State of California
Air Resources Board

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

CALIFORNIA
AIR RESOURCES BOARD

Final Statement of Reasons

December 2021

Table of Contents

List of Acronyms and Abbreviations

3R	Raymond Regulatory Resources
AMR	Automotive and Maintenance Repair
AMR ATCM	Airborne Toxics Control Measure for Automotive Maintenance and Repair Activities
AQMD	Air Quality Management District
C & D	Church & Dwight Co.
CARB	California Air Resources Board
CISA	The Cybersecurity and Infrastructure Security Agency
DIPPR	Design Institute for Physical Properties Project 801 Database
DME	Dimethyl Ether
ECIW	Essential Critical Infrastructure Workforce
EEC	Energized Electrical Cleaner
FCA	Fragrance Creators Association
FDA	Food and Drug Administration
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
GHG	Green House Gas
GWP	Global Warming Potential
GPC/ GPD	General Purpose Cleaner/ General Purpose Degreaser
HCPA	Household and Commercial Products Association
HFC-152a	1,1-Difluoroethane
HFO-1233zd	1-Chloro-3,3,3-Trifluoropropene
I&I	Industrial and Institutional Product
IPE	Innovative Product Exemption
ISOR	Initial Statement of Reasons
LPG	Liquefied Petroleum Gas
MCS	Multiple Chemical Sensitivity
LVP-VOC	Low Vapor Pressure Volatile Organic Compound
MIR	Maximum Incremental Reactivity
NAA	National Aerosol Association
NIOSH	National Institute for Occupational Safety and Health
NOAA	National Oceanic and Atmospheric Administration
NOx	Nitrogen Oxides
OFP	Ozone Forming Potential
PCPC	Personal Care Products Council
PCA	Pine Chemicals Association International
PFPs	Personal Fragrance Products
RIFM	Research Institute for Fragrance Materials
ROC	Reactive Organic Compounds
ROG	Reactive Organic Gas

SB 258	Cleaning Product Right to Know Act
SB 312	Flavor Ingredient Right to Know Act
SIP	State Implementation Plan
TAC	Toxic Air Contaminant
tpd	tons per day
trans-HFO-1234ze	trans-1,3,3,3-Tetrafluoropropene
U.S. EPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound
WAIB	The Western Aerosol Information Bureau

State of California
Air Resources Board

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

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

Public Hearing Date: March 25, 2021
Agenda Item No.: 21-2-1

I. General Discussion

The Staff Report: Initial Statement of Reasons for Rulemaking (staff report or ISOR), entitled "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" (Proposed Amendments), released February 2, 2021, is incorporated by reference herein. The staff report contained a description of the rationale for the Proposed Amendments. On February 2, 2021, all references relied upon and identified in the staff report were made available to the public.

As explained in the staff report, the primary purpose of the Proposed Amendments is to fulfill the requirement in the 2016 State Strategy for the State Implementation Plan (2016 State SIP Strategy) that the California Air Resources Board (CARB) develop measures to reduce volatile organic compound (VOC) emissions from consumer products by 1-2 tons per day (tpd) by 2023, 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 fulfill these emission reduction commitments needed to help California attain federal ozone standards.

The Proposed Amendments establish 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 product categories, staff has proposed extending the prohibition on the use of several chlorinated toxic air contaminants (TAC) and the use of compounds with a global warming potential (GWP) value of 150 or greater.

The Proposed Amendments also sunset a longstanding exemption for fragrance ingredients (the Two Percent Fragrance Exemption) for most consumer product categories. Additionally, the Proposed Amendments encourage the development and sale of products using compressed gas or other innovative propellants in "Hair Finishing Spray," "Dry Shampoo," and "Personal Fragrance Product," reduce excess VOC and TAC emissions from "Energized Electrical Cleaner," and update other regulatory provisions to improve program transparency and effectiveness.

The Proposed Amendments amend sections 94501, 94502, 94506, 94508, 94509, 94510, 94511, 94513, 94515, 94521, 94522, 94524, 94526, 94540, 94541, 94542, 94543, 94544, 94545, 94546, 94547, 94548, 94549, 94550, 94551, 94552, 94553, 94554, 94555, 94700, Title 17, California Code of Regulations, and amendments to sections 1,2,3,4,5,6,8 and Appendix A of Method 310, which is incorporated by reference in California Code of Regulations, title 17, sections 94506, 94515 and 94526.

On March 25, 2021, CARB held a public hearing to consider the Proposed Amendments, as described in the Staff Report and associated Notice of Public Hearing (45-Day Notice). The formal comment period for the Proposed Regulation opened February 5, 2021, and closed March 22, 2021. Written comments were received from a total of 59 individuals or organizations during the formal comment period. Oral comments were given by 13 individuals during the March public hearing. No written comments were received at the hearing. At the March 25, 2021, public hearing, the Board directed staff to make appropriate modifications to the originally-proposed regulation, after considering comments received during the formal public comment period and during the Board Hearing, available for public comment for at least 15 days.

The text of proposed modifications to the originally-proposed regulation and supporting documents were made available for a supplemental 15-day comment period through a "Notice of Public Availability of Modified Text and Availability of Additional Documents and Information" (15-Day Notice). The 15-Day Notice, modified regulatory language, and additional supporting documents were posted on August 19, 2021, on CARB's website: http://ww2.arb.ca.gov/rulemaking/2021/consumerproducts2021, accessible to stakeholders and interested parties. The comment period commenced on August 19, 2021, and ended on September 3, 2021. All modifications to the regulatory language are clearly indicated in the 15-Day Notice. There were 12 comment letters received during this period.

This Final Statement of Reasons (FSOR) updates the staff report by identifying and providing the rationale for the modifications made to the originally-proposed amendments to the regulatory text. The FSOR also contains a summary of the comments received by CARB during the formal rulemaking process on the Proposed Amendments or the process by which they were adopted, and CARB's responses to those comments.

A. Mandates and Fiscal Impacts to Local Governments and School Districts

The Board has determined that this regulatory action will not result in a mandate to any local agency or school district the costs of which are reimbursable by the state pursuant to Part 7 (commencing with section 17500), Division 4, Title 2 of the Government Code, because the proposed amendments do not mandate a new program or higher level of service on any local government, nor do they include any costs or cost savings mandated by the State. Further, the impacts of the proposed amendments apply generally to private and public entities, so they do not impose unique new requirements on these local agencies and are not a reimbursable mandate.[1]

B. Consideration of Alternatives

For the reasons set forth in the Staff Report, staff's comments and responses at the hearing, and in this FSOR, the Board determined that no alternative considered by the agency would be more effective in carrying out the purpose for which the regulatory action was proposed, or would be as effective and less burdensome to affected private persons, or would be more cost-effective to affected private persons and equally effective in implementing the statutory policy or other provisions of law than the action taken by the Board.

The primary purpose of the Proposed Amendments is to lower VOC emissions from the use of consumer products, to reduce the formation of ground-level ozone and help attain national ambient air quality standards. By helping to expedite attainment of State and federal health-based air quality standards, the Proposed Amendments also provide health and wellness benefits for California residents. The Proposed Amendments achieve statewide VOC reductions of 3.00 tpd in 2023 and 9.80 tpd in 2031, including reductions of 1.25 tpd in 2023 and 4.03 tpd in 2031 in the South Coast Air Basin. Potential co-benefits of the Proposed Amendments include:

- Improvements to indoor air quality, depending on the extent that the proposed sunsetting of the Two Percent Fragrance Exemption would reduce consumer product fragrance content;

- Ensuring that up to three tons per day of VOC emissions do not occur in future years by eliminating the Two Percent Fragrance Exemption for most regulated consumer product categories;

- Reduction of toxic air contaminant (TAC) emissions and the associated health risk, particularly among those repairing or maintaining automobiles, by extending the restriction on the use of certain TACs in products, and by

[1] County of Los Angeles v. State of California, 43 Cal. 3d 46 (1987), *https://scocal.stanford.edu/opinion/county-los-angeles-v-state-california-28508*. January 1987.

excluding products sold to Automotive Maintenance and Repair Facilities from the "Energized Electrical Cleaner" category; and

- Reducing greenhouse gas (GHG) emissions by encouraging the use of innovative zero-emission compressed gas propellants in "Hair Finishing Spray," "Dry Shampoo," and "Personal Fragrance Products."

CARB analyzed three alternatives to the proposed regulation. The first alternative is to impose more stringent VOC standards on the product categories included in these provisions, thus achieving greater emissions benefits. This alternative was rejected based on staff's evaluation of data gathered during the public rulemaking process that show it to be commercially and technically infeasible, and less cost effective.

The second alternative would impose less stringent VOC standards on the product categories included in these provisions, achieving fewer emission benefits. 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 the Proposed Amendments to help achieve the federal ozone standards. Further, 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 the second alternative.

The third alternative would adopt product-weighted reactivity-based standards instead of mass-based VOC content standards for the "Hair Finishing Spray" and "Dry Shampoo" categories. These product-weighted maximum incremental reactivity (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. Staff rejected Alternative Three due to potential implementation challenges. Further, 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 mass-based VOC standards.

During the development of the Proposed Amendments, staff learned that the second alternative could lessen the impacts of the Proposed Amendments on many consumer product manufacturers, including small businesses. However, as previously mentioned, this alternative would not fulfill the 2016 State SIP Strategy emission reduction commitment for consumer products because it would not achieve enough emission reductions, and so would not achieve the goals of the Proposed Amendments summarized below. The Board also rejected 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, because 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, resulting in the potential inability to achieve the needed emissions reductions.

For more information regarding these alternatives, and the benefits of the proposed action, please refer to the staff report and the 15-day notice on CARB's website: http://ww2.arb.ca.gov/rulemaking/2021/consumerproducts2021.

II. Modifications Made to the Original Proposal

A. Modifications Approved at the Board Hearing and Provided for in the 15-Day Comment Period

At the March 25, 2021, public hearing, staff presented additional proposed modified regulatory language, developed in response to comments received since the ISOR was released to the public on February 2, 2021. These modifications include the addition of a definition of "monoterpene" and related updates to the Innovative Product Exemption (IPE) regulatory language.

The Board directed the Executive Officer to make modified regulatory language, and any additional conforming modifications that were appropriate, available for public comment, with any additional supporting documents and information, for a period of at least 15 days, as required by Government Code section 11346.8, subdivision (c). The Board further directed the Executive Officer to consider written comments submitted during the public review period and make any further modifications that are appropriate available for public comment for at least 15 days; and to present the proposed regulation to the Board for further consideration if warranted or take final action to adopt the regulation after addressing all appropriate modifications.

A Notice of Public Availability of Modified Text (15-day Notice) for the Proposed Amendments and modified text was released for a 15-day comment period on August 19, 2021. The specific proposed modifications are detailed in the 15-day Notice and companion underline/strikeout modified regulatory text. The 15-day modifications are also discussed, where appropriate, in the summary of comments and agency responses in Section IV of this document.

B. Non-Substantial Modifications

Subsequent to the 15-day public comment period mentioned above, staff identified the following additional non-substantive changes to the regulation:

1. Sections 94501(e), 94508(42), and 94521(27): Corrected a grammatical error by adding a strikethrough of the comma after "(CARB or ARB)."

2. Section 94502(c): Corrected a grammatical error by extending the strikethrough to include the extra comma after "Subchapter 7."

3. Section 94508(a)(6)(B): Deleted erroneously introduced numbering (A)-(E) in the list of subcategories from the 45-day proposed regulatory text.

4. Section 94508(a)(6)(B): Corrected a grammatical error by adding a period after the numbering (1)-(5) in the list of subcategories.

5. Section 94508(a)(6)(B)(4): Corrected a grammatical error by moving the period inside the quotation marks after "Disinfectant."

6. Section 94508(a)(40): Added underlines for "1." and "2." to reflect that the numbering is also in the proposed language.

7. Deleted the symbol "* * * *" for the intervening text after the subsection 94508(b) since it was not needed.

8. Section 94509(a), Table of Standards: Corrected a grammatical error by adding a space between the reference to subsection 94509(m)(1)(A) and subsequent text.

9. Section 94511(c)(1)(A)-(D): Added underline to headings "(A)" through "(D)" that was erroneously omitted during the 15-day changes.

10. Sections 94511(j)(1)(A) and (k)(2): Replaced the single quotes with double quotes to ensure consistency with how other categories are referenced.

11. Section 94511(j)(1)(A): Corrected the subsection number in the reference to the fragrance definition to 94508(a)(55), as indicated by the text.

12. Section 94515(a)(2) 3.4: Removed the partial underline of the word "pursuant."

13. Section 94542(17)(B): Removed underline and added strikethrough of "s" in the word "section."

14. Section 94542(32)(a): Added strikethrough of "s" in the word "section."

15. Appendix A of Method 310: Corrected an inadvertent numbering error by changing Figures 147-150 to Figures 1-4 to match the correct references in Method 310 - Appendix A.

The above described modifications constitute non-substantial changes to the regulatory text because they more accurately reflect the numbering of a section and correct spelling and grammatical errors, but do not materially alter the requirements or conditions of the proposed rulemaking action.

III. Documents Incorporated By Reference

The Proposed Amendments, which include the regulation and the incorporated Tables of Maximum Incremental Reactivity Values and Test Method 310, adopted by the Executive Officer incorporate by reference the following documents:

> North American Industry Classification System United States, 2017, Executive Office of the President, Office of Management and Budget (2017), incorporated by reference in California Code of Regulations, title 17, section 94508, subdivision (a)(40)(C)(3);
>
> IPCC's Fifth Assessment Report. Myhre, G., D. Shindell, F.-M. Bréon, W. Collins, J. Fuglestvedt, J. Huang, D. Koch, J.-F. Lamarque, D. Lee, B. Mendoza, T. Nakajima, A. Robock, G. Stephens, T. Takemura and H. Zhang, 2013: Anthropogenic and Natural Radiative Forcing. In: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA), incorporated by reference in California Code of Regulations, title 17, section 94511, subdivisions (c)(5)(B) and (c)(5)(C); and
>
> Method 310, Determination of Volatile Organic Compounds (VOC) in Consumer Products and Reactive Organic Compounds (ROC) in Aerosol Coating Products [Insert date of Amendment], incorporated by reference in California Code of Regulations, title 17, sections 94506, subdivision (a)(1), 94515, subdivision (a)(1); and 94526, subdivision (a)(1).

