staff's analysis of the proposed amendments indicates that there will be an insignificant impact on business growth in California as a whole.

3. Potential Impact on Business Competitiveness

The Proposed Amendments would have no significant impact on the ability of California businesses to compete with businesses in other states. Because the Proposed Amendments would apply to all businesses that manufacture or market certain consumer products regardless of their location, staff’s proposal should not present any economic disadvantages specific to California businesses.

Nonetheless, the Proposed Amendments may have an adverse impact on the competitive position of some small, marginal businesses in California if these businesses lack the resources to develop commercially acceptable products in a timely manner. As stated above, such impacts can be mitigated to a degree with a justified compliance extension under the variance provisions of both the Consumer Products and the Aerosol Coating Products Regulations. For consumer products, additional regulatory flexibility is afforded by the IPE and the ACP Regulation.

4. Potential Impact on California Employment

The Proposed Amendments are not expected to cause a noticeable change in California employment and payroll. Table IX-10 presents the impact of the Proposed Amendments on total employment in California across all industries. The employment impacts represent the net change in employment, which consists of positive impacts for some industries and negative impacts for others. The Proposed Amendments are estimated to result in a slightly negative job growth from about 2021 to 2035, leading to slight job losses over this time period. These changes in employment represent less than 0.01 percent of baseline California employment.

**Table IX-10:
Total California Employment Impacts of the Proposed Consumer Products Amendments**

	2021	2023	2025	2027	2030	2033	2035
California Employment	21,063,390	22,603,894	23,781,436	24,725,674	24,751,214	24,853,070	25,011,299
% Change*	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Change in Total Jobs	-8	-19	-20	-20	-36	-19	-15

*All figures are rounded

5. Impacts on California Consumers

The potential impact of the Proposed Amendments on consumers depends upon the ability of affected businesses to pass on the cost increases to consumers. Competitive market forces may prevent businesses from passing all of their cost increases on to consumers. Staff does not expect a significant change in retail prices for this reason. However, for the proposed standards for some categories, businesses will likely be unable to absorb all their costs of doing business, likely passing some of their cost increases onto consumers. Assuming the affected industry will pass on the entire compliance costs to consumers in terms of higher prices, estimated average cost per unit increase for affected categories are shown in Table IX-9 above. Staff estimates that the Proposed Amendments would increase

the cost of products in affected categories by a negligible amount to up to \$0.23 per unit.

The Proposed Amendments may also affect consumers adversely if they result in reduced performance attributes of the products. However, this scenario is unlikely to occur for the following reasons: First, for the proposed standards, there are already complying products with a market presence. Thus, the industry already has the technology to manufacture compliant products that satisfy consumers. Second, marketers are unlikely to introduce a product which does not meet their consumers' expectations. This is because such an introduction would be damaging not only to the sale of the product, but also to the brand's reputation and thus to the sale of other products sold under the same brand name, impairing brand loyalty. Finally, the Board has provided flexibility under the existing consumer products regulations to businesses whose situations warrant an extension of their compliance dates. For companies that can justify such variances, the additional time may afford more opportunity to explore different formulation, cost-cutting, performance-enhancing, or other marketing strategies which can help make the transition to complying products nearly transparent to consumers.

6. Potential Impacts to California State or Local Agencies

State agencies are required to estimate the cost or savings to any State or local agency and school district in accordance with instructions adopted by the Department of Finance. The estimate shall include any non-discretionary cost or savings to local agencies and the cost or savings in federal funding to the State.

a. State and Local Sales Taxes

Sales taxes are levied in California to fund a variety of programs at the State and local level. The Proposed Amendments would alter product prices in the affected categories. The sale of more expensive consumer products with lower VOC content in California would result in a direct increase in sales tax revenue collected by the State government and passed onto local governments at a rate of approximately 4.7 percent. The average local tax rate in California is 8.115% (CARB, 2020b). Overall, State and local sales tax revenue may increase less than is projected if manufacturers do not raise prices to the extent identified in Table IX09 or if consumer demand is affected by changing prices.

The Proposed Amendments would impact the cost per unit of products in each of the affected consumer products categories by up to \$0.23. This would result in a direct increase in sales tax revenue collected by the State and local government (CARB, 2020b). Sales tax revenue is split between the State and local governments on an approximate basis. Table IX-11 shows the anticipated annual revenue to the State and local governments as a result of the potential increase in the price of consumer products effected by the Proposed Amendments.

Table IX-11: Approximate Local and State Sales Tax Revenue Anticipated from Proposed Amendments

Year	Local Sales Tax Revenue (Approximate)	State Sales Tax Revenue (approximate)
2020	\$0	\$0
2021	\$37,285	\$31,450
2022	\$74,586	\$62,900
2023	\$71,906	\$60,640
2024	\$71,941	\$60,657
2025	\$82,070	\$69,182
2026	\$94,268	\$79,464
2027	\$96,861	\$81,632
2028	\$109,502	\$92,266
2029	\$156,857	\$132,168
2030	\$199,394	\$167,973
2031	\$155,864	\$131,275
2032	\$118,249	\$99,572
2033	\$117,959	\$99,307
2034	\$117,713	\$99,036
2035	\$107,277	\$90,256

b. DPR Registration

The State government may also be affected by the proposed new standard for aerosol crawling bug insecticide if the cost of those products is impacted. If pesticide products are reformulated, or new products are created to meet the new proposed standard, they may be subject to registration costs with DPR and U.S. EPA.