The following documents are incorporated by reference in the Proposed Amendments to Method 310, Determination of Volatile Organic Compounds (VOC) in Consumer Products and Reactive Organic Compounds (ROC) in Aerosol Coating Products;

> ASTM D5443-14 "Standard Test Method for Paraffin, Naphthene, and Aromatic Hydrocarbon Type Analysis in Petroleum Distillates Through 200°C by Multi-Dimensional Gas Chromatography (June 15, 2014)," incorporated by reference in section 2.1.22;
>
> ASTM D5580-15 "Standard Test Method for Determination of Benzene, Toluene, Ethylbenzene, p/m-Xylene, o-Xylene, C9 and Heavier Aromatics, and Total Aromatics in Finished Gasoline by Gas Chromatography (December 1, 2015)," incorporated by reference in section 2.1.23;
>
> NIOSH Methods 1300 "Ketones I, NIOSH Manual of Analytical Methods, Fourth Edition (August 15, 1994)," incorporated by

reference in section 2.1.28;

NIOSH: Methods 1401 “Alcohols II, NIOSH Manual of Analytical Methods, Fourth Edition (August 15, 1994),” incorporated by reference in section 2.1.30;

NIOSH: Methods 1402 “Alcohols III, NIOSH Manual of Analytical Methods, Fourth Edition (August 15, 1994),” incorporated by reference in section 2.1.31;

NIOSH: Methods 1403 “Alcohols IV, NIOSH Manual of Analytical Methods, Fourth Edition (March 15, 2003),” incorporated by reference in section 2.1.32; and

The following documents are incorporated by reference in the Proposed Amendments to the Aerosol Coating Products Regulation:

ASTM D5381 - 93(2014) "Standard Guide for X-Ray Fluorescence (XRF) Spectroscopy of Pigments and Extenders (July 1, 2014)," incorporated by reference in California Code of Regulations, title 17, section 94526, subdivision (a)(2);

ASTM D523 - 08 "Standard Test Method for Specular Gloss (June 1, 2008)," incorporated by reference in California Code of Regulations, title 17, section 94526, subdivision (a)(3); and

ASTM D1613 - 06 "Standard Test Method for Acidity in Volatile Solvents and Chemical Intermediates Used in Paint, Varnish, Lacquer, and Related Products (April 1, 2006)," incorporated by reference in California Code of Regulations, title 17, section 94526, subdivision (a)(4).

These documents were incorporated by reference because it would be cumbersome, unduly expensive, and otherwise impractical to publish them in the California Code of Regulations. In addition, some of the documents are copyrighted, and cannot be reprinted or distributed without violating the licensing agreements. The documents are lengthy and highly technical test methods that would add unnecessary additional volume to the regulation. Distribution to all recipients of the California Code of Regulations is not needed because the interested audience for these documents is limited to the technical staff at a portion of reporting facilities, most of whom are already familiar with these methods and documents. Also, the incorporated documents were made available by CARB upon request during the rulemaking action and will continue to be available in the future. The documents are also available from college and public libraries or may be purchased directly from the publishers. The North American Industry Classification System United States, 2017, is available from the United States Executive Office of the President, Office of Management and Budget.

IV. Summary of Comments and Agency Responses

This chapter summarizes public comments received during 45- and 15-day comment periods regarding the Proposed Amendments. Comments received during the 45-day comment period are summarized in Section A, Table 1; written or oral comments provided at the March 25, 2021, Board Hearing are summarized in Section B, Table 2; and comment letters received during the 15-day changes public comment period are summarized in Section C, Table 3. CARB staff's responses to these public comments can be found in Section D.

CARB would like to express its appreciation to the numerous organizations, agencies, and individuals that participated in the rulemaking process to develop and propose the Proposed Amendments. The Proposed Amendments will provide much-needed reductions in VOCs, as well as co-benefit reductions in TAC and GHG emission reductions in the State.

A summary of comments on the Proposed Amendments, as well as responses, are categorized and provided below. Note that all content reflects the submitted comments; however, some comments which follow were scanned or otherwise electronically transferred, so they may include minor typographical errors or formatting that is not consistent with the originally submitted comments. Typographical and grammatical errors were not corrected and were designated with (*sic*), where appropriate, to indicate that this was how the comment was received by CARB. Reproduction of comments does not reflect CARB's views, but the views of the commenters; only CARB's responses to the comments reflect CARB's views. The quotation of a comment or lack of a CARB response to a specific point in a comment does not indicate CARB agreement. Consistent with applicable law, CARB responded mainly to objections or recommendations specifically directed at the agency's proposed action, and to comments on the procedures followed by the agency in proposing or adopting the action. All originally-submitted comments are available in Appendices A-C of this FSOR.

A. Written Comments Received during 45-day comment period

Written comments were received during the 45-day comment period in response to the March 25, 2021, public hearing notice, and oral comments were presented at the Board Hearing. Listed below are the organizations and individuals that provided written comments during the 45-day comment period:

Table 1: List of Written Comments Received During the 45-Day Comment Period

Comment Number	Commenter	Affiliation	Date Comment was Received/ Added to Database	Subject(s)
1	Doug Raymond; Joe Bowen	National Aerosol Association (NAA)	3/05/2021	Compressed Gas IPE
2	Guy Woods	Green Products	3/10/2021	Methylene Chloride In Paint Removers
3	Joseph Yost	Household & Commercial Products Association (HCPA)	3/12/2021	-Two Percent Fragrance Exemption -Additions to Maximum Incremental Reactivity (MIR) Table -Costs -Aerosol Crawling Bug Insecticide -Energized Electrical Cleaners -Industrial & Institutional Product Definition -Aerosol Air Fresheners -Monoterpenes -Fragrance in Sanitizers and Disinfectant -0.25% fragrance/ monoterpene calculation -Enforcement Advisory number 131
4	Doug Raymond; Ernest Bernaducci	WD-40	3/16/2021	-Compressed Gas IPE -HFO-1233zd
5	Alexandra Scranton	Women's Voices for the Earth	3/17/2021	Two Percent Fragrance Exemption
6	Doug Raymond; William Auriemma	Diversified CPC International	3/18/2021	Additions to MIR Table
7	Doug Raymond; Erik Kendall	Wilsonart Adhesives	3/19/2021	HFO-1233zd
8	Jean Cheeseman	Individual	3/19/2021	Fragrance
9	James R Monroe	Monroe Science Education Services	3/19/2021	Two Percent Fragrance Exemption
10	Cynthia Ratliff	Individual	3/19/2021	Fragrance
11	Caryn Graves	Individual	3/19/2021	Two Percent Fragrance Exemption
12	Ron Schmidt	Individual	3/19/2021	Fragrance

Comment Number	Commenter	Affiliation	Date Comment was Received/ Added to Database	Subject(s)
13	Diana Bohn	Individual	3/19/2021	Fragrance
14	Nikki Nafziger	Individual	3/19/2021	Fragrance
15	Thoi Pham	Individual	3/19/2021	Fragrance
16	Sherrill Futrell	Individual	3/19/2021	Fragrance
17	Harriet Lit	Individual	3/19/2021	Fragrance
18	Bret Polish	Individual	3/19/2021	Two Percent Fragrance Exemption
19	Deborah Wardly	American Academy of Pediatrics	3/19/2021	Two Percent Fragrance Exemption
20	Susan Watts	Individual	3/19/2021	Two Percent Fragrance Exemption
21	Sylvia Valentine Henrichsen	Individual	3/19/2021	Two Percent Fragrance Exemption
22	Christopher Pearce	SC Johnson	3/19/2021	-Two Percent Fragrance Exemption -Bed Bug Insecticide Definition - Aerosol Crawling Bug Insecticide -Dry Shampoo -Monoterpenes -Internet Claims
23	Cassandra Hanrahan	Individual	3/19/2021	Two Percent Fragrance Exemption
24	Kathleen Wright	Individual	3/19/2021	Fragrance
25	Darynne Jessler	Individual	3/19/2021	Two Percent Fragrance Exemption
26	Leda Olinger	Firehorse Salon	3/19/2021	Two Percent Fragrance Exemption
27	Stephanie Taylor	Individual	3/19/2021	Fragrance
28	Jamie Ambrosi	Individual	3/19/2021	Fragrance
29	Doug Raymond; William Wood	PLZ Aeroscience Corporation	3/19/2021	-Additions to MIR Table - Aerosol Crawling Bug Insecticide -Dry Shampoo -Hair Care -Air Fresheners -Monoterpenes
30	Colleen Thomas	Individual	3/19/2021	Fragrances/VOCs
31	Greg Rosas	Individual	3/19/2021	Two Percent Fragrance Exemption
32	Daphne Raider	Individual	3/19/2021	Fragrance
33	Tina Colafranceschi	Individual	3/19/2021	Fragrance
34	Sylvia De Baca	Individual	3/19/2021	Two Percent Fragrance Exemption
35	Liza Grandia	Individual	3/19/2021	Fragrance
36	David Burtis	Individual	3/19/2021	Two Percent Fragrance Exemption
37	Doug Raymond; Laura Reinhard	Honeywell International Inc.	3/19/2021	HFO-1233zd
38	Doug Raymond; Steve Disckstein	Shield Packaging of PLZ Aeroscience	3/19/2021	Hair Care

Comment Number	Commenter	Affiliation	Date Comment was Received/ Added to Database	Subject(s)
39	Doug Raymond; John Davis	The Western Aerosol Information Bureau (WAIB)	3/19/2021	-Additions to MIR Table -Energized Electrical Cleaners -Air Fresheners -Monoterpenes -Plastic Pipe Cement Definition
40	Virginia Cusick	Individual	3/19/2021	Fragrance VOCs in Consumer Products
41	Anne Parzick	Individual	3/19/2021	Two Percent Fragrance Exemption
42	Zoe Harris	Individual	3/19/2021	Fragrance
43	Sharon Wilcox	Individual	3/20/2021	VOCs in Consumer Products
44	Rose Ann Witt	Individual	3/20/2021	Two Percent Fragrance Exemption
45	Erica Stanojevic	Individual	3/21/2021	Two Percent Fragrance Exemption
46-47	Lauren Schiffman	Individual	3/21/2021	Antiperspirants/ Deodorants
48	Doug Raymond; Mark Rivers	Aeropres Corporation	3/22/2021	-Compressed Gas IPE -HFO-1233zd
49	Doug Raymond	EMD Performance	3/22/2021	Method 310
50	Nelson Lawson	Pine Chemicals Association International (PCA)	3/22/2021	-Two Percent Fragrance Exemption -Industrial & Institutional Product Definition -Monoterpenes
51	Roya Adjory	Individual	3/22/2021	Fragrance
52	Doug Raymond; Jeffrey Shaul	Church and Dwight (C & D)	3/22/2021	-Compressed Gas IPE -Dry Shampoo
53	Denise Wesleder	Individual	3/22/2021	Legal Authority
54	Doug Raymond; Michelle Rudnick	CRC Industries	3/22/2021	Energized Electrical Cleaners
55	Amy Levitt	Unilever	3/22/2021	-Two Percent Fragrance Exemption -Costs -Dry Shampoo -Personal Fragrance Products -HFO-1234ze -Reactivity
56	Doug Raymond	Raymond Regulatory Resources (3R), LLC	3/22/2021	-Additions to MIR Table -Dry Shampoo -Hair Care -Energized Electrical Cleaners -Air Fresheners -Monoterpenes -Plastic Pipe Cement Definition -Reactivity

Comment Number	Commenter	Affiliation	Date Comment was Received/ Added to Database	Subject(s)
57	Amanda Nguyen	Fragrance Creators Association	3/22/2021	-Two Percent Fragrance Exemption -Monoterpenes -Personal Fragrance Products -Toxics
58	Lisette van Vliet	Breast Cancer Prevention Partners	3/22/2021	Two Percent Fragrance Exemption
59	Thomas Myers	Personal Care Products Council (PCPC)	3/22/2021	-Two Percent Fragrance Exemption -Costs -Dry Shampoo -Hair Care -Reactivity -Personal Fragrance Products -Toxics

B. Oral Comments Received at the Board Hearing on March 25, 2021

Oral comments were presented at the March 25, 2021, Board Hearing. Listed below are the organizations and individuals that provided oral comments at the Board Hearing:

Table 2: List of Comments Received at the Board Hearing held on March 25, 2021

Comment Number	Commenter	Affiliation	Date Comment was Received/ Added to Database	Subject(s)
OC-1	Dr. Megan Schwarzman	Family Physician and UC Berkeley School of Public Health	3/25/21	-Two Percent Fragrance Exemption -Proposed VOC Reductions
OC-2	Doug Raymond	3R Raymond Regulatory Resources; Church and Dwight; WD-40; Diversified CPC International; Aeropres Corporation; National Aerosol Association; Wilsonart Adhesives; Western Aerosol Information Bureau; PLZ Aeroscience; Shield Packaging; EMD Electronics; CRC Industries	3/25/21	-Compressed Gas IPE -Dry Shampoo -Energized Electrical Cleaner -Hair Care -HFO-1233zd -Manual Aerosol Air Freshener -Method 310 -Reactivity
OC-3	Joseph Yost	Household and Commercial Products Association	3/25/21	-Aerosol Crawling Bug Insecticide -Fragrance -Air Fresheners -Monoterpenes
OC-4	Jessica Olson	Honeywell	3/25/21	HFO-1233zd
OC-5	Narcisco Gonzalez	Individual	3/25/21	-Energized Electrical Cleaner -Costs
OC-6	Sarah Rees	South Coast Air Quality Management District (South Coast)	3/25/21	Support for Proposed Amendments
OC-7	Lisette van Vliet	Breast Cancer Prevention Partners NGO	3/25/21	Two Percent Fragrance Exemption
OC-8	Thomas Myers	Personal Care Products Council	3/25/21	Thanking staff for collaboration
OC-9	Christopher Chavez	Coalition for Clean Air	3/25/21	-Support for Proposed Amendments -Two Percent Fragrance Exemption
OC-10	Will Barrett	American Lung Association	3/25/21	-Support for Proposed Amendments

Comment Number	Commenter	Affiliation	Date Comment was Received/ Added to Database	Subject(s)
				-Two Percent Fragrance Exemption
OC-11	Amanda Nguyen	Fragrance Creators Association (FCA)	3/25/21	-Personal Fragrance Products -Two Percent Fragrance Exemption
OC-12	Lauren Rosenberger	Individual	3/25/21	Aerosol Crawling Bug Insecticide
OC-13	Christopher Pearce	SC Johnson	3/25/21	-Two Percent Fragrance Exemption -Proposed Amendments

C. Written Comments Received During the 15-day Comment Period

Written comments were received during the 15-day comment period in response to the August 19, 2021, public hearing notice. Listed below are the organizations and individuals that provided written comments during the 15-day comment period:

Table 3: List of Written Comments Received During the 15-day Comment Period

Comment Number	Commenter	Affiliation	Date Comment was Received/ Added to Database	Subject(s)
A	Dave Carroll	Individual	8/19/21	-Monoterpene Definition
B	Doug Raymond; Laura Reinhard	Honeywell	9/1/21	-Innovative Product Exemption
C	Doug Raymond; Jeffrey Shaul	Church & Dwight Co., Inc.	9/1/21	-Innovative Product Exemption
D	Doug Raymond; Ernest Bernarducci	WD-40 Company	9/3/21	-Innovative Product Exemption
E	Doug Raymond; Robert Sweger	Stoner Incorporated	9/3/21	-Innovative Product Exemption
F	Nicholas Georges	Household and Commercial Products Association	9/3/21	-Fragrance Exemption -Monoterpene Definition -Innovative Product Exemption -LVP Definition Reference
G	Doug Raymond; Bill Auriemma	Diversified CPC	9/3/21	-Innovative Product Exemption
H	Thomas Myers	Personal Care Products Council	9/3/21	-Innovative Product Exemption
I	Doug Raymond; John Davis	PLZ Aeroscience Corporation	9/3/21	-Innovative Product Exemption
J	Doug Raymond; Mark Rivers	Aeropress Corporation	9/3/21	-Innovative Product Exemption
K	Doug Raymond; Joe Bowen	National Aerosol Association	9/3/21	-Fragrance Exemption -Monoterpene Definition -Innovative Product Exemption
L	Doug Raymond	Raymond Regulatory Resources (3R), LLC	9/3/21	-Fragrance Exemption -Monoterpene Definition -Innovative Product Exemption -Method 310

D. Agency Responses to Comments Received during the 45-day comment period and Oral Comments Received at the Board Hearing

Consistent with Government Code section 11346.9, subdivision (a)(3), CARB staff have included a summary of each objection or recommendation made regarding the Proposed Amendments, together with an explanation of how the Proposed Amendments have been changed to accommodate each objection or recommendation, or the reasons for making no change. This requirement applies only to objections or recommendations specifically directed at the agency's proposed action or to the procedures followed by the agency in proposing or adopting the action.