DPR requires that pesticides be registered before being made available for purchase in California. If the formulation of aerosol crawling bug insecticide products is significantly altered to comply with the Proposed Amendments, it could result in the need to register the product with DPR again. Product manufacturers must pay an application fee of \$1,150 for each newly reformulated aerosol crawling bug insecticide to cover the costs of DPR review (DPR, 2020). Reformulation or registration costs for aerosol crawling bug insecticide could lead to those costs being passed on to the customer. This could directly affect State government agencies that purchase aerosol insecticide products for their facilities.

DPR staff indicate that the registration process would have a negligible impact on DPR resources, as the amount of reformulated aerosol crawling bug insecticide products that would be evaluated would be spread over a period of two to three years. Staff anticipates between 60 and 70 potential applications, as shown in the "Number of Products" column on Table IX-5.

F. Other Possible Economic Impacts of Regulatory Changes

In addition to the proposed VOC standards, there are other Proposed Amendments to the Consumer Products Regulation, most of which are administrative in nature. Staff does not expect these administrative amendments to have any significant economic impact on affected businesses, because they are non-substantive modifications of existing requirements and do not add new requirements. While staff does not expect any significant economic impact from any of the proposals, it is possible that there could be some negligible increased cost to business resulting from proposed changes, specifically for products utilizing the two percent fragrance exemption and "Energized Electrical Cleaner" products.

Two Percent Fragrance Exemption. Staff quantified possible revenue loss to California-based and non-California-based fragrance vendors due the proposed sunset of the Two Percent Fragrance Exemption.

- The 2015 Survey identified 178 national and international fragrance formulators and subsidiaries that supply fragrance for use in consumer products sold in California. Staff estimates that sunsetting the Two Percent Fragrance Exemption would result in lost fragrance sales from these vendors totaling \$807,454 per year.
- Twenty-three formulators and subsidiaries reported in the 2015 Survey are located in California. These California-based fragrance formulators supply 476 pounds of fragrance per year as ingredients for use in 38 products that utilize the Two Percent Fragrance Exemption. The sunset would result in approximately \$1,919 per year in lost revenue for California-based fragrance vendors.

Energized Electrical Cleaner. While this proposal would not require reformulation of "Energized Electrical Cleaner", it would have the effect of reducing sales of this product to automotive maintenance and repair establishments. If this product is replaced by what are typically less expensive alternatives, some retailers may see a revenue decrease, while California maintenance and repair facilities would see equivalent cost savings. Staff estimates that replacement of "Energized Electrical Cleaner," which retails for \$0.50 to \$0.58 per ounce, with Brake Cleaner, Carburetor or Fuel Injection Air Intake Cleaner, or Engine Degreaser, which average \$0.18 to \$0.43 per ounce, would cost California automotive part and accessory stores (and save California-based automotive maintenance and repair establishments) \$209,000 to \$446,000 per year. Staff anticipates that the proposed "Energized Electrical Cleaner" sales record retention requirement would impose negligible costs, as it would not require automotive parts and accessories stores to generate any additional data or information other than what they already do, or to report anything regularly.

G. Mitigation of Potential Impacts

Manufacturers of consumer products could also comply with the Proposed Amendments, if adopted by the Board, through the use of the IPE, which allows a product to exceed the VOC standard if it is clearly demonstrated that the "innovative" product will result in less VOC emissions than a complying product

that meets the applicable VOC standard, and other flexibility options described above.

Manufacturers of consumer products can also comply with the Proposed Amendments through the use of an Alternate Control Plan, which allows emissions averaging of various regulated products throughout their product lines.

X. Evaluation of Regulatory Alternatives

Government Code section 11346.2, subdivision (b)(4) requires CARB to consider and evaluate reasonable alternatives to the proposed regulatory action and provide the reasons for rejecting those alternatives. This section discusses the alternatives to the Proposed Amendments that CARB evaluated, and provides the reasons why these alternatives were not ultimately selected or included in the Proposed Amendments. As explained below, no alternative proposed was found to be less burdensome and equally effective in achieving the purposes of the regulation in a manner that ensures full compliance with the authorizing law. The Board has not identified a reasonable alternative that would lessen any adverse impact on small business.

Alternative One – More Stringent VOC Standards

Alternative One would impose more stringent VOC standards on the product categories identified in the Proposed Amendments, achieving greater emission benefits. Alternative One was rejected because staff's evaluation of the 2015 Consumer Products Survey data, information gathered during the extensive public rule development process, and discussions with public stakeholders indicated that more stringent VOC standards would not be commercially and technically feasible at this time. More stringent VOC content standards could also result in a deterioration of product efficacy and consumer acceptance. Alternative One also is less cost-effective than the Proposed Amendments, which have an overall cost-effectiveness of \$8,588 per ton of VOC reduced. Alternative One has an overall cost-effectiveness of \$12,830 per ton of VOC emissions reduced.