Also, consistent with Government Code section 11346.9, subdivision (a)(3), CARB staff have generally aggregated, summarized, and responded to repetitive or irrelevant comments as a group. A comment is "irrelevant" if it is not specifically directed at the agency's proposed action or to the procedures followed by the agency in proposing or adopting the action. In some cases, CARB has directly quoted a comment. Reproduction of comments does not reflect CARB's views, but the views of the commenters; only CARB's responses to the comments reflect CARB's views. The quotation of a comment or lack of a CARB response to a specific point in a comment does not indicate CARB agreement. Instead, CARB has responded only to objections or recommendations specifically directed at the agency's proposed action, and to comments on the procedures followed by the agency in proposing or adopting the action, consistent with Government Code section 11346.9, subdivision (a)(3).

1. Comments in Support

a. Comments in support of the overall measure

CARB received multiple stakeholder comments that expressed their support for the overall proposal to amend the regulations to fulfill the requirement in the 2016 State SIP Strategy to reduce VOC emissions from consumer products in the South Coast Air Basin and statewide. The following commenters expressed support for the Proposed Amendments as a whole:

(30, 58, OC-1, OC-6, OC-9, OC-10).

Agency Response: These comments did not include any objection or recommendation regarding the Proposed Amendments, so CARB made no changes to the proposal in response to these comments. CARB staff appreciates stakeholder recognition of the importance of the VOC emission reductions achieved by the Proposed Amendments in helping to attain the federal ozone standards and protecting public health in the South Coast and statewide.

b. Comments expressing support for the measure but requesting more stringent VOC standards and/or accelerated implementation dates for VOC standards

CARB received comments requesting accelerated effective dates for the VOC standards from the following individuals and stakeholders:

(5, 58, OC-1, OC-9).

Agency Response: CARB has not changed the Proposed Amendments to accommodate this recommendation. As discussed in the ISOR, California Health and Safety Code section 41712 requires CARB to ensure that consumer product regulations are commercially and technically feasible, do not eliminate a product form, and do not reduce the efficacy of specified health products. As discussed in the ISOR, the proposed effective dates provide product manufacturers the time necessary to ensure compliance with the proposed requirements, while achieving the VOC reductions needed to meet national ambient air quality standards and to protect public health as expeditiously as possible.

c. Comments appreciative of staff engagement with stakeholders and the overall rulemaking process

CARB received the following comments that expressed appreciation for CARB staff's extensive public outreach, professionalism, transparency, and collaboration with interested stakeholders during the rule development process:

(1, 3, 6, 22, 29, 37, 38, 39, 48, 54, 55, 56, 57, 59, OC-2, OC-3, OC-8, OC-11, OC-13)

Agency Response: CARB appreciates these public comments and thanks all the product manufacturers, formulators, trade associations, non-governmental organizations, members of the public, and other interested stakeholders that contributed to development of the Proposed Amendments.

d. Comments emphasizing the importance of VOC reductions

Comment OC-6: Great. Good morning, Chair Randolph and members of the Board. My name is Sarah Rees. I'm a Deputy Executive Officer at South Coast Air Quality Management District. I appreciate the opportunity to testify today in support of the proposed rule. As you're aware, South Coast AQMD, we are a jurisdiction that has the worst ozone in the country. Our 17 million people who live in our area, they breathe this air every day. While NOx emission reductions are the key to attaining ozone standards, we do need VOC emission reductions as well. Consumer products remain amongst the highest VOC emitting categories. And in the future, it's the only category where we project the VOC emissions are actually going to increase. By 2031, we estimate that 25 percent of the VOC emissions in the basin will be from consumer products. So this rule is

necessary. It's part of CARB's commitments to reduce VOC emissions from consumer products by one to two tons per day by 2023. And we are supportive of this rule and urge the Board to adopt it.

Agency Response: CARB staff appreciates the South Coast Air Quality Management District's (District) recognition of the importance of VOC emission reductions, as well as the District's partnership in further reducing VOC emissions. Our agencies' collective efforts will expedite attainment of ozone standards, thereby protecting public health in South Coast. Consumer product emission reductions resulting from these regulatory amendments meet the targets for 2023 and 2031 in CARB's 2016 State SIP Strategy and the District's 2016 Air Quality Management Plan. Those emission reduction targets were designed to address projected growth in emissions as the number of consumers, and their use of products, increases. Benefits provided by these reductions will also contribute to progress toward attaining the 0.070 parts per million ozone standard.

Comment 5: Lastly, we appreciate the data supplied by CARB that both consumer product usage (and consumer product emissions) have increased in the last few years. Given this fact, it is all the more important to continue restricting VOC emissions from consumer products which comprise such a significant proportion of statewide emissions. For the sake of our health and the environment we support CARB's efforts to reduce VOC emissions as soon as possible.

Comment 58: We wholeheartedly support the proposals' goal to achieve statewide VOC emissions reductions, and note the importance of achieving these reductions in the South Coast Air Basin, where a high percentage of residents are in disadvantaged communities. Given the emerging evidence about the association between people's exposure to air pollution and their susceptibility to COVID infection and poor outcomes once infected, these VOC emissions reductions take on even greater importance.

Agency Response: These comments did not include any objection or recommendation regarding the Proposed Amendments, so CARB made no changes to the proposal in response to the comment. CARB thanks the commenters for the comments.

2. Air Freshener Categories

a. Comments in support of aspects of the air freshener provisions

Comment 3, Part 1: CARB's proposal to redefine the aerosol air freshener product forms required a substantial amount of time and effort

by both stakeholders and CARB staff to develop new definitions that more accurately reflect current product technology and use. HCPA member companies appreciate CARB staff's efforts to ensure that these new definitions provide the clarity that manufacturers require to formulate products to comply with the regulatory standards.

HCPA member companies support the definitions that CARB is proposing for each of the four new product categories:

- Manual Aerosol Air Freshener
- Automatic Aerosol Air Freshener
- Concentrated Aerosol Air Freshener
- Total Release Aerosol Air Freshener

Within the Automatic Aerosol Air Freshener category, HCPA also supports the proposed definition of, and the requirement for, the use of an "Automatic Air Freshening Dispenser."

Comment 3, Part 2:

Automatic Aerosol Air Freshener

HCPA member companies support the proposal to maintain the VOC standard of 30 percent by weight for this product category, which is the currently applicable VOC limit for the "Single Phase Aerosol Air Freshener" category. To comply with this regulatory standard, these niche products must be used with an "Automatic Air Freshening Dispenser," a specific type of device that must meet very prescriptive requirements. Formulating products that meet the requirement to function in this unique device will significantly limit the number of products that can comply with the clear definition for this category of aerosol air fresheners.

Concentrated Aerosol Air Freshener

HCPA member companies support the proposed VOC standard for this niche product category. It will be technologically challenging to reformulate products to comply with the proposed VOC standard of 15 percent by weight by the January 1, 2023, compliance date, and the second tier VOC standard of 10 percent by weight by the January 1, 2027, compliance date. In addition to complying with stringent VOC limits, manufacturers must also comply with unique requirements that a product: (1) be designed with a unique valve to ensure that the product dispenses no more than 185 microliters with each activation; and (2) is sold in aerosol containers of two ounces or less by weight. HCPA member companies commit to reformulate products to ensure that they comply with these unique and prescriptive requirements.

Total Release Aerosol Air Freshener

HCPA member companies support the proposed VOC standard for products in this niche subcategory. To comply with the proposed VOC standard of 25 percent by weight will be challenging since the product must also dispense all or most of the contents during a single application and be sold in containers of five ounces or less by weight. HCPA member companies commit to work to reformulate products to comply with these strict requirements.

Comment 29: PLZ appreciates the openness of CARB staff in dealing with the creation of niche categories and their respective VOC limits. Both the Concentrated Aerosol Air Freshener and the Total Release Aerosol Air Fresheners are now niche categories. While these categories are very small in size, these niche categories are important to the Consumer, for they perform a much needed function. The definitions created define these new categories well and the VOC limits, while technologically challenging, can be met.

Comment 39: WAIB supports the proposal for the Aerosol Air Freshener categories. The addition of the definitions for the new categories as well as the new VOC limits are supported by WAIB. The Association would like to thank the staff for their work with the Industry through numerous meetings in person and virtually to provide a reasonable and workable outcome for these categories. Adding the niche categories concentrated Aerosol Air Freshener and Total Release Air Freshener is valuable to the Industry.

Comment 56: 3R can support the VOC limits for the Automatic Aerosol Air Freshener, Concentrated Aerosol Air Freshener and Total Release Aerosol Air Freshener. These are niche categories but are very important to the consumer. In addition, the newly developed definitions are crafted to prevent any loopholes for other products to move into the category.

Comment OC-2: PLZ Aeroscience, and California based Shield Packaging are consumer product fillers and marketers. All support the VOC limits for the aerosol air freshener, especially the niche categories for concentrated and total release, as well as supporting the VOC limits for hair spray and dry shampoo.

Agency Response to Comments 3 Parts 1 & 2, 29, 39, 56, and OC-2: These comments did not include any objection or recommendation regarding the Proposed Amendments, so CARB made no changes to the proposal in response to these comments. CARB thanks the commenters for the support for staff's proposal, and for working with CARB to develop a balanced regulatory proposal that reduces VOC emissions to

the greatest extent feasible from the highest-emitting air freshener product categories, while excluding niche product types for which lower VOC standards may be infeasible at this time.

b. Comments noting industry challenges

Comment 3: HCPA member companies are committed to reformulating products to comply with the stringent proposed two tiers of VOC standards for this proposed new product category. The "Manual Aerosol Air Freshener" product category will include products that are currently regulated as "Single Phase Aerosol" (30 percent VOC standard by weight) and "Double Phase Aerosol" (20 percent VOC standard by weight) air freshener products.[1] HCPA member companies are confronted with a significant technological challenge to reformulate these products to comply with the proposed two tiers of VOC standards:

- 10 percent VOC standard by weight by 2023; and
- Five percent VOC standard by weight by 2027.

Based on the CARB 2015 Consumer Products Survey data, ethanol constitutes a significant portion the VOC content for this product category. An adequate amount of ethanol is critical to create and retain particle breakup necessary to prevent droplets from falling to the floor and causing a potential slip hazard and/or causing degradation of furniture and floor finishes. Therefore, as an initial matter, it will be technologically challenging for manufacturers to reformulate effective and safe products to comply with the proposed 10 percent VOC standard by the January 1, 2023 compliance date.

Furthermore, manufacturers will be required to reformulate many products a second (and possibly a third) time to comply with the very stringent five percent VOC standard by weight that will take effect on January 1, 2027 with the current two percent fragrance exemption and then again by January 2031 with a 0.25 percent exemption for the VOC content of fragrance. Reformulating products to meet these proposed VOC standards will require manufacturers and fragrance houses to expend a considerable amount of time and money to perform the necessary research, development, engineering and consumer testing for ensuring compliance.

HCPA member companies are committed to producing products that meet these challenging two tiers of VOC standards, meet consumers' expectations, and are safe when used according to label instructions.

Comment 56: The Manual Aerosol Air Freshener VOC limit will be technology forcing for both the 2023 effective date as well as the 2027 effective date. Industry will be working on these new limits.

Comment OC-3: The proposed regulatory amendments present very serious and costly reformulating challenges. First, CARB staff's proposal to redefine aerosol air fresheners to–required a substantial amount of time and effort by both stakeholders and CARB staff to develop new definitions that more accurately reflect current product technology and use. HCPA member companies commit to expend the resources necessary to research and develop product formulations to meet the stringent proposed VOC standards and challenging compliant states.

Agency Response to Comments 3, 56, and OC-3: CARB staff made no changes based on the received comment. CARB Staff believe the proposed VOC standard of 10 percent that would go into effect in 2023, and the proposed 5 percent VOC standard that would go into effect in 2027 for Manual Aerosol Air Freshener are technically and commercially feasible due to the significant market share of products sold into California at these VOC levels in 2015. As detailed in the Staff Report, 73 percent of all Manual Aerosol Air Freshener products reported during the 2015 Consumer Products Survey already complied with the proposed 10 percent standard for 2023 in, and 22 percent complied with the proposed 5 percent standard. Since 22 percent of Manual Aerosol Air Fresheners already comply with the proposed 5 percent standard, Staff believe that this proposed standard provides for enough ethanol for products to perform safely. Hence, it is possible to reformulate to meet the proposed standard by the proposed deadlines.

This proposal is cost-effective, as detailed in the economic analysis in the ISOR. Staff also estimate that an overall per-unit cost reduction may occur due to the decrease in overall ingredient costs for products that comply with the proposed standards.

Comment 3: HCPA members respectfully comment on the statement made by CARB staff in the description of the Air Freshener Product category, which in pertinent part states that these products are "…packaged in a disposable aerosol container."[1] While it is true that products packaged in aerosol containers are not refillable, aerosol containers are typically made of steel or aluminum, both of which are recyclable. The California Department of Resources Recycling and Recovery (CalRecycle) states that "Aerosol containers are generally made of steel, which is easily recycled."[2]

Agency Response: 'CARB staff made no changes based on the received comment. The term "disposable" was used in the Staff Report to indicate

that the product container is disposed of by the consumer after use, not to indicate the potential recyclability of a particular container type. Staff's intent in using this language is to include in this category products that consumers dispose of after use, either in the trash, by recycling, or any other method of disposal; the method of disposal is not relevant to the category definition, and so will not be included in the language.