California Health and Safety Code section 41712 requires CARB to ensure that each new consumer product regulation is commercially and technologically feasible, does not eliminate a product form, and does not reduce the efficacy of specified public health products. Alternative One was rejected because the proposed VOC content standards could result in a deterioration in the ability of affected products to provide their desired effect, resulting in products that are not acceptable or tolerated by consumers. In addition, the VOC standards proposed in Alternative One are technology forcing, so it is not clear that they are technologically feasible, and CARB would not be able to confirm technological feasibility of Alternative One in time for adoption. Determining whether Alternative One is feasible would require that CARB conduct technical assessments for all proposed categories before the standards were adopted. Conducting simultaneous technical assessments for all categories in the necessary timeframe would not be possible for existing CARB staff, and would necessitate additional staff resources. Further, the Proposed Amendments are intended to help CARB implement the 2016 State SIP Strategy and help achieve the federal air quality standards for ozone. If the results of the needed technical assessments were delayed, or indicated that the standards were not technologically feasible, CARB would risk not achieving SIP commitments by the statutory deadlines.

Based upon staff's assessment of the 2015 Consumer Products Survey data and conversations with stakeholders, CARB developed the Proposed Amendments with

emissions standards that are more likely to obtain the maximum feasible emission reductions by the required deadlines, be commercially and technologically feasible, and preserve product forms and efficacy.

Alternative Two – Less Stringent VOC Standards

Alternative Two would impose less stringent VOC standards on the product categories identified in the Proposed Amendments, achieving fewer emission benefits. It also would not eliminate the Two Percent Fragrance Exemption. Alternative Two would have a cost-effectiveness of \$16,165, which is less cost-effective than the Proposed Amendments.

This alternative was rejected because, while technically feasible, it would not achieve enough VOC reductions to fulfil the 2016 State SIP Strategy VOC emission reduction commitment for consumer products, thereby also failing to meet the objective of helping to achieve the federal ozone standards. If this emission reduction commitment is not fulfilled, California's 2016 State SIP Strategy for meeting federal ozone standards in the South Coast could incur an emission reduction shortfall. In cases where U.S. EPA has yet to approve an attainment plan for a nonattainment area, such a shortfall may jeopardize attainment plan approval. In situations where an attainment plan has already been approved by U.S. EPA and the area fails to meet the ozone standard by its mandated attainment date, a federal finding of failure to attain the ozone standard could result, as well as a federal finding of failure to implement commitments in an approved attainment plan. A failure to attain finding leads to a call for a revised attainment plan, with new emission reduction measures; and a finding of failure to implement commitments comes with shorter timelines by which either the proposed measures or replacements must be adopted and implemented. In summary, federal findings and the resulting actions required would necessitate further emission reductions from consumer products. Meanwhile, California residents also would not benefit as much from improved air quality that would result from the reduction of emissions being proposed, since there would be fewer emission reductions from this alternative.

Alternative Three – Reactivity Standards for Select Categories

In Alternative Three, CARB would adopt product-weighted MIR (PWMIR) standards for "Hair Finishing Spray" and "Dry Shampoo" instead of VOC standards for those categories. These PWMIR standards would be established at a stringency level that would achieve ozone reductions equivalent to the VOC standards in the Proposed Amendments for these two categories. All other aspects of Alternative 3 would be the same as the Proposed Amendments, including the proposed VOC standards for "Manual Aerosol Air Freshener," "Hair Shine," "Temporary Hair Color," "Personal Fragrance Product" and aerosol "Crawling Bug Insecticide," and elimination of the Two Percent Fragrance Exemption.

Staff rejected Alternative Three due to potential implementation challenges. While CARB received many stakeholder comments during the rulemaking process requesting that CARB consider reactivity-based approaches, a transition to reactivity-based standards would be a significant deviation from CARB's

longstanding regulatory approach for personal care categories. Discussions with industry leaders during the development of the Proposed Amendments indicated that many (typically smaller) manufacturers were concerned about how reactivity-based standards would work or be applied by CARB, and continued to prefer the continuity of VOC standards.

Reactivity-based standards also pose implementation challenges for CARB. CARB staff currently does not test for a product's reactivity directly, but must identify and quantify the amount of each ingredient in a product, which is then assigned an MIR value from the regulation's Table of Maximum Reactivity Values for the purpose of calculating a product's PWMIR. Laboratory procedures for quantifying many consumer product ingredients, including many fragrances, do not yet exist. While CARB can speciate numerous commonly-occurring ingredients, such as ethanol and most propellants, full product speciation could be challenging or infeasible for many products. Since reactivity-based compliance determinations require full product speciation, Alternative Three would also be more resource intensive for CARB to implement than VOC-based compliance determinations. Reactivity-based standards would therefore require additional time and CARB staffing to address these implementation needs.

Finally, reactivity-based standards for "Hair Finishing Spray" and "Dry Shampoo," but not for other hair care categories could result in unachieved emission reductions, by increasing the incentive for these hair care products to be relabeled rather than reformulated to meet applicable standards. For example, PWMIR standards for "Hair Finishing Spray" and VOC standards for a "Hair Styling Product" with similar label claims could result in unachieved emission reductions if manufacturers merely modify their product's label claims to be considered subject to a less stringent regulatory standard. CARB staff have observed that manufacturers modify or expand their haircare category product label claims, which enables products to fall into regulated categories with less stringent VOC standards, or to be exempt from VOC standards altogether. For example, CARB staff have seen cases where an aerosol "Hair Styling Product" exceeds the applicable six percent VOC standard, but rather than reformulate to meet the six percent standard, the manufacturer modifies its product label claims to enable the product to be classified as a "Hair Finishing Spray," which is subject to a 55 percent VOC standard. Such targeted relabeling already occurs under the current regulatory structure, and could become more prevalent if reactivity standards are introduced into a subset of hair care categories.

Small Business Alternative

During the development of the Proposed Amendments, staff learned that Alternative Two could lessen the impacts of the Proposed Amendments on many consumer product manufacturers, including small businesses.¹¹ However, as

¹¹ A Small business is defined as an independently owned and operated business that is not dominant in its field of operation, the principal office of which is located in California, and the officers of which are domiciled in California, and which, together with affiliates, has 100 or fewer employees, and average annual gross receipts of fifteen million dollars or less over the previous three years, or is a manufacturer with 100 or fewer employees (CLI, 2020).

previously mentioned, Alternative Two is not proposed because it would not fulfill the 2016 State SIP Strategy emission reduction commitment for consumer products. Staff also considered a more targeted approach, to lessen potential adverse impacts on small businesses, such as less stringent VOC standards for small businesses, or for products that do not exceed a certain sales volume. Discrete category VOC standards based upon product sales and/or company size would be challenging, if not impossible, to implement, due to the sheer number of consumer products sold in California, and would significantly reduce transparency and clarity for what is already a complex regulatory paradigm.

Performance Standards in Place of Prescriptive Standards

The proposed VOC standards do not mandate the use of specific technologies or equipment, or prescribe specific actions or procedures, as they, as a whole, set emission reduction standards which may be met in multiple ways. However, out of an abundance of caution, CARB staff have evaluated some provisions of the Proposed Amendments that may be viewed as prescriptive if read in isolation. First is the prohibition on the use of the TACs methylene chloride, perchloroethylene, trichloroethylene, and PCBTF. The proposed prohibition on the use of specific TACs in consumer products is necessary to protect public health in a way that is transparent, clear, and predictable. A more performance-based standard would not achieve this objective. For example, one performance-based standard could indicate that no chemical may be used if it is known to cause any of a list of potential adverse health impacts (i.e., based upon a chemical's adverse "performance"). However, such an approach does not identify the specific prohibited compounds; thus, it would be complex, difficult to understand and thus comply with, and difficult to implement. Instead, TACs are identified by the State of California through a rigorous scientific process based upon their potential adverse impacts (i.e., "performance"). Prohibition of specific TACs utilizes this existing scientific foundation as needed to protect public health in a clear and transparent way. It is thus necessary to prohibit specific ingredients to most effectively protect public health.

Similarly, staff's proposal to redefine "Energized Electrical Cleaner" in a way that excludes products sold to automotive maintenance and repair facilities from this category could potentially be considered a prescriptive standard. However, a proposal to achieve staff's goal of reducing off-label sales and the resulting harmful emissions based upon a product or specific facility performance requirement would be overly complex and CARB could not implement it. For example, a restriction on "Energized Electrical Cleaner" annual sales, emissions, or anticipated product health impacts per automotive maintenance and repair facility would be extremely cumbersome and impose significant compliance tracking costs on both CARB and affected retailers. Furthermore, CARB has already conducted a health risk assessment as part of the CARB AMR ATCM regulatory development, which justified CARB's determination that perchloroethylene and trichloroethylene, the primary ingredients in "Energized Electrical Cleaner," pose an unacceptable health risk at automotive maintenance and repair establishments, and are unnecessary for automotive maintenance and repair use. Staff therefore believes that, even if this proposed definition update is considered a prescriptive standard, it is necessary to

effectively achieve this proposal's objectives.

Finally, to the degree any other portion of the regulation were to be viewed as prescriptive, CARB staff did consider whether a performance standard simply setting out VOC limits would be acceptable, without further detailed specifications. Staff determined such an approach would not be feasible. As described throughout this ISOR, careful measurement and testing provisions, and clear regulatory design is needed to ensure reductions occur as planned in this complex sector. Therefore, this "standard-only" approach was not feasible to achieve program objectives.

Health and Safety Code section 57005 Major Regulation Alternatives

The proposed regulation will not result in a total economic impact on State businesses of more than \$10 million in one or more years of implementation. Therefore, this proposal is not a major regulation as defined by Health and Safety Code section 57005.

XI. Justification for Adoption of Regulations Different from Federal Regulations Contained in the Code of Federal Regulations

National Consumer Products Regulation

On September 11, 1998, U.S. EPA promulgated a national consumer products regulation, the "National Volatile Organic Compound Emission Standards for Consumer Products" (40 CFR Part 59, Subpart C, sections 59.201 et seq.) (U.S. EPA, 1998). This action set national VOC emission standards for various categories of consumer products. The regulation became effective on September 11, 1998, and the VOC standards became effective on December 10, 1998. There are similarities and differences between the existing CARB and national consumer products regulations. The national regulation does not preclude states from adopting more stringent regulations.

The national consumer products regulation is less effective than the CARB Consumer Products Regulation in reducing VOC emissions from consumer products. National VOC standards do not apply to a number of product categories that are currently regulated under the CARB regulation, including non-aerosol "Personal Fragrance Product" and "Dry Shampoo." Of the categories that are regulated under both regulations, CARB's standards are more stringent than the national standards. Therefore, CARB's Consumer Products Regulation has achieved significant additional reductions over those that would be achieved by the national rule.

U.S. EPA has also promulgated a national regulation for aerosol coatings: The "National Volatile Organic Compound Emission Standards for Aerosol Coatings" (40 CFR Part 59, Subpart E, sections 59.500 et seq.) (U.S. EPA, 2008), which was modeled on CARB's Aerosol Coating Products Regulation. This is a reactivity-based regulation. The National Aerosol Coatings Regulation was promulgated on March 24, 2008, with a compliance deadline of July 1, 2009.