3. Hair Care Products

a. Comments in support of Hair Care Product provisions

CARB received the following comments from a range of individuals and stakeholders that expressed their support for the two-tier VOC standard for Dry Shampoo and how Staff addressed technological and commercial feasibility challenges raised by stakeholders during the rulemaking process. They also support the proposed definition changes, including the name change from No Rinse Shampoo to Dry Shampoo. The following commenters expressed support for the hair care products staff proposal:

(22, 29, 38, 39, 52, 55, 56, and OC-2).

Agency Response: These comments did not include any objection or recommendation regarding the Proposed Amendments, so CARB made no changes to the proposal in response to these comments. CARB thanks the commenters for the comments.

b. Comments requesting the addition of volumizing in the category definition of Dry Shampoo.

Comment 55: We suggest adding "volumizing" to this definition as an addition to the cleansing benefit, as this is a claim that is traditionally made on 'wet' shampoos and can result from the removal of oil from the hair.

Comment 59: As to the proposed definition, it is important to remember that the purpose of Dry Shampoo is to remove oil from the hair, which results in making the hair fuller in body and volume. As such, CARB should amend the definition slightly to include the word "volumizing," thereby explicitly allowing the use of this claim for dry shampoos, especially given this is a claim that is traditionally made on 'wet' shampoos as well.

Agency Response to Comments 55 and 59: CARB staff made no changes based on the received comments. Staff did not revise the definition of "Dry Shampoo" to include a volumizing claim to avoid losing VOC emission reductions by allowing "Hair Styling Products" to try to fit

into the higher-VOC "Dry Shampoo" category. Volumizing is not the main purpose of "Dry Shampoo" products. "Dry Shampoo" products will be subject to a much higher VOC 55 percent VOC standard in 2023, and a 50 percent standard in 2029. Staff also notes that the Proposed Amendments do not prohibit the use of every volumizing term on "Dry Shampoo" products.

c. Other comments on Hair Care Product provisions

Comment 59: Whether the current 55% VOC formulations are made with a an "exempt propellant" (e.g., HFC-152a) or Dimethyl Ether (DME), the 50% "compliant" formulations provided show that the 5% reduction in VOC is achieved predominantly by reducing solvents (ethanol and/or DME) and increasing water by a commensurate amount.

Decreasing the solvent and increasing water will result in longer drying times for the product and reduce consumer acceptability. At some point, the solubility of material which provides the hold will also become an issue, since solvents are needed to adequately disperse this ingredient.

Nevertheless, PCPC member companies are committed to achieving the 50% target. We appreciate that CARB recognizes the technical difficulty of formulating a consumer acceptable hair spray below a 50% VOC limit and, therefore, has decided to not pursue lower VOC standards for this category.

Agency Response: Staff agree that one method of reformulating products to meet the new 50% standard for Hair Finishing Spray is to replace VOC solvent material with a non-VOC, like water, but note that reformulation pathways utilizing VOC-exempt propellants for aerosol products are also possible and likely to be used by manufacturers. The use of exempt propellants is common in the Hair Finishing Spray category to meet lower VOC standards, which does not require an increase in water content or result in a reduction in consumer acceptability. In addition, updates to the IPE provisions proposed in the 15-day change period in response to stakeholder comments provide additional reformulation flexibility for Hair Finishing Spray products to meet the proposed standards.

Comment 59: PCPC appreciates the fact that CARB's proposed VOC standards for Hair Finishing Spray, No Rinse Shampoo (to be known as Dry Shampoo), Hair Shine, Temporary Hair Color, and Personal Fragrance Products (PFPs) remain unchanged from the July 28, 2020 proposal. Companies are already working to modify current product formulations necessary to meet these proposed VOC levels – especially for the January 1, 2023 implementation date – in anticipation of CARB Board approval.

Agency Response: This comment did not include any objection or recommendation regarding the Proposed Amendments, so CARB made no changes to the proposal in response to the comment. Comment noted.

4. Personal Fragrance Products

a. Comments in support of the Personal Fragrance Product provisions

Comment 39: WAIB supports the proposal for Hairspray, Dry Shampoo and Personal Fragrance.

Comment 55: Unilever appreciates and supports CARB's proposed VOC standards for Hair Finishing Spray, No Rinse Shampoo (Dry Shampoo), Hair Shine, Temporary Hair Color, and Personal Fragrance Products (PFPs) as proposed on July 28, 2020.

Agency Response: These comments did not include any objection or recommendation regarding the Proposed Amendments, so CARB made no changes to the proposal in response to these comments. CARB thanks the commenters for the comments.

Comment OC-1: I think the more recent proposals that extend compliance timelines for VOC content are a little unfortunate. The earlier ones – I was in favor of the earlier ones, but the VOC limits themselves are critical and I want to support that.

Agency Response: CARB staff made no changes to the proposal based on the received comment. As discussed in the ISOR, the proposed effective dates provide product manufacturers the time necessary to ensure compliance with the proposed requirements, while achieving the VOC reductions needed to meet federal air quality standards and protect public health as expeditiously as possible. For the "Personal Fragrance Products" categories, adequate time is needed before the second-tier standards become effective for responsible parties to report party's research and development efforts undertaken. These timelines will still meet CARB's 2016 State Strategy goals by the federal deadlines and protect public health.

Comment OC-1: CARB reported earlier this morning that personal fragrance product – products emit almost 15 tons a day of VOCs. And my own analysis of the 2015 consumer products survey data showed that emissions of VOCs from fragrances in personal care products totaled about six tons a day. So this obviously isn't news to the Board and the staff, but I think it's important to keep in mind a sense of the volume of these chemicals in commerce and in our air.

Agency Response: CARB staff made no changes based on the received comment. The Proposed Amendments will achieve the needed VOC reduction commitment to meet federal deadlines and protect the public health as expeditiously as possible.

b. Comments Indicating the Need for or Otherwise supporting the Proposed Technology Assessment

Comment 39: However, the Personal Fragrance VOC limits are technology forcing. The Technology review will be needed to ensure these stringent limits are able to be met.

Agency Response: CARB staff made no changes based on the received comment. CARB staff believes, based on survey and stakeholder data, that the second-tier standards are feasible. At stakeholders' request, CARB will conduct a technology assessment to monitor progress made before the effective date of the second-tier standards, to ensure that these standards remain feasible.

c. Comments proposing changes to elements of the Regulation's technology assessment

Comment 57, Part 1: Fragrance Creators offers the following additional comments on the Proposed Amendments with respect to the technological assessment for the Personal Fragrance Products category:

- Section 94513(i)(1)(A) of the Proposed Amendments provides that responsible parties shall provide "data regarding . . . the VOC content of fragrance ingredients. . . ." Fragrance Creators suggests that this provision be revised to require data regarding the VOC content of the "fragrance concentrate" or "fragrance mixture," as it is not possible to determine the VOC content of each individual ingredient of the fragrance mixture.

Comment 57, Part 2: Fragrance Creators submitted the following additional comment on the Proposed Amendments with respect to the technological assessment for the Personal Fragrance Products category: Section 94513(i)(1)(B) of the Proposed Amendments provides that responsible parties shall provide a written update on research and development efforts, which shall include a detailed description of steps taken to achieve compliance, including "types of formulations to be tested," "formulation data," "prototype testing," "toxicity testing and research," "stability testing," and "consumer acceptance research." Fragrance Creators suggests that CARB add to this list "olfactory/odor expert acceptance testing." A fragrance product must be deemed acceptable by an olfactory/odor expert before it can be marketed and

sold, and therefore this criterion is critical to evaluating technological feasibility.

Comment 59, Part 1: There are two technical considerations in the text of the amendments that are worth making for both aerosols and non-aerosols PFP's:

With respect to the technological assessment for the Personal Fragrance Products category:

Section 94513(i)(1)(A) of the Proposed Amendments provides that responsible parties shall provide "data regarding . . . the VOC content of fragrance ingredients . . . ."

We suggest revising this provision slightly to require data regarding the VOC content of the "fragrance concentrate" or the "fragrance mixture," (as it is not possible to determine the VOC content of each individual ingredient of the fragrance mixture).

Comment 59, Part 2: Section 94513(i)(1)(B) of the Proposed Amendments provides that responsible parties shall provide a written update on research and development efforts, which shall include a detailed description of steps taken to achieve compliance, including "types of formulations to be tested," "formulation data," "prototype testing," "toxicity testing and research," "stability testing," and "consumer acceptance research."

We suggest removing "consumer acceptance research" and replacing it with "olfactory/odor expert acceptance testing." A fragrance product must undergo an olfactory/odor expert acceptance test before deemed to be acceptable for presentation to consumers. (This is part of the technical steps that a product must go through). Otherwise, every small tweak to a fragrance will require consumer acceptance research, which is very costly and time consuming.

Agency Response to Comment 57 Parts 1 & 2, and Comment 59 Parts 1 & 2: CARB staff made changes based on the received comments. It was not CARB's intent to request a fully speciated listing of all the substances of the fragrance concentrate(s), but staff proposed a modification of the language of 94513(i)(1)(A) in the 15-day change to address such concerns and these comments, as follows:

a. data regarding product sales and composition for the year 2025, including the information listed in subsections 94513(a) and (c), the VOC content of the fragrance ingredients, <u>if requested by the Executive Officer</u>, and the entire product label for the responsible party's products sold or offered for sale in California.

Staff agrees that "expert olfactory odor testing" would be useful for CARB to consider as part of the technology assessment and has added this to the reportable list of steps taken to achieve the 50 percent by weight VOC standard as part of proposed 15-day changes.

Comment 55: Unilever also supports CARB's "Proposed Technology Assessment of the 2031 Standard," which was presented in the November 10, 2020 Public Workshop. Unilever supports that CARB will conduct another full technical assessment of the 2031 standard to determine if the 50% VOC standard for PFPs with less than or equal to 10% fragrance will be technically and economically feasible. We appreciate that CARB is aware that this standard is a challenge to industry and are willing to assess its feasibility. This technical assessment will require manufacturers to conduct a survey of all potentially impacted products for 2025, and we request an additional 3 months to conduct this survey, changing the deadline to June 30, 2026.

Comment 57: Fragrance Creators offers the following additional comments on the Proposed Amendments with respect to the technological assessment for the Personal Fragrance Products category:

- Section 94513(i)(1)(A) of the Proposed Amendments provides that responsible parties shall provide "data regarding . . . the VOC content of fragrance ingredients. . . ." Fragrance Creators suggests that this provision be revised to require data regarding the VOC content of the "fragrance concentrate" or "fragrance mixture," as it is not possible to determine the VOC content of each individual ingredient of the fragrance mixture.

Comment 59: The technical assessment will require manufacturers to conduct a survey of potentially impacted products for the year 2025. In order to conduct a complete survey of products sold as late as December 31, 2025, companies will need additional time. As previously requested, PCPC members are seeking an additional 3 months to conduct the survey, with a new deadline of June 30, 2026, to deliver the required information.

Agency Response to Comments 55, 57 and 59: CARB staff made no changes to the proposal in response to these comments. Extending the timeline to ensure that these standards remain feasible could delay the commencement of the technical assessment, and, therefore, the opportunity to make any necessary adjustments in advance of the January 1, 2031 effective date. Therefore, it is not possible to offer additional time, nor is it clear that additional time would be needed for the Personal Fragrance Products technology assessment as compared to similar assessments which have previously been conducted on other categories. Based on CARB discussion with stakeholders and data CARB received

during this rulemaking, every responsible party has the ability to determine the VOC content of fragrance ingredients in their products. The regulated entities may determine how best to do this, whether by asking their suppliers, by measuring it themselves, or by some other method.

Comment 57: Under CARB's Proposed Amendments, Personal Fragrance Products with 7 percent or less fragrance would be subject to a VOC standard of 70 percent by weight starting January 1, 2023 (the Tier 1 Standard). Starting January 1, 2031, Personal Fragrance Products with 10 percent or less fragrance would be subject to a VOC standard of 50 percent by weight (the Tier 2 Standard). CARB also proposes to conduct a technology assessment by 2027 to evaluate whether the Tier 2 Standard is feasible.

Fragrance Creators values the ongoing dialogue and collaboration with CARB staff to develop new VOC targets for Personal Fragrance Products, and generally supports CARB's commitment to undertake a technology assessment to reevaluate the feasibility of the Tier 2 Standard. Fragrance Creators remains committed to working with CARB and the fragrance industry on this technology assessment.

Comment 59: In its November 10, 2020 webinar, CARB presented an overview of the "Proposed Technology Assessment of the 2031 Standard." We greatly appreciate the inclusion of a Technical Assessment in the proposal as an important and necessary step to determining the feasibility of the 2031 proposed VOC limit.

Agency Response to Comments 57 and 59: These comments did not include any objection or recommendation regarding the Proposed Amendments, so CARB made no changes to the proposal in response to these comments. CARB thanks the commenters for the comments.

d. Comments expressing concern that the Regulation may not be technically or commercially feasible

Comment 57, Part 1: Fragrance Creators notes, however, that the proposed VOC limits may not be technologically, nor commercially, feasible across all of the subcategories of Personal Fragrance Products. As Fragrance Creators explained previously, for the vast majority of fine fragrance products (colognes, perfumes, parfums, eau de parfum, eau de toilette, etc.), compliance with the more stringent limits would be very difficult (at 70 percent) if not impossible (at 50 percent). Indeed, CARB's data shows that only an exceedingly small percentage of the market (5%) currently meets the Tier 2 Standard, and Fragrance Creators expects that this percentage is even lower (if not zero) for fine fragrance products.

Comment 57, Part 2: CARB states that it expects Personal Fragrance Products can be reformulated by replacing some of the ethanol content with water, or by utilizing solubilizers to facilitate compliance with the 50 percent standard. Fragrance Creators believes that these alternatives are likely to present significant feasibility challenges, particularly for fine fragrance products. As CARB notes, fine fragrance products are the "most simply formulated products" and consist predominantly of fragrance, ethanol, and water. Given the limited ingredients in these products, even a small change to the formulation changes the olfactory character of the product such that it loses its identity, which is particularly problematic for many longstanding and iconic fine fragrance products for which consumers expect a certain, consistent scent. In addition, industry already has evaluated several possible alternatives to ethanol (such as propylene glycol, isopropyl myristate, other alcohols, and phthalates) and determined that they are not feasible either because of technical concerns (odor, solubility, stability, etc.) or real and/or perceived health and environmental safety issues.

In sum, the composition of products in the fine fragrance category, coupled with the lack of commercially or olfactively viable alternative ingredients, makes CARB's proposal for the Personal Fragrance Products category especially challenging. Nevertheless, Fragrance Creators appreciates CARB's efforts to address industry concerns and is committed to working with CARB on the technology assessment to further evaluate feasibility of the Tier 2 Standard.

Comment 59, Part 1: Importantly, many companies are presently uncertain as to how to reduce VOC levels for much of the PFP category from 70% to 50% VOC:

b. While CARB states in the ISOR that 20% of product formulations from its 2015 survey met the proposed 50% VOC limit on "Personal Fragrance Products with less than 10% fragrance," we are unaware of any successfully marketed formulations which also meet the criteria of consumer acceptability and brand quality.

Comment 59, Part 2: The proposed VOC limits may not be technologically nor commercially feasible across all subcategories of non-aerosol Personal Fragrance Products. Indeed, significant reformulation of existing products will be needed for some subcategories to reach even the 70% VOC standard; and much work will be required to create some entirely new fine fragrances which meet a 70% standard.

For the vast majority of existing fine fragrance products with < 7% fragrance, (perfumes, parfums, eau de parfum, eau de toilette, cologne), compliance with 70 % will be difficult without compromising the overall

scent of the product. Indeed, as CARB points out, fine fragrances are "the most simply formulated products" comprised of fragrance (a mixture of hundreds of ingredients), ethanol, water and possibly a very small amount of ingredients like colorants or antioxidants. As a result, the smallest change in the fragrance mixture requires significant amounts of work just to maintain the same scent, as expected by consumers. Any change to the equilibrium ethanol/ water, which is very specific to any given fragrance mixture, strongly modifies the olfactory character of the product, which is its highly recognizable identity. Consumers will likely find any change to the scent of the product to be unacceptable. Generations of consumers expect over the time the exact same scent and sensation from their iconic fine fragrance brands, many of them on the market since several decades.

When it comes to a 50% standard, CARB's data show that regardless of fragrance content, only a very small percentage of today's market (less than 5%) currently meets the limit, and PCPC expects this percentage to be zero or close to nil for fine fragrances. If reformulation of most existing fine fragrances, which have been on the market for many years, is deemed difficult at 70%, it is even more true for 50%.

Agency Response to Comments 57 Parts 1 & 2, and Comments 59 Parts 1 & 2: CARB staff made no changes based on these comments. I majority of "fine fragrance" personal fragrance products contain more than 10 percent fragrance and will not be subject to any new standards under the Proposed Amendments. A smaller number of "fine fragrance products" contain between 7 percent and 10 percent fragrance and will not be subject to a new standard until January 1, 2031.

CARB staff disagrees, based upon reviews of the product formulation and sales data provided by product and fragrance manufacturers, and on extensive discussions with industry stakeholders, that the adopted 50 percent VOC standard is infeasible. However, as noted by the commenters, CARB has agreed to conduct a technical assessment prior to the standard's effective date to evaluate the standard's continued feasibility prior to its implementation. CARB staff looks forward to working with the Personal Fragrance Product manufacturers and other industry stakeholders to evaluate and achieve the maximum technically feasible and cost-effective VOC reductions from this large and diverse category of products.

Comment 59: Many avenues have been tried in the past to replace either partially or entirely ethanol without success; nevertheless, PCPC members are committed to working collaboratively with fragrance suppliers to assess the feasibility of new approaches and simultaneously with CARB on the technology assessment.

Comment OC-11: When it comes to the personal fragrance products category, as a matter of fact, currently, an exceedingly small percent of the existing market meets the tier two standard. 'hat's five percent by market share. And we expect that this number would be even lower for fine fragrance. So [*sic*] we have some concern moving forward about being able to meet these technical changes, primarily because fragrances consist predominantly of fragrance, ethanol, and water. So [*sic*] there will be a significant burden on trying to find ways to innovate out of this…

Agency Response to Comments 59 and OC-11: CARB staff made no changes based on these comments. 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. 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.

Evaluation of the product formulation data received during the 2015 Consumer Products Survey indicate that 20 percent of personal fragrance product formulations would comply with the proposed standard, and so CARB staff knows the proposal is feasible, 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.

Regarding "fine fragrances," It should be noted that nonaerosol products with more than 7 percent fragrance will not be subject to a new standard until January 1, 2031. And nonaerosol products with more than 10 percent fragrance will not be subject to any new standards under the Proposed Amendments.

e. Other comments regarding Personal Fragrance Products

Comment 58: In particular, we again would like to re-iterate our opposition to the absence of any further limits for VOC emissions for personal fragrance products that have a fragrance concentration above 20%. Individual fragrance formulations can be made up of anywhere between a dozen to sometimes hundreds of chemical constituents, and while 'iconic' brands might not wish to reformulate, they bear a responsibility, as does the manufacturer of every other VOC-emitting

consumer product, to doing their part to reduce VOC-related air pollution in our state. The California Clean Air law allows for the continuation of a product form, but it does not enshrine or protect iconicity from VOC reductions. Protecting the public health and preventing air pollution should be the key goals of this regulatory process, not allowing special interests to continue to maintain the special treatment their fragranced products have received for far too long.

Agency Response: Although Personal Fragrance Products with more than 20 percent fragrance are currently subject to a 65 percent VOC standard, Staff's regulatory focus on Personal Fragrance Products with fragrance content below 20 achieves the most cost-effective VOC reductions from this large and diverse category, while excluding those smaller volume products that contribute the smallest portion of VOC emissions. Table III-2 of the Staff Report illustrates that Personal Fragrance Products with more than 20 percent fragrance represent almost six percent of the category's unique products, but contribute only 1.3 percent of VOC emissions. By adjusting the applicable fragrance content threshold for VOC standards from the current 20 percent to 7 percent on January 1, 2023, and to 10 percent on January 1, 2031, the regulation maximizes the cost-effective VOC reductions from this category. While CARB could have retained the 20 percent fragrance threshold and set a more stringent VOC standard for products above this threshold, two fragrance thresholds (i.e., 7 percent and 20 percent as of January 1, 2023, and 10 percent and 20 percent as of January 1, 2031) would have significantly increased complexity and reduced the cost-effectiveness of the regulation, for minimal air quality benefit.

Comment 59: PCPC reiterates and urges CARB to explicitly state in its "resolutions" that, if the 50% VOC level for Personal Fragrance Products proves to be technically infeasible by the January 1, 2031 deadline, CARB will increase the proposed VOC limit to a higher level commensurate with the results of the technology assessment.

Agency Response: CARB staff made no changes based on this comment. CARB always has the authority to amend its regulations should circumstances change requiring such amendments. As CARB has done for previous rulemakings, staff will analyze and assess the results of the technology assessment to ensure that these standards remain feasible, and make further proposals, if necessary, based on our findings. It should be noted that options for proposals based on these findings are not limited to a choice between increasing or not increasing the VOC standard.

Comment 59: Once this proposed regulation is promulgated, PCPC and its members commit to engaging with CARB to develop and execute the survey and technology assessments required.

Agency Response: Comment noted. This comment did not include any objection or recommendation regarding the Proposed Amendments, so CARB made no changes to the proposal in response to the comment.

Comment 59: B. Personal Fragrance Product (Aerosol)

i. Industry is currently reformulating its products to meet the 70% VOC limit by 1/1/2023, in anticipation of this being in the final rule.

ii. To reformulate from 70% VOC to 50% VOC in 2031, CARB offers an example of a proposed formulation that eliminates the hydrocarbon propellant (30% to 0%), decreases the solvent ethanol from 40% to 30%, significantly increases the "Exempt Propellant" (i.e., HFC -152a) from 13% to 30%, adds 20% DME, and increases the water level from 13% to 16%.

    Consumer acceptability will be the primary issue for this type of product, since drying times and cost will likely be significantly impacted by these hypothetical changes.

iii. The technical assessment will provide CARB with much needed information about the potential for the 50% VOC formulations to be adopted by 1/1/2031.

5. **Agency Response: CARB staff made no changes based on this comment. The proposed formulation the commenter refers is hypothetical, and was included the Appendix D of the Staff Report in order to estimate recurring costs for a generalized compliant 50 percent VOC aerosol Personal Fragrance Product. Staff believes it is reasonably representative for the purposes of estimating recurring costs, but does not reflect the exact composition of an existing or reformulated product. Staff therefore cannot comment on the consumer acceptability of a hypothetical product.** **Crawling Bug Insecticide and Bed Bug Insecticide**

    a. ***Comments in support of the Bed Bug Insecticide definition and VOC standard***

    Comment 22: SC Johnson supports the proposed definition for "Bed Bug Insecticide" and the proposed 15% by weight VOC limit for the aerosol form, as well as the proposed 20% by weight VOC limit for all forms. We appreciate that CARB has clearly stated an effective date of January 1, 2030 for aerosol and "all forms" of Bed Bug Insecticide in the Table of Standards.

Comment 29: PLZ greatly appreciates the multiple changes that occurred on the proposal for this category. Moving to one new regulation versus the initially proposed two prevents the burdensome task of registering products with the EPA twice. PLZ also appreciates the movement from the initial proposed voe [*sic*] limits and the separation and creation of the Bed Bug category from the Crawling Bug category that was initially proposed. PLZ supports the new definitions and limits for these pesticide categories.

Agency Response to Comments 22 and 29: These comments did not include any objection or recommendation regarding the Proposed Amendments, so CARB made no changes to the proposal in response to these comments. CARB thanks the commenters for the comments.

b. Other comments on the Crawling Bug Insecticide and Beg Bug Insecticide provisions

Comment 3: HCPA member companies do not agree with CARB staff's stated strategies for meeting the proposed VOC standard. Reformulation will entail more than simply "…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."

Agency Response: CARB staff made no changes based on the received comment. As part of the staff discussion on reformulation strategies for Crawling Bug Insecticide (aerosol) products in the ISOR (Chapter 3), staff noted that, based on the formulation data reported in the 2015 Consumer Products Survey, several reformulation strategies can be utilized to meet the proposed eight percent by weight VOC standard. These strategies were reported in the survey data as including 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. This is not, and was not intended to be, an exhaustive list of reformulation options, nor is there a prescriptive requirement in the proposal as to how to meet the proposed standards. Product manufacturers may use the best strategies available to make safe, compliant, and effective consumer products.

Comment 3: HCPA member companies do not agree with the statement in the ISOR that, "Staff's evaluation of the 'Crawling Bug Insecticide' (aerosol) product category shows that some complying products already exist." HCPA members believe that products reported at the eight percent by weight VOC standard in the 2015 survey may not have included pests of "significant public health importance," or may be

"minimum risk pesticides" (i.e., FIFRA 25(b) products), which are exempt from EPA registration requirements, including EPA testing requirements for efficacy and toxicity. Thus, HCPA members believe that the products listed in Table III-15 cannot be compared fairly with the reported products in the survey that comply with the current 15 percent by weight VOC standard.

Moreover, since EPA updated the efficacy testing requirements after the 2015 survey data was submitted, it is possible that the products cited by CARB staff as complying with the eight percent by weight VOC standard may not meet the current EPA requirement for efficacy data to support a "knockdown," "quick kill" or "kills on contact" claim.

Agency Response: CARB staff made no changes based on this comment. Staff's review of aerosol "Crawling Bug Insecticide" product data submitted in response to the 2013-2015 survey indicated that there were compliant products that were exempt under Section 25(b) of FIFRA, as well as other compliant products that were subject to more stringent FIFRA requirements.

Staff acknowledge that "Crawling Bug Insecticide" products are subject to rigorous, multifaceted, and sometimes changing U.S. EPA efficacy and testing requirements, and these considerations featured heavily in discussions with product manufacturers as the provisions were being developed. (See Comment 22 below.) The Proposed Amendments therefore already reflect consideration of these factors and no further changes to the proposal are needed. CARB staff will continue to work with regulated entities to understand the current state of products and product requirements from other agencies.

Comment 22: Aerosol Crawling Bug Insecticide products play a critical role in helping consumers in California and across the country mitigate pests that are recognized by the U.S. Environmental Protection Agency (EPA) as "pests of significant public health importance," particularly cockroaches that can spread asthma, allergy, and food contamination. As such, it is equally important that these products are able to meet the rigorous efficacy testing requirements of EPA's product registration process, as well as registration by the California Department of Pesticide Regulation.

While we appreciate that CARB has amended its previous proposal to lower the current 15% VOC limit down to 6% in response to feasibility concerns, the new proposed VOC limit of 8% applicable on January 1, 2030 will still require significant reformulation to ensure optimal product efficacy and delivery of product to the target pest. While Liquified Petroleum Gas (LPG) propellants constitute the majority of VOCs in these

products, these propellants in their liquid phase play an important role in the solvent phase of our water based emulsion formulas. They help to form the proper emulsion, which in turn aids in the delivery and efficacy of the active pesticidal ingredient necessary to control the target pest. Simply switching from one type of propellant to another, as suggested by CARB in its Initial Statement of Reasons (ISOR, page III-68), addresses only one part of the reformulation challenge. Additional research will have to be performed to ensure that a change in propellent to comply with a much lower VOC limit does not negatively impact emulsion formation, spray pattern and particle size in a way that compromises product efficacy.

SC Johnson is committed, however, to achieving this reduction and we look forward to keeping in touch with CARB staff to share progress toward meeting the significantly lower VOC limit proposed for this product category.

Agency Response: CARB staff made no changes based on the received comment. As discussed in the ISOR, 25 out of the 87 product formulations evaluated for the proposed 8 percent VOC standard already comply with it. Therefore, staff believe it is possible to achieve compliance with the proposed VOC limit without compromising product efficacy.

Comment OC-12: Talk about mosquito repellents. Well, I like the fact that you don't allow propellants in there that are toxic chemicals, which is a positive thing. Make it more natural and actually more effective, because it irritates the skin and people get allergic to it. It is more likely they'll be able to attract mosquitos. But the other thing is the active ingredient in mosquito repellents are essential oil, lemon grass, geranium, eucalyptus, peppermint, sweet orange essential oils, like -- and they're actually necessary to prevent COVID, especially in places like Fresno where there's just swarms. You get like a hundred mosquito bites, like it would start itching rashes all over. And they bite you under the nose. They go under your mask. They just attack people that are stressed out and are already susceptible to COVID. And also West Nile Virus is red skin. That should get rid the sources of that problem so people won't have to cover themselves with mosquito repellents. But I don't see how -- I don't know about the alcohol and maybe it's important to make the whole product work or is it essential or not? I never researched that. But what is your opinion on those products? All right. Thanks.

Agency Response: CARB staff made no changes based on the received comment. This comment relates to “Insect Repellent,” which differs from “Crawling Bug Insecticide.” The Proposed Amendments do not amend existing regulatory language for “Insect Repellent” and these comments

are therefore outside the scope of these regulatory amendments. Therefore, CARB is not required to respond.