CARB's regulation is also more effective than national aerosol coatings regulation because it applies to all aerosol coating products sold, supplied, offered for sale, or manufactured for sale in California. U.S. EPA's rule exempts from compliance manufacturers whose national sales are less than 7,500 kilograms (16,500 pounds) per year. CARB's regulation also applies to the commercial application of aerosol coatings, while the national regulation does not. Additionally, CARB lowered reactivity limits even further below national standards for most of aerosol coating product categories in 2013, helping California achieve more reductions needed to achieve attainment of national standards and State air quality mandates, and improve public health.

The national regulations for consumer products and aerosol coatings also do not prohibit the use of certain TACs. To date, the CARB Consumer Products Regulation and the CARB Aerosol Coating Products Regulation include prohibitions on the use of certain TACs in 83 categories, resulting in a reduction of toxic compound emissions of over 13 tons per day and less public exposure to those harmful TACs.

As of the date of this staff report, there are no national consumer products regulations related to reducing GHG emissions or limiting the reactivity of ingredients formulated in “Multi-Purpose Lubricant” products, while CARB’s Consumer Products Regulations cover both of these.

Because California has unique air quality challenges, reducing VOC emissions from all categories, including consumer products, to the maximum extent feasible, is necessary to expedite attainment of federal and State ambient air quality standards for ozone. Further, California’s State air quality and public health goals also mandate the regulation of TACs and GHGs emitted by consumer products.

XII. Public Process for Development of Proposed Action

A. 2013-2015 Survey and Emission Inventory Update

Since the inception of CARB's consumer products program, CARB staff has conducted several surveys to generate updated emission inventories, and to inform regulatory actions that reduce the air quality impacts from the use of chemically formulated consumer products.

In 2014, CARB launched the most comprehensive and extensive survey of consumer products to date in collaboration with industry stakeholders. This survey provided updated and more detailed information and understanding of the sales volume, chemical content, and reactivity of consumer and commercial products sold or supplied for use in California in 2013, 2014, and 2015. The survey also assisted CARB staff in evaluating emission trends for consumer products, and in determining the feasibility of further reducing consumer product emissions.

The survey collected data for nearly 500 consumer and commercial product categories, 70 of which were never before surveyed. Approximately 1,500 companies reported information over one million products. By comparison, the most extensive survey previously conducted was in 2003, which gathered information about approximately 250 product categories and almost 26,000 products.

In conducting the survey, CARB held numerous instructive webinars to answer questions specific to completing the survey reporting process. In addition, CARB posted step-by-step tutorials online to assist respondents with completing the survey process using the interactive reporting tool. CARB also launched a consumer products email account dedicated to the consumer products program to respond to stakeholder questions or comments regarding survey participation.

CARB staff undertook a four year quality assurance and quality control (QA/QC) effort to review and verify the data submitted by responsible parties and formulators in response to the Survey. CARB's QA/QC efforts included checks of formulation data and product categorization. Significant QA/QC was also performed as part of 'Nonvehicular Source, Consumer Products and Architectural Coating Fees' assessment work, which involved data reported by companies emitting 250 tons per year of VOC or more.¹² As part of this QA/QC data review, CARB staff contacted responsible parties and formulators for follow-up information, and collaborated with survey respondents in performing QA/QC.

Staff posted draft survey data summaries for the 2013 and 2014 calendar years to the CARB website for stakeholder review on June 4, 2018, and December 6, 2018. In addition to these formal draft survey data releases, stakeholders had many opportunities to review the survey data summaries. CARB staff reached out to

¹² Section 39612 of the Health and Safety Code authorizes CARB to impose additional fees on nonvehicular sources (facilities) that emit 250 tons or more per year of any nonattainment pollutant or its precursors.

stakeholders via email and by telephone throughout the data review process to ensure manufacturers had the opportunity to identify and address potentially misrepresented or inaccurate for their products or product category.

CARB staff posted Final 2015 Consumer & Commercial Product Survey Data Summaries and Supplemental Materials on April 2, 2019, with updated final survey data posted on December 12, 2019 (2015 Consumer Products Survey Data). These materials provide a detailed summary of consumer product sales, emissions, volatile organic compound content, chemical speciation, reactivity, and other information for over 400 categories of consumer products during the 2015 calendar year, based on data collected from survey respondents. These updated final data summaries reflect CARB's refined evaluation of the VOC content of fragrance in consumer products, as well as updated product information from a handful of manufacturers, all also based on survey responses.

This 2015 Consumer Products Survey Data provides the technical foundation for the development of CARB's emission inventory updates and proposed regulatory amendments to achieve additional emission reductions from consumer products. Ensuring the confidentiality of responsible party and formulator data has been a priority for CARB staff. From survey design to data processing to data release, CARB took steps to ensure confidential data protection was incorporated into the design of the survey reporting tools, all steps of data processing, and all data releases.

In transitioning the survey data to an updated Consumer Products Emission Inventory, CARB staff applied fate and transport adjustments to the emissions of 63 survey categories. The majority of the fate and transport adjusted emissions were made to 38 categories of Household and Institutional Products, 24 categories of Personal Care Products, and one Vehicle and Marine Vessel Aftermarket Product Category. Fate and transport adjustments reduced the emissions when applied to survey ingredient formulation data, because a portion of adjusted category ingredients was assumed to go down the drain or get combusted, and therefore not be emitted into the air.