Comment OC-3: Second, the efficacy of aerosol crawling bug insecticide products is critically important, since these products kill or control pests of significant public health importance, many of which carry infectious diseases. We will have to resolve significant technical challenges to meet the proposed VOC standard for this product category, which cuts the current limit by more than half. We will maintain an ongoing dialogue with CARB staff to communicate progress in reformulating these products while continuing to comply with the U.S. EPA efficacy requirements.

Agency Response: CARB staff made no changes based on the received comment. Staff acknowledge that manufacturers will need to take steps to meet the proposed standard. As discussed in the ISOR, 25 out of the 87 product formulations evaluated for the proposed 8 percent VOC standard already comply with it. Therefore, staff believe it is possible to achieve compliance with the proposed VOC limit without compromising product efficacy. Staff will continue to work with regulated entities to understand the current state of products and product requirements from other agencies.

6. Sunsetting of the Two Percent Fragrance Exemption

a. Comments in support of sunsetting the Two Percent Fragrance Exemption as adopted by the Board

CARB received multiple comments from a range of individuals and stakeholders that expressed support for the provision sunsetting the Two Percent Fragrance Exemption. The following commenters support the staff proposal as written:

(13, 23, 27, 33, 39, 51).

Agency Response: CARB staff made no changes based on the received comments in support of sunsetting the Two Percent Fragrance Exemption. CARB appreciates public stakeholder support for this regulation's goals of reducing emissions, improving air quality and public health, and addressing the implementation challenges of a long-standing regulatory provision that exempted up to two percent of fragrance VOCs from consumer products regulatory standards.

Elimination of this exemption achieves several benefits, including reducing 0.30 tons per day of VOC emissions Statewide by 2031, locking in the current low rate of utilization of the exemption, thus preventing significant increases in VOC emissions that would result from full

utilization, creating equity of VOC content between fragranced and non-fragranced products within a consumer product category, and simplifying testing and enforcement efforts.

b. Comments requesting an earlier effective date for sunsetting the Two Percent Fragrance Exemption

CARB received multiple comments from a range of individuals and stakeholders that expressed overall support for the provision sunsetting the Two Percent Fragrance Exemption, but, in addition, requested that CARB adopt an earlier sunset date. The following commenters supported the provision as written, except for the effective date:

(5, 9, 11, 18, 19, 20, 21, 25, 26, 31, 34, 36, 41, 44, 45, 50, 58, OC-1, OC-7).

Agency Response: CARB staff made no changes based on the received comments. As explained in the Staff Report, CARB staff initially proposed, at its second public workshop on November 7, 2019, to sunset the Two Percent Fragrance Exemption on January 1, 2027. CARB held five subsequent public workshops and work group meetings to discuss the policy and technical rationales that underlaid that proposal, review proposed refinements based upon stakeholder feedback, and address stakeholder questions and comments.

One outcome of these discussions was a decision to move out the effective date -to January 1, 2031 - due to the large number of product categories potentially impacted and the feasibility of an earlier date. A sunset date of January 1, 2031, for most product categories provides an opportunity for many manufacturers to comply as new products are developed and existing products are reformulated anyway as part of typical business practice, thus reducing potential compliance challenges. Staff believe the January 1, 2031 effective date does not impact the objectives of the proposed provision, since utilization of the two percent fragrance exemption was already low to begin with, and industry stakeholders will be unlikely to reformulate their fragrances to use more of the exemption in the interim with the sunset in place.

c. Comments regarding fragrance sensitivities or other negative air quality or public health impact of fragrances

CARB received the following comments from individuals that discussed their particular concerns with fragrances in consumer products, including fragrance sensitivities and other negative and public health impacts of fragrances. Many of these commenters also requested CARB take further steps to reduce or eliminate fragrance VOCs in consumer products:

(8, 10, 12, 14, 15, 16, 17, 24, 28, 30, 32, 40, 42, 43).

Agency Response: CARB staff made no changes based on the received comments. As described in the Staff Report, CARB recognizes that health studies indicate exposure to fragranced products can pose negative health impacts, particularly to sensitive populations. However, the primary goal of the Proposed Amendments is achievement of VOC reductions to help attain health-based ozone standards. The current proposal may also achieve other public health co-benefits if fragrance components are reduced as a result of the current proposal.

d. Comments requesting retention of the Two Percent Fragrance Exemption

CARB received the following comments from various stakeholders on how Sunsetting the Two Percent Fragrance Exemption will impact the consumer products manufacturing industry and fragrance manufacturers. Where appropriate, comments are grouped and provided with a single response.

Comment 3: HCPA members do not support the proposed sunset of the current two percent fragrance exemption which impacts almost all regulated products manufactured on or after January 1, 2031. Fragrance is an important component of almost every consumer product: it encourages proper product use; covers base malodors; and creates a mechanism for product manufacturers to differentiate between brands and products. For the past 30 years, the current exemption that allows product formulators to include a de minimis level of fragrance in products has provided much-needed flexibility to comply with CARB's increasingly stringent VOC regulatory standards to meet customers' expectations. Consequently, the proposal to sunset the two percent fragrance exemption will constitute a de facto reduction of the VOC standards for almost every product category included in the Consumer Products Regulation.

Manufacturers only use the necessary amount of fragrance ingredients required to cover the malodor of base active ingredients, to prevent over-use by consumers and to differentiate their brands and products.

Comment 22: CARB proposes to eliminate the Two Percent Fragrance Exemption by 2031, with a modified 0.25 percent fragrance exemption for select product categories, including general purpose cleaners and degreasers, air fresheners, disinfectants, and sanitizers. While SC Johnson appreciates that CARB has pushed the effective date for "sunsetting" the Two Percent Fragrance Exemption to 2031 and has called for retaining a modified exemption for a very limited number of product categories, we

continue to have concerns about the impact of eliminating the exemption for almost all regulated consumer products.

As we and our industry partners have described, fragrance is an important component of many consumer products and serves multiple purposes – encouraging proper use of a product by the consumer (thus helping consumers to avoid over-use of a specific product); helping to mask base malodors; and enabling manufacturers to differentiate between products and brands in a highly competitive marketplace.

CARB recognized these functions when it established the exemption in 1990, explaining in a technical support document that the exemption was established "to allow manufacturers a de minimis level of these substances in various products such that the products may be marketed in an appealing manner to consumers." As a result, the exemption has provided product manufacturers with much-needed flexibility to achieve VOC limits that have become increasingly more stringent over the past thirty years. Put simply, the exemption has become a familiar and critical tool in the formulator's toolkit that has helped manufacturers bring effective products to market that meet CARB VOC standards and consumers' expectations for product performance and a pleasant user experience.

In the alternative, we would be pleased to participate in a separate and meaningful science-based discussion with CARB, its sister agencies, such as the Office of Environmental Health Hazard Assessment or the Department of Toxic Substances Control, and other interested stakeholders about the safety of fragrance ingredients used in consumer products.

For these and other reasons that have been ably described by the Household and Commercial Products Association and Fragrance Creators Association, we urge CARB to reconsider its proposal to "sunset" the Two Percent Fragrance Exemption.

Comment 50: PCA members do not support the proposed sunset of the current two percent fragrance exemption which impacts almost all regulated products manufactured on or after January 1, 2031. Fragrance is an important component of almost every consumer product: it encourages proper product use; covers base malodors; and creates a mechanism for product manufacturers to differentiate between brands and products. For the past 30 years, the current exemption that allows product formulators to include a de minimis level of fragrance in products to meet customers' expectations and provide flexibility to comply with CARB's increasingly stringent VOC regulatory standards. The proposal to sunset the two percent fragrance exemption will constitute a de facto

reduction of the VOC standards for almost every product category included in the Consumer Products Regulation. Manufacturers only use the necessary amount of fragrance ingredients required to cover the malodor of base active ingredients, to prevent over-use by consumers – a significant safety issue - and to differentiate their brands and products. CARB's own data provides irrefutable evidence that product manufacturers do not over-use the current fragrance exemption.

Comment 57: Research has also shown that fragrance plays a critical role in our emotions and experiences—from nurturing warm memories and our sense of home; to promoting positive self-image and self-confidence; and aiding in our well-being and psychological health, including reducing stress, sparking joy, and promoting brain function. It is for these reasons that CARB adopted the Two Percent Fragrance Exemption thirty years ago, explaining that the exemption would allow manufacturers to use a "de minimis level" of fragrance in their consumer products "such that the products may be marketed in an appealing manner to consumers." The consumer products industry has relied on this exemption for many years to formulate products that both work as intended and comply with the volatile organic compound ("VOC") emission limits for their product category, while still imparting a scent that drives consumer acceptance and other benefits. The Two Percent Fragrance Exemption thus enables product manufacturers to deliver efficacious products to the market that meet consumers' needs.

Comment 59: In previous comments, PCPC requested that CARB withdraw the proposal to "sunset" the 2% fragrance exemption for Article 2 products, in part because the VOC savings are minute and could require significant reformulation of products which currently use the exemption. It has also been pointed out that the elimination of the fragrance exemption amounts to a de facto reduction of the maximum VOC level in most Article 2 product categories.

Comment OC-13: We echo the concerns expressed by our trade groups about the proposal to eventually eliminate the long-standing two percent fragrance exemption, which has been a critical tool in the formulators toolbox for many years from meeting the increasingly lower VOC limits, while also delivering on consumer expectations about our products.

Agency Response to Comments 3, 22 Parts 1 & 2, 50, 57, 59, and OC-13: CARB staff made no changes to the Proposed Amendments based on the received comments.

Staff agrees with the descriptions of the purposes for the use fragrance materials in consumer product formulations offered by commenters. However, as discussed in the ISOR, the Two Percent Fragrance Exemption

is not utilized by a majority of regulated products. Staff, therefore, does not agree that sunsetting the exemption will present a difficulty to manufacturers and formulators.

For select product categories where sunsetting the exemption posed significant compliance challenges, CARB responded to stakeholder concerns by proposing to retain a fragrance exemption for those select categories. CARB also provided a specific exemption for monoterpenes in non-aerosol "General Purpose Cleaners" and non-aerosol "General Purpose Degreasers" beginning in 2023, to address challenges associated with products in these categories subject to a 0.5 percent VOC standard. Staff believes that this balanced proposal enables CARB to achieve its required VOC emission reductions while providing the necessary time and continued exemptions to facilitate compliance.

e. Comments supporting the Regulation's retention of a portion of the Two Percent Fragrance Exemption for Non-aerosol General Purpose Cleaner, Non-aerosol General Purpose Degreaser, and other product categories

Comment 3, Part 1: HCPA member companies support CARB's proposed Section 94510(c)(1), which will allow manufacturers to use up to 0.25% by weight of monoterpenes for "General Purpose Cleaner" (nonaerosol) and "General Purpose Degreaser" (nonaerosol) products as part of two percent fragrance exemption for products manufactured before January 1, 2031. HCPA appreciates this much-needed flexibility to comply with the very stringent VOC standards for these two product categories.

Comment 3, Part 2: HCPA member companies also support the proposed Section 94510(c)(3), which provides an exemption for fragrances and/or monoterpenes up to a combined 0.25 percent by weight for the "General Purpose Cleaner" (nonaerosol) and "General Purpose Degreaser" (nonaerosol) products that are manufactured on or after January 1, 2031.

Comment 3, Part 3: HCPA supports the proposed Section 94510(c)(4), which will provide a much-needed exemption for the VOC content of fragrance up to a combined level of 0.25% by weight for "Air Freshener," "Disinfectant," and "Sanitizer" products manufactured on or after January 1, 2031.

Manufacturers of air fresheners formulate these products for the purpose of masking odors and scenting the air. Therefore, fragrance is an essential ingredient of these products. Moreover, the use of fragrance ensures proper dosage, which is essential to avoid overuse of the products. This

limited exemption for fragrance is needed for air fresheners to retain their efficacy and safety.

Manufacturers of disinfectants and sanitizers use the allowable amount of VOCs for the requisite amount of alcohol and propellant needed to comply with EPA efficacy testing requirements. Without some level of fragrance exemption, manufacturers would likely be required to re-test and revise their EPA Confidential Statement of formula for their product(s). HCPA members appreciate this exemption which is needed to address feasibility concerns and to eliminate the potential for unintended consequences in a "health benefit product."

Comment 22: If, however, CARB proceeds with plans to eliminate the exemption as of January 1, 2031, SC Johnson fully supports CARB's proposal to provide a much-needed 0.25% fragrance exemption for General Purpose Cleaners and Degreasers, Air Fresheners, Disinfectants, and Sanitizers to assist with reformulation concerns – specifically, product performance and customer acceptance. We appreciate that CARB is proposing to retain at least a small portion of the exemption for these product categories.

Comment 29: PLZ supports the 0.25% exemption for monoterpenes in General Purpose Cleaner non-aerosol and General Purpose Degreaser non-aerosol. This is a good solution to an issue that has been active for several years now. The staff should be commended for their proposal.

Comment 39: WAIB supports the inclusion of the 0.25% VOC of Monoterpenes for General Purpose Cleaners and General Purpose Degreasers non-aerosol. This has been a long term issue and the staff proposal will hopefully settle this issue. We appreciate the staff's approach to the issue.

Comment 50: PCA member companies support CARB's proposed Section 94510(c)(1), which will allow manufacturers to use up to 0.25% by weight of monoterpenes for "General Purpose Cleaner" (nonaerosol) and "General Purpose Degreaser" (nonaerosol) products as part of two percent fragrance exemption for products manufactured before January 1, 2031. This will provide much-needed flexibility to comply with the very stringent VOC standards.

Comment 56: 3R supports the 0.25% by weight exemption for monoterpenes in General Purpose Cleaner nonaerosol and General-Purpose Degreaser nonaerosol. With the very stringent VOC limit of 0.5% for these categories this exemption is needed.

This issue has been going on for several years. The staff's proposal of the 0.25% monoterpene exemption is a creative solution to this difficult issue.

Comment OC-3: However, if the Board approves the proposed sunset of the fragrance exemption, HCPA member companies support the proposal to exempt a portion of the fragrance and the monoterpene content for the specified product categories.

Comment OC-13: If CARB intends to follow through on this proposal to sunset the exemption, then we would strongly support the staff proposal to retain a modest exemption for fragrance for a limited group of products that includes general purpose cleaners and degreasers, air fresheners, disinfectants, and sanitizers.

Agency Response to Comments 3 Parts 1, 2, & 3; 22; 29; 39; 50; 56; OC-3; and OC-13: CARB staff made no changes in response to these comments. CARB thanks the commenters for the comments.

f. Comments requesting the Regulation retain the Two Percent Fragrance Exemption for other categories

CARB received the following comments from various stakeholders asking for a 0.25 percent fragrance exemption retention for other categories beyond those granted a retention in the provision:

Comment 3: HCPA respectfully requests that CARB provide an exemption for 0.25 percent of the VOC content of fragrances for the Aerosol Crawling Bug Insecticide products manufactured on or after January 1, 2031. Based upon the 2015 CARB Consumer and Commercial Product Survey data, the Crawling Bug Insecticide (aerosol) product category reported use of the 2 percent fragrance exemption at the currently applicable 15 percent by weight VOC standard. The proposed eight percent by weight VOC standard constitutes a dramatic reduction from the current VOC limit.