Discussions continued between CARB and public stakeholders during 2019 to refine CARB's understanding of fragrance VOC speciation and reactivity. Additional fragrance compositional data provided to CARB by stakeholders along with the 2016 fragrance survey data were used to improve the Consumer Products Emissions inventory. Data from the fragrance survey, along with collaborative interaction with stakeholders, helped CARB staff refine assumptions about fragrance constituents. More Information regarding this process can be found In 'Appendix B: Utilization of the Two Percent Fragrance Exemption.'

The updated Consumer Products Emission Inventory, based upon the 2015 Consumer Products Survey Data, includes 71 new Emission Inventory Codes (EIC) for categories that were not previously surveyed. The total ROG emissions from categories surveyed for the first time represented approximately seven percent of the total ROG emissions from all 491 surveyed categories. The 2015 Consumer Products Survey Data also includes fate and transport adjustment – typically

indicative of product ingredients that go down-the-drain rather than into the air – for 38 categories of Household and Institutional Products, 24 categories of Personal Care Products. Finally, the updated Consumer Products Emission Inventory reflects refined assumptions regarding the VOC content and reactivity of fragrance ingredients.¹³

B. Development of Proposed Amendments

In this section, staff provides an overview of the work group and workshop meetings staff undertook to solicit public and stakeholder feedback on concepts and proposals for this rulemaking, along with a description of the topics presented for meeting discussions. Many different members of the public participated in these work groups and workshops, and in the rule development process generally, including consumer product manufacturers, marketers, and trade associations, non-governmental organizations, and various other stakeholders, including those listed below:

- Breast Cancer Prevention Partners;
- Fragrance Creators Association;
- Household and Commercial Products Association;
- National Aerosol Association;
- Personal Care Products Council;
- California Automotive Wholesalers’ Association;
- Auto Care Association;
- Raymond Regulatory Resources; and
- Women’s Voices for the Earth.

1. Public Work Group Meetings

The specific topic work group meetings outlined in Table XII-1, below, were held via teleconference, with work group materials posted to the consumer products website prior to each meeting.

Table XII-1: Round One Work Group Meetings – Technical Evaluation of Top 47 VOC Emission Categories*

Date	Topics Discussed
May 20, 2019	<ul style="list-style-type: none"> • Hair Finishing Spray • No Rinse Shampoo • Dye, Permanent
May 22, 2019	<ul style="list-style-type: none"> • Laundry Detergent • Liquid Fabric Softener • Dish Detergent/Soap (manual) • Aerosol Cooking Spray
May 28, 2019	<ul style="list-style-type: none"> • Air Freshener, Single Phase Aerosol • Air Freshener, Double Phase Aerosol • Dual Purpose Air Freshener/Disinfectant (aerosol)

¹³ For more information regarding development of updated assumptions regarding fragrance ingredients, see Appendix B: Utilization of Two Percent Fragrance Exemption

Date	Topics Discussed
	<ul style="list-style-type: none"> • Air Freshener, liquid/pump spray • Air Freshener, solid/semisolid
May 30, 2019	<ul style="list-style-type: none"> • General Purpose Cleaner (nonaerosol) • General Purpose Degreaser (nonaerosol) • Bathroom and Tile Cleaner (aerosol) • Glass Cleaner (aerosol)
June 4, 2019	<ul style="list-style-type: none"> • Aerosol Sunscreen • Shampoo • Conditioner Without Styling Claims • External Analgesic Product • Topical Anti-Fungal Product
June 11, 2019	<ul style="list-style-type: none"> • Brake Cleaner • Floor Wax Stripper • Automotive Windshield Washer Fluid • Windshield Washer Additive • Body Repair Products (other than coatings)
June 13, 2019	<ul style="list-style-type: none"> • Mothballs • Denatured Alcohol • Paint Remover or Stripper • Scented Candles • Pet Care Products
June 18, 2019	<ul style="list-style-type: none"> • Body Wash/Mousse/Gel/Soap/Foam/Scrub • General Use Hand or Body Cleaner or Soap • Hand and Body Conditioner, Cream, Lotion, or Moisturizer • Mouthwash/Rinse
June 25, 2019	<ul style="list-style-type: none"> • Antiperspirant • Deodorant • Personal Fragrance Product with 20 percent or less fragrance
June 27, 2019	<ul style="list-style-type: none"> • Aerosol Disinfectant • Nonaerosol Disinfectant • Hand Sanitizer • Anti-microbial Hand or Body Cleaner or Soap • Rubbing Alcohol
July 2, 2019	<ul style="list-style-type: none"> • Charcoal Lighter Material • Crawling Bug Insecticide • Nail Polish/Lacquer/Paint

* Meetings held by teleconference.

Staff also held three Regulatory Definitions Work Group Meetings to prioritize and discuss possible Consumer Product Regulation definitional updates. These meetings primarily focused on potential updates to existing definitions in the Consumer Products Regulation. Table XII-2, below, shows the dates of these

meetings and the topics discussed. These work group meetings were held in person and via webinar.

Table XII-2: Regulatory Definitions Work Group Meetings*

Date	Topics Discussed
July 17, 2019	<ul style="list-style-type: none"> • Disinfectant / Sanitizer • Energized Electrical Cleaner • General Purpose Degreaser • Hair Finishing Spray • Paint Thinner • More Holistic View of Product Label Claims
October 4, 2019	<ul style="list-style-type: none"> • Institutional Product or Industrial and Institutional (Product • Metal Polish or Cleanser • Aerosol Adhesive • Energized Electronic Cleaner, proposed new definition • Energized Electrical/Electronic Equipment Use, proposed new definition(s)
February 26, 2020	<ul style="list-style-type: none"> • Institutional Product or Industrial and Institutional Product • Retail Sale of Products Used Exclusively to Manufacture Good or Commodities • Energized Electrical Cleaner • Paint Thinner

* Each meeting held in person and via teleconference.

Based on comments received and individual meetings with stakeholders, CARB staff began a second round of specific topic work group meetings as a way to continue to identify the appropriate scope of the 2020 rulemaking amendment proposals. Three second-round Specific Topic Work Group Meetings were held in September and October of 2019. Stakeholder comments led to additional staff evaluation of the survey data, and in some instances, resulted in modification of the draft proposals to ensure the commercial and technological feasibility of each proposal. At several of these meetings, industry representatives presented technical information related to the reformulation of products. Table XII-3, below, shows the dates of these meetings and the specific topics discussed at each meeting.

Table XII-3: Round Two Specific Topic Work Group Meetings*

Date	Topics Discussed
September 20, 2019	<ul style="list-style-type: none"> • Evaluation of Consumer Product Fragrance VOC Content • Discussion of HFC-152a Propellant
October 10, 2019	<ul style="list-style-type: none"> • Hair Finishing Spray • Dry Shampoo • Aerosol Sunscreen

Date	Topics Discussed
	<ul style="list-style-type: none"> • Mouthwash • Personal Fragrance Product with less than 20 percent fragrance • Antiperspirants and Deodorants
October 17, 2019	<ul style="list-style-type: none"> • Aerosol Air Freshener • Laundry Detergent and Fabric Softener • Nonaerosol Glass Cleaner • Aerosol Cooking Spray • Floor Wax Stripper • Paint Remover or Stripper • Aerosol Crawling Bug Insecticide • Charcoal Lighter Material • Hand Sanitizer

* Meetings held by webinar.

Staff also held four third-round Specific Topic Work Group Meetings between March and July 2020. Table XII-4, below, shows the dates and topics discussed in round three of specific topic work group meetings.

Table XII-4: Round Three Specific Topic Work Group Meeting

Date	Topics Discussed
March 10, 2020*	<ul style="list-style-type: none"> • Hair Care Products • Personal Fragrance Product with 20 percent or less fragrance • Manual Air Freshener • Sunset of Two Percent Fragrance Exemption
April 20, 2020**	<ul style="list-style-type: none"> • Method 310 Updates • Associated Consumer Product Regulation Clarifications to Method 310
July 2, 2020**	<ul style="list-style-type: none"> • Draft proposed Method 310 updates
July 9, 2020**	<ul style="list-style-type: none"> • Sunset of Two Percent Fragrance Exemption • Expanding definition of “label” to include claims a manufacture makes on its internet site • “Energized Electrical Cleaner” definition update to address off label use for automotive maintenance and repair.
October 29, 2020**	<ul style="list-style-type: none"> • “Energized Electrical Cleaner” definition update to address off-label use for automotive maintenance and repair.

* Meeting held in person and via webinar.

** Meeting held via webinar to comply with California’s public health directives.

2. Public Workshops

Staff also held five formal public workshops. CARB publicized these workshops by publishing formal workshop notices on CARB’s website, and by emailing a public

workshop notice describing topics to be discussed to the over 4,000 stakeholders who had signed up as interested parties on CARB’s Consumer Product GovDelivery email notification system. Prior to each public workshop, staff posted all relevant materials to CARB’s consumer products webpage and issued a public notice. Table X-5, below, lists the dates of each of the five public workshops. A description of the topics presented at each workshop is also presented below.

Table XII-5: Public Workshops

Date	Topic
April 12, 2019	First Public Workshop*
November 7, 2019	Second Public Workshop*
April 14, 2020	Third Public Workshop**
July 28, 2020	Fourth Public Workshop**
November 10, 2020	Fifth Public Workshop**

* Workshop held in person and by webinar.

** Workshop offered only as public webinars to comply with California’s public health directives.

a. First Public Workshop

At the first public workshop on April 12, 2019, staff provided stakeholders with background information on CARB’s consumer products program, and discussed and solicited public feedback on the anonymized, aggregated survey data summaries posted to CARB’s webpage on April 2, 2019. Staff also outlined and solicited feedback on the anticipated rulemaking work group descriptions and schedule. Finally, staff spoke and solicited feedback regarding the proposed category evaluation process, and shared staff’s considerations in evaluating potential categories for potential new or lower VOC standards.

b. Second Public Workshop

At the second public workshop, on November 7, 2019, staff provided a description of the South Coast Air Basin’s SIP Commitment and the long-term Statewide SIP commitment, and a description of the updated consumer products emission inventory. Staff then discussed and solicited feedback on topics including: 1) staff’s modified assumptions of the VOC content of “fragrance” for emissions inventory purposes; 2) staff’s initial draft proposal for new or lower VOC standards; 3) staff’s initial draft proposal to sunset the Two Percent Fragrance Exemption; 4) proposed concepts and potential amendments to improve program transparency and effectiveness; and 5) proposed next steps in the regulatory development process.

c. Third Public Workshop

At the third public workshop, staff presented and solicited public feedback on proposed draft regulatory amendments, including updated proposed VOC standards; modifications to the proposal to sunset the Two Percent Fragrance Exemption; and a draft fragrance exemption proposal for non-aerosol General Purpose Cleaners and General Purpose Degreasers.