Consequently, some level of fragrance will continue to be needed to ensure the application of proper dosage levels (i.e., the fragrance provides olfactory feedback for gauging the amount of product applied). Fragrance is also needed to mask the strong base odor of the active ingredients. As a practical matter, if the product does not contain an adequate amount of fragrance, the active ingredients' lingering malodor may cause consumers to avoid using (or to use an inadequate dosage of) products that have been proven to be effective in killing and controlling disease-carrying insects when used according to label instructions.

Therefore, HCPA respectfully requests that CARB also include "Crawling Bug Insecticide" (aerosol) as one of the product categories listed in Section 94510(c)(4) of the final regulation. This will provide manufacturers with a small degree of flexibility in complying with the very stringent proposed eight percent by weight VOC standard while maintaining the performance, safety, and efficacy of this product category.

C**omment 22:** Additionally, because the proposed 8% VOC limit represents a significant reduction from the current 15% VOC limit, we would ask that CARB also provide a 0.25% fragrance exemption in 2031 for this product category. CARB's consumer products survey data shows that the fragrance exemption was utilized by some reporting companies at the 15% VOC limit. Accordingly, we respectfully request CARB to allow a minimal amount of fragrance exemption for this category to give formulators added flexibility to comply with the reduced 8% by weight VOC limit without making changes to the formulation that could negatively affect product performance or efficacy.

Comment 55: In the ISOR, CARB reiterated its intent to eliminate the 2% Fragrance Exemption, but previously has expressed a willingness to consider retaining a portion of the exemption for certain low VOC categories. We request that CARB reconsider the intention of the exemption for certain personal care product categories with a low VOC limit and include this within the final regulation.

Comment 59: We request that CARB once again consider the retention of the exemption for personal care products with low VOC maxima, and include such provision in the final regulation.

Comment OC-3: HCPA also requests that the Board direct staff to provide this limited exemption for aerosol crawling bug insecticide products.

Agency Response to Comments 3, 22, 55, 59, and OC-3: CARB staff made no changes based on the received comments. Staff does not believe a 0.25 percent fragrance VOC content exemption for aerosol crawling bug products or personal care products is necessary. As detailed in Chapter III of the ISOR, as part of Staff's extensive regulatory development process, CARB 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, including those that sell products in these categories. CARB staff also held numerous additional meetings with trade associations and individual product manufactures to develop and refine this proposal. Throughout this process, products in these categories, including "Crawling Bug Insecticides," were not shown to require a retention of a

fragrance exemption, and staff therefore believes that this proposal is technically feasible and will not reduce product efficacy or eliminate a product form.

Comment 59: Previously CARB expressed a willingness to consider retaining a portion of the 2% exemption for certain low VOC categories such as hair mousse, in which a significant percentage (over 60% as per Figure B-3 in Appendix B of the ISOR) of fragranced products currently make use of the fragrance exemption.

Agency Response: CARB staff made no changes based on this comment. CARB staff disagree with the commenter's characterization that the data presented in Figure B-3 in Appendix B of the ISOR indicates that "Hair Mousse" should retain a portion of the Two Percent Fragrance Exemption. As shown in Table B-2 of Appendix B, over 65 percent of "Hair Mousse" products do not utilize the exemption, and there are feasible formulations for the product that also do not utilize the exemption, which indicates to Staff that a retention of the exemption is not necessary for "Hair Mousse" products.

g. Comments with concerns regarding the relative costs and benefits of sunsetting the Two Percent Fragrance Exemption

CARB received the following comments from various stakeholders regarding the compliance cost of sunsetting of the Two Percent Fragrance Exemption.

Comment 3: CARB's own data provides irrefutable evidence that product manufacturers do not over-use the current fragrance exemption. The sunset of the two percent fragrance exemption is estimated to result in producing only 0.3 tons per day of additional VOC reductions towards meeting California's State Implementation Plan (SIP) commitment for 2031.

Comment 22: The loss of the current Two Percent Fragrance Exemption will impact almost every product category regulated under Article 2 of the Consumer Product Regulations, triggering significant and costly reformulation efforts – even among product categories that will be allowed to retain a modest exemption level. Yet, CARB's own calculations show that doing away with the exemption will result in a relatively minor reduction in VOC emissions – only 0.3 TPD of additional VOC reductions to meet California's SIP commitment.

Comment 50, Part 1: CARB's own data provides irrefutable evidence that product manufacturers do not over-use the current fragrance exemption. According to the Household and Commercial Products Association the

sunset of the two percent fragrance exemption is estimated to result in producing only 0.3 tons per day of additional VOC reductions towards meeting California's State Implementation Plan (SIP) commitment for 2031.

Comment 50, Part 2: According to the Household and Commercial Products Association the sunset of the two percent fragrance exemption is estimated to result in producing only 0.3 tons per day of additional VOC reductions towards meeting California's State Implementation Plan (SIP) commitment for 2031. This seems to be an insignificant benefit compared to the high costs of reformulating the fragrances and monitoring each individual product to ensure that formulators are meeting the requirements of the regulations. When compared the huge unregulated emissions of natural terpenes from trees in Californian forests, the monoterpenes portion of the Fragrance Exemption pales into insignificance.

Comment 57, Part 1: Without an exemption for fragrance, product manufacturers—across a wide range of product categories and products—would have to expend a significant amount of time, money, and effort to reformulate products that were developed with the reasonable expectation that the longstanding exemption for fragrance would remain in effect. Reformulating just a single consumer product is a costly and time-consuming process that involves multiple stages, including design and development of multiple fragrance options; production of sample fragrance oils; testing of each fragrance oil sample for hedonics, performance, and stability; regulatory review to ensure each fragrance oil sample meets the product manufacturer's specifications; and production of the selected formulated fragrance for distribution to the product manufacturer.

In addition, reformulation often is an iterative process, such that these steps must be repeated several times (for both the fragrance itself and the overall consumer product for which the fragrance is just one component). Reformulating many products—as likely would be required under CARB's proposal to eliminate the fragrance exemption—would thus be an extraordinarily time-consuming and costly endeavor, diverting resources from other efforts such as research and development. Moreover, reformulation is not automatic; there is no guarantee that the reformulated fragrance will be as successful (e.g. olfactively, commercially) as the previous version. And even if CARB is correct that the Two Percent Fragrance Exemption is not widely used, manufacturers still would have to review each of their products to ensure that the formulations comply with the applicable VOC limits without the Two Percent Fragrance Exemption. In either case, sunsetting the Two Percent Fragrance Exemption would

impose a significant and costly burden on product manufacturers, while achieving only marginal reductions in VOC emissions.

Comment 57, Part 2: In particular, sunsetting the Two Percent Fragrance Exemption results in a relatively small reduction in VOC emissions (only 0.3 tons per day based on CARB's calculation), but—as described above—will impose significant costs and burdens on manufacturers across a wide range of product categories.

Comment 57, Part 3: The overwhelming majority of consumers want and use fragranced products. As a result, sunsetting the Two Percent Fragrance Exemption will not result in the elimination of fragrance from consumer products. Instead, sunsetting the exemption will lead to unintended consequences as manufacturers try to find ways to meet consumer demand while complying with the CARB requirements. For example, if the Two Percent Fragrance Exemption is eliminated for most product categories as proposed, manufacturers may need to replace VOC ingredients in fragrance with LVP-VOC ingredients. Using a higher proportion of LVP-VOC ingredients will change the character of many fragrances. And importantly, because LVP-VOC ingredients do not evaporate as quickly as VOC ingredients, in order to achieve the same "fragrance throw," the total fragrance concentration in the product may need to be increased. This can be done by replacing VOC ingredients with even larger amounts of LVP-VOC ingredients. In addition, consumers may use more of the product to achieve the same fragrance effect. As a result, it is not at all clear that sunsetting the Two Percent Fragrance Exemption will reduce overall VOC emissions. On the contrary, in some products, it may lead to a substantial increase in the total volume of fragrance used and released into the environment.

Comment OC-3: Third, HCPA does not support the proposed sunset of the current two percent fragrance exemption. It will impact almost all regulated products and constitutes a de facto reduction of the VOC standards for currently regulated products. It will not simplify compliance determinations.

Comment OC-11: The shift that will be necessary does not necessary -- does not support CARB's VOC reduction goals flat out. The 3. -- the 0.3 tons per day change will only -- will not outweigh the regulatory burden that our association and our members will face. We also think that there will be some challenges moving forward with reformulations.

Agency Response to Comments 3; 22; 50; 57 Parts 1, 2, & 3; OC-3; and OC-11: CARB staff made no changes to the Proposed Amendments published in the ISOR based on the received comments. CARB staff acknowledges that the 0.3 tons per day of VOC reductions achieved by

this amendment is lower than many other Consumer Products measures the Board has adopted, but CARB staff disagrees with the comments that suggest that the benefits of sunsetting the Two Percent Fragrance Exemption are insignificant when compared to the associated cost to reformulate products, or when compared to non-anthropogenic sources of emissions, or that sunsetting the exemption will result in VOC emissions increases. CARB staff also acknowledges that some product manufacturers will incur costs as a result of this amendment.

As discussed in Chapters III and IX of the ISOR, staff's evaluation of consumer products formulation data indicates that most 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. For those products that do use the exemption, cost surveys indicate that consumer product manufacturers can expect a recurring costs savings by either reformulating their products to use less fragrance material, or by reducing the amount of other VOC ingredients in the product formulation. Therefore, while it is impossible for Staff to predict every possible outcome of product reformulation, we do not anticipate an appreciable increase in product use and consequent increase VOC emissions, or an increase in LVP-VOC ingredient content, as a result of this proposed provision.

Moreover, as Staff described in the ISOR, the only costs many product manufacturers will incur will be due to the need to track and account for the VOC content of the fragrance mixtures used in their products, and not due to the need to reformulate. As described in the Staff Report, the overall cost-effectiveness of the fragrance sunset measure is $10,694/ton of VOC reduced, which is higher than the average cost-effectiveness of $8,588/ton of all the adopted measures, but well within the range of $3,827/ton-$19,252/ton of all the adopted measures. CARB did not receive any public comments disputing these specific cost-effectiveness values or staff's overall evaluation of the economic impact of sunsetting the Two Percent Fragrance Exemption.

Staff experience evaluating multiple years of manufacturer survey data and implementing other consumer products programs 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 extension of the proposed compliance timeline during the regulatory development process – from January 1, 2027 to January 1, 2031 - provides ample 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 the ISOR.

As discussed in the ISOR, without the VOC emission reductions achieved by sunsetting the Two Percent Fragrance Exemption, CARB's 2016 SIP commitment of 4-5 tpd of VOC reductions from consumer products by 2031 in the South Coast Air Basin would not be met.

Finally, while CARB staff does not dispute that there several potential sources of non-anthropogenic monoterpene emissions in California, the air quality benefits of this provision will occur independently of those sources.

h. Comments regarding potential co-benefits of sunsetting the Two Percent Fragrance Exemption

CARB received the following comments from various stakeholders regarding the characterization of potential co-benefits of Sunsetting the Two Percent Fragrance Exemption:

Comment 22: We are also concerned that among the stated benefits of eliminating the exemption is the consideration of "public health concerns." As discussed in more detail in comments filed by the Fragrance Creators Association, addressing concerns about the health effects of fragrance in consumer products in the context of a rulemaking project whose principal focus is to achieve VOC reductions necessary to attain state and federal ambient air quality standards seems very out of place. In the alternative, we would be pleased to participate in a separate and meaningful science-based discussion with CARB, its sister agencies, such as the Office of Environmental Health Hazard Assessment or the Department of Toxic Substances Control, and other interested stakeholders about the safety of fragrance ingredients used in consumer products.

For these and other reasons that have been ably described by the Household and Commercial Products Association and Fragrance Creators Association, we urge CARB to reconsider its proposal to "sunset" the Two Percent Fragrance Exemption.

Comment 57, Part 1: Fragrance Creators remains concerned that CARB's proposal to sunset the Two Percent Fragrance Exemption is not supported by CARB's VOC-reduction goals and is disproportionately driven by other considerations that are outside the scope of CARB's statutory mandate to reduce VOC emissions in a manner that is commercially and technologically feasible and necessary. See Health & Safety Code § 41712(b).

Comment 57, Part 2: CARB asserts that sunsetting the Two Percent Fragrance Exemption would achieve several benefits beyond VOC reductions, including addressing concerns raised by some commenters regarding the potential impact of fragrance on public health. Specifically, CARB states that sunsetting the exemption could protect public health by improving indoor air quality, noting that "[e]xposure to fragrance chemicals in many consumer products has been linked to multiple chemical sensitivity (MCS)." These assertions regarding the potential health effects of fragrance are unfounded. To the extent that CARB cites certain studies, Fragrance Creators believes the record should fully contemplate fragrance science. In fact, unaddressed malodors can create a variety of unpleasant conditions and emotional impacts in indoor environments as well as public spaces. A number of studies have shown that fragrances and scents—especially those found in products with additional odor-eliminating components—can be used to counter malodor, which promotes public health and enhances mood and quality of life.

For more than 50 years, the Research Institute for Fragrance Materials (RIFM)10 has worked to build universal acceptance and trust in the safe use of fragrance materials through applied science and research. RIFM is a nonprofit scientific authority that gathers and analyzes scientific data related to the use of fragrance. The RIFM Database is the most comprehensive, worldwide source of toxicology data, literature and general information on fragrance and flavor raw materials, classifying more than 6,000 materials. RIFM reviews upwards of 50 journals a month, conducts literature searches, and regularly collects member company data to keep the RIFM Database as complete as possible. With upwards of 70,000 references that include more than 135,000 human health and environmental studies, the Database also houses RIFM's full Safety Assessments and several tools that are crucial to RIFM's Fragrance Ingredient Safety Assessment and Research programs. All of RIFM's research is reviewed by an independent Expert Panel composed of dermatologists, pathologists, toxicologists, and respiratory scientists from around the world who have no commercial ties to the fragrance industry.

Accordingly, any assessment of fragrance-related health concerns must consider the full universe of available information, rather than a few select (and flawed) studies. In any event, though we appreciate CARB receives broad stakeholder input, such considerations do not relate to CARB's statutory mandate to reduce VOC emissions, and, therefore, should not factor into CARB's decision-making process.