Other topics on which public feedback was solicited include: potential amendments to the Table of MIR values to include three additional compounds; discussion of how to avoid disincentivizing the use of compressed gas propellants; additional possible chlorinated solvent and GHG prohibitions; possible prohibition on use of the PCBTF (an Exempt VOC) in the proposed regulated categories due to toxicity and the resulting public health concerns; updated draft proposals for Energized Electrical Cleaner and Energized Electronic Cleaner categories; draft proposed changes to the Alternative Control Plan and the Innovative Product Exemption; and a discussion of web-based or other product claims.

d. Fourth Public Workshop

At the fourth public workshop, staff solicited public feedback on the draft regulatory category proposals; staff's proposal to sunset the Two Percent Fragrance Exemption and to modify this exemption for General Purpose Cleaners and General Purpose Degreasers; draft amendments to the Table of MIR values to include three additional compounds; potential concepts for how to avoid disincentivizing the use of compressed gas propellants as a means to mitigate HFC-152a; potential chlorinated solvent and GHG prohibitions in the categories proposed for VOC standards; a draft proposal to prohibit the use of the exempt VOC PCBTF due to toxicity and the resulting public health concerns; an updated draft proposal for Energized Electrical Cleaner; potential proposed changes to the Alternative Control Plan and the Innovative Product Exemption eligibility criteria; a draft proposal to address manufacturer web-based product claims; and a summary of draft proposed modifications to CARB Test Method 310. Staff also presented for public feedback staff's consideration of additional possible definitional updates for aerosol adhesives (creating a new special purpose adhesive category for aerosol PVP pipe cement) and multi-purpose solvents (addressing denatured alcohol used exclusively to maintain electrical equipment at public utilities).

As part of this workshop, CARB staff published an initial draft of potential regulatory language reflecting these proposals in underline strikeout format for stakeholder consideration and feedback.

e. Fifth Public Workshop

At the fifth public workshop, staff solicited public feedback on the draft regulatory category proposals; staff's proposal to sunset the Two Percent Fragrance Exemption, including new proposals to retain a 0.25 percent exemption for "Sanitizer," "Disinfectant," and air fresheners; an updated draft proposal to prohibit the use of the exempt VOC PCBTF due to toxicity and the resulting public health concerns; an updated draft proposal for "Energized Electrical Cleaner;" an updated draft proposal to the Innovative Product Exemption eligibility criteria for products that use compressed gas propellant instead of HFC-152a; a discussion of staff's proposal to defer a measure regarding manufacturer web-based product claims to a future rulemaking; and a summary of draft proposed modifications to CARB Test Method 310. Staff also presented for public feedback staff's updated proposal of additional possible definitional updates for aerosol adhesives (creating a new special purpose adhesive category for aerosol PVP pipe cement) and multi-purpose solvents (addressing denatured alcohol used exclusively to maintain

electrical equipment at public utilities).

As part of this workshop, CARB staff published an updated draft of potential regulatory language reflecting these proposals in underline strikeout format for stakeholder consideration and feedback.

3. Additional Public Participation

In addition to the stakeholder feedback provided to CARB staff during public work group meetings and public workshops, staff met with both individual stakeholders and groups of stakeholders on numerous occasions to hear perspectives on development of the regulatory proposals, both at the request of specific stakeholders and to collect specific information. CARB staff also collaborated with its counterparts at U.S. EPA, DTSC, OEHHA, DPR, Cal Recycle, South Coast Air Quality Management District and other public agencies to share information and explore opportunities to meet our common environmental and public health.

The Proposed Amendments reflect the work of CARB staff, based upon the data, expertise, and unique perspectives provided by industry leaders, product manufacturers, NGOs, academics, public agencies, members of the public, and others over the past six years. CARB staff thanks the many interested public stakeholders that have contributed to developing and refining the Proposed Amendments.

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XIV. Appendices

Appendix A: Proposed Amendments to the California Consumer Products Regulations

Appendix A-1: Proposed Amendments to the Regulation for Reducing Volatile Organic Compound Emissions from Antiperspirants and Deodorants

Appendix A-2: Proposed Amendments to the Regulation for Reducing Emissions from Consumer Products

Appendix A-3: Proposed Amendments to the Regulation for Reducing the Ozone Formed from Aerosol Coating Product Emissions

Appendix A-4: Proposed Amendments to the Alternative Control Plan Regulation for Consumer Products

Appendix A-5: Proposed Amendments to the Tables of Maximum Incremental Reactivity (MIR) Values

Appendix A-6: Proposed Amendments to Method 310: Determination of Volatile Organic Compounds (VOC) in Consumer Products and Reactive Organic Compounds (ROC) in Aerosol Coating Products

Appendix B: Evaluation of Two Percent Fragrance Exemption Utilization

Appendix C: Energized Electrical Cleaner Appendix

Appendix D: Recurring and Fixed Cost Tables

Appendix E: Emission Inventory Appendix