Comment 57, Part 3: CARB also states that eliminating the Two Percent Fragrance Exemption would encourage transparency and simplify compliance determinations. Fragrance Creators submits, respectfully, that

addressing CARB's interest in transparency and simplifying compliance determinations could be achieved through other avenues and does not require eliminating the Two Percent Fragrance Exemption entirely. Fragrance Creators is proud to have been a primary stakeholder, and the lead representative on fragrance issues, for the Cleaning Product Right to Know Act (SB 258) and the Cosmetic Fragrance and Flavor Ingredient Right to Know Act of 2020 (SB 312). As an active participant in creating a predictable, understandable ingredient communication framework in California, Fragrance Creators and its members are happy to work with CARB to address the agency's concerns. Fragrance Creators has already taken direct responsibility for increasing consumer understanding through the development of The Fragrance Conservatory, the comprehensive digital resource for high-quality information about fragrance. But, transparency considerations do not warrant eliminating the Two Percent Fragrance Exemption entirely as CARB has proposed.

Comment 59: In the ISOR, CARB staff reaffirmed its intent to eliminate the 2% Fragrance Exemption, stating that "this proposal would promote transparency and equity, clarity, and help address growing public health concerns associated with exposure to fragrance ingredients". PCPC and its members continue to object to the implication that fragrances cause public health concerns, as the safety of all cosmetic products must be substantiated before marketing, per U.S. FDA regulations.

Agency Response to Comments 22; 57 Parts 1, 2, & 3; and 59: CARB made no change to the proposal in response to this comment because, while the ISOR describes potential co-benefits of sunsetting the Two Percent Fragrance Exemption, CARB's proposal to sunset the Two Percent Fragrance Exemption is driven only by the need to achieve technically feasible and cost-effective VOC emission reductions needed to help attain federal air quality standards. As discussed in the ISOR, Sunsetting the Two Percent Fragrance Exemption has the potential to achieve significant co-benefits beyond achieving VOC reductions necessary to help attain federal air quality standards, which include locking in emission reductions due to the current low utilization of the exemption, and making the program more equitable by treating smog-forming fragrance VOC emissions equally, regardless of their intended function. This provision does not eliminate fragrances from consumer products. The ISOR merely points out that many stakeholders expressed concerns about the potential impact of fragrance on public health and manufacturers might respond to the proposal by reducing the use of fragrance, though this is not required or intended by the proposal.

Commenters who indicate that CARB's ISOR should not cite flawed studies regarding potential health impacts of fragrance do not provide sufficient detail as to which studies they are concerned with and why they

believe such studies are flawed. Health studies cited by CARB have been peer reviewed and are generally accepted by the scientific community. These studies were not relied upon in developing this proposal, because this regulation is not intended to reduce fragrance use. As a result, CARB need not cite studies describing potential benefits of fragranced products in combatting malodors.

Manufacturers will still be able to produce products that effectively combat malodor and meet other consumer needs. As described in the ISOR, staff's category-specific evaluation of consumer product survey data for each potentially-impacted product category indicates that, based upon market share and other information, effective scented products can be manufactured without the need for the fragrance exemption. Staff also held numerous discussions with interested stakeholders to discuss category-specific potential feasibility concerns, and modified its proposal to retain exemptions for categories with potential feasibility challenges. To the extent that fragranced products provide a public benefit, this benefit will be retained.

Finally, some commenters suggest that a co-benefit of enhancing transparency, by encouraging manufacturers to learn the smog-forming VOC content of their fragrance, is unnecessary due to passage of the Cleaning Product Right to Know Act (SB 258) and the Cosmetic Fragrance and Flavor Ingredient Right to Know Act of 2020 (SB 312). The intent of these laws is consistent with the potential co-benefit of increased transparency that could accrue from sunsetting the Consumer Product Regulation's fragrance exemption for most categories. However, while the goals of SB 258 and SB 312 are greater transparency for air toxics and other ingredients with possible negative human health impacts, the sunset of the fragrance exemption is driven by a need to reduce smog-forming VOCs. In addition, many products subject to these two acts' transparency requirements, such as cosmetics, are not subject to the Consumer Product Regulation, while many consumer products subject to VOC standards do not fall under the purview of SB 258 or SB 312. Thus, the intent of these two acts and the potential transparency co-benefit of sunsetting the fragrance exemption are consistent and complimentary, not duplicative. Nevertheless, the main objective of the Proposed Amendments is reducing VOCs, which sunsetting of the two percent fragrance exemption meets, regardless of its co-benefits.

i. Comments on the definition of monoterpenes

CARB received the following comments requesting a modification to section 94510(c) by adding a definition for the term "Monoterpene" and requesting the addition of a table to the section that identifies specific chemical names and their associated Chemical Abstracts Service (CAS)

registry numbers for "Monoterpene" compounds to specify the substances classified as monoterpene:

(3, 50, 57, OC-3, CO-11).

Agency Response: CARB staff concurs with these comments, and, as directed by the Board, worked together with the commenters and other stakeholders to draft a regulatory language update in response to these comments, adding a definition for "Monoterpene," which was proposed in 15-day changes. This change provides additional regulatory certainty to regulated parties regarding which product ingredients are considered "monoterpene" and therefore would be eligible for the monoterpene content exemptions described in sections 94510(c)(1) and (c)(3). Also in response to this comment, staff is adding table 94510(c), "Specified Monoterpenes," to identify specific chemical names and their associated Chemical Abstracts Service (CAS) registry numbers for "Monoterpene" compounds. The CAS number substance identification system is generally accepted by the scientific community (SciFinder, 2021) and used across CARB in many other programs to identify ingredients like monoterpenes.

j. Comments requesting an earlier effective date for section 94510((c)(1) as it applies to Non-aerosol General Purpose Cleaner and Non-aerosol General Purpose Degreaser products

CARB received the following two comments requesting a modification of the effective date for section 94510(c)(1), as it applies to fragrance and monoterpene ingredients in non-aerosol General Purpose Cleaners and non-aerosol General Purpose Degreasers, so that the section would apply upon approval of the Regulation rather than as of December 31, 2022:

(3, 50).

Agency Response: Staff concurs with these comments and made the requested regulatory language update to have the monoterpene portion of the exemption for these two categories become effective at the same time the Proposed Amendments become effective. This proposed change was made available for public comment as part of the 15-day changes.

k. Example calculations for products using fragrance

Comment 3: If the proposed Section 94510(c)(2) is approved, HCPA requests confirmation that the following compliance calculation is accurate.

Under proposed Section 94510(c)(2), and in conjunction with the proposed revisions to Section 94510(d), HCPA respectfully requests

confirmation of the fragrance exemption compliance calculation example below for products manufactured before January 1, 2031:

Product A is subject to a 50% VOC standard, it contains:

- 49% VOC in base formula
- 3% fragrance, which is 20% VOC and 80% LVP-VOC

Fragrance VOC exemption calculation:

3% (fragrance) x 20% (VOC portion of fragrance) = 0.6 % (fragrance VOC)

49% VOC (base formula) + 0.6% VOC (fragrance) = 49.6% VOC (total)

This product would be compliant with the 50% VOC standard and the current two percent fragrance exemption.

CARB staff's confirmation of the above-stated calculation will provide stakeholders with a clear understanding how to comply with proposed Section 94510(c)(2).

Comment 3 (cont): Under proposed Sections 94510(c)(3) and (c)(4), and in conjunction with the proposed revisions to Section 94510(d), HCPA respectfully requests confirmation of the examples below for calculating 0.25 percent of the VOC content of fragrances and/or monoterpenes for specified product categories manufactured on or after January 1, 2031:

Example 1 – Proposed Section 94510(c)(4)
A manual aerosol air freshener will be subject to a 5% VOC standard, it contains:

5% VOC in base formula
1% fragrance, which is 20% VOC and 80% LVP-VOC

Fragrance VOC exemption calculation:
1% (fragrance) x 20% (VOC portion of fragrance) = 0.2% (the VOC content of fragrance)

Fragrance VOC exemption total:

0.2% (total fragrance VOC) < 0.25% (allowed fragrance VOC exemption)
This product would be compliant with the 5% VOC standard and the exemption for 0.25 percent of the VOC content of fragrance.

Example 2 (with monoterpenes) – Proposed Section 94510(c)(3)

A nonaerosol GPC is subject to a 0.5% VOC standard, it contains:

- 0.5% VOC in base formula
- 0.3% fragrance mixture
- 0.1% fragrance, which is 20% VOC and 80% LVP-VOC
- 0.2% monoterpene

Fragrance VOC exemption calculation:

0.1% (fragrance) x 20% (VOC portion of fragrance) = 0.02% (fragrance VOC)
Monoterpene VOC exemption (at 100% VOC):
0.2% monoterpene

Fragrance and monoterpene VOC exemption total:
0.02% (fragrance VOC exemption) + 0.2% (monoterpene VOC exemption) = 0.22% (total VOC exempted) < 0.25% (total allowed fragrance and monoterpene VOC exemption)

This product would be compliant with the 0.5% VOC standard and the exemption for 0.25 percent of the VOC content of fragrances and/or monoterpenes.

Comment 59: If the elimination of the fragrance exemption is approved, CARB must provide guidance on how manufacturers are to comply (assuming that Section 94510(c)(2) is adopted as drafted).

Agency Response to Comments 3 and 59: CARB staff made no changes based on these comments. The comments do not request any changes to the Proposed Amendments. The Proposed Amendments fully explain how manufacturers are to comply, and regulated entities may review the rulemaking package for more background. As a courtesy, to correct inconsistencies in commenters' calculations, and to make them consistent with what the regulation requires, Staff is providing the following example calculations for determining the VOC content of hypothetical products and incorporating the proposed fragrance provisions:

Example 1

A product is subject to a 50 percent VOC standard, and it contains:

- 49 percent VOC in base formula and,
- 3 percent fragrance, which is 20 percent VOC and 80 percent LVP-VOC

To calculate the amount of fragrance VOC in the product:

3 percent (fragrance) x 20 percent (VOC portion of fragrance) = 0.6 percent (fragrance VOC)

Thus, the total VOC of the product is:

49 percent VOC (base formula) + 0.6 percent VOC (fragrance) = 49.6 percent VOC (total)

Example 2

A Non-Aerosol General Purpose Cleaner is subject to a 0.5 percent VOC standard. It contains:

- 0.5 percent VOC in its base formula and,
- A 0.3 percent fragrance mixture, of which 0.1 percent is a fragrance blend consisting of 20 percent VOC and 80 percent LVP-VOC, and 0.2 percent monoterpene

To calculate the amount of fragrance VOC in the product:

0.1 percent (fragrance) x 20 percent (VOC portion of fragrance) = 0.02 percent (fragrance VOC)

Fragrance and monoterpene VOC exemption total:

0.02 percent (fragrance VOC) + 0.2 percent (monoterpene) = 0.22 percent (total fragrance VOC)

Example 3

A manual aerosol air freshener will be subject to a 5 percent VOC standard and a 0.25 percent fragrance exemption. It contains:

- 5 percent VOC in base formula
- 1 percent fragrance, which is 20 percent VOC and 80 percent LVP-VOC

Fragrance VOC exemption calculation:

1 percent (fragrance) x 20 percent (VOC portion of fragrance) = 0.2 percent (the VOC content of fragrance).

l. Other comments on the Two Percent Fragrance Exemption sunset provisions

Comment 57, Part 1: As Fragrance Creators has explained in prior comments, fragrance is a critical component of consumer products: it encourages proper product use; covers base malodors; and creates a mechanism for product manufacturers to differentiate between brands and products. For example, since this rulemaking began, the fragrance

value chain has been instrumental in responding to COVID-19. The Cybersecurity and Infrastructure Security Agency (CISA) updated its Guidance, Essential Critical Infrastructure Workforce (ECIW): Ensuring Community and National Resilience in COVID-19 Response, to explicitly include fragrance manufacturers.

Agency Response: CARB staff made no changes in response to this comment. Comment noted.

Comment 57, Part 2: In short, CARB's proposal to sunset the Two Percent Fragrance Exemption entirely for the vast majority of product categories (and in significant part for the general purpose cleaner and degreaser, air freshener, disinfectant, and sanitizer categories) threatens to eliminate certain products from the California market because they would no longer be technologically and/or commercially feasible—i.e., they could not be formulated to both work as intended and comply with the low VOC limits for their product category while still imparting a scent that drives consumer acceptance and other benefits.

Agency Response: CARB staff made no changes based on this comment. CARB staff does not agree that products would be eliminated from the California market due to the sunsetting of the Two Percent Fragrance Exemption. As discussed in the ISOR, the majority of products currently eligible for the exemption do not use it, and those that do use it have several feasible options to ensure compliance with the regulation and remain in the California market once the exemption sunsets in 2031.

Comment 57, Part 3: Because fragrance is an integral component across all consumer product types, sunsetting the Two Percent Fragrance Exemption would affect virtually every product category. Should CARB move forward with this proposal, retaining the extended 2031 timeline is necessary to address the impact on the supply chain.

Comment 59: If product manufacturers are to obtain the VOC level, by percentage, of each fragrance used in order to calculate the total VOC of a particular product, there will need to be a modification in the commercial agreements between the product manufacturer and fragrance manufacturer to ensure continued compliance. PCPC appreciates that CARB has proposed a 2031 implementation date, giving industry time to reformulate products as necessary and to conclude discussions with suppliers.

Agency Response to Comments 57 Part 3 and 59: Since this is consistent with CARB's proposal for the timing of sunsetting the Two Percent Fragrance Exemption, CARB has made no changes to its proposal to address these comments. During the rulemaking process, stakeholders

indicated that fragrance formulators would share this information if requested, and a decade provides ample time for these agreements to be modified if necessary.

Comment OC-11: In fact, fragrance was recognized as essential in the fight to combat COVID-19 by CISA and identified as a critical business, particularly when it comes to cleaning and disinfecting products.

Agency Response: CARB staff made no changes based on this comment. The Proposed Amendments do not eliminate fragrance, but instead make fragrance part of the calculation for the VOC content of a product, to reduce emissions. Included in the provision are measures providing additional flexibility for monoterpenes in non-aerosol general purpose cleaners and degreasers in the near-term, while the sunset provisions will not take place for nearly a decade, providing ample time to reformulate to incorporate fragrance into the VOC content calculation of a product, resulting in overall fewer VOCs in a product and fewer VOC emissions statewide. In addition, CARB is retaining a portion of the exemption for sanitizers and disinfectants that help facilitate continued compliance in these health-benefit product categories, because, based on the data, it is needed for these categories.

Comment OC-11: I'll focus today primarily on feedback for the sunsetting of the two percent exemption, as well as new VOC limits for personal fragrance products. I'll start by saying that these proposals are very much a middle ground. As other have alluded, this proposal while [*sic*] push industry and will fundamentally alter the regulatory framework that's existed for fragrance for 30 years. And while we're willing to make that change, and understand the goals of the CARB staff quite well, I want to start by saying that we echo the compliments sent towards staff. The process really has been transparent and engaging, as well as collaborative, but there are challenges that our industry will face, first and foremost with the sunsetting of the two percent exemption.

Agency Response: CARB staff made no changes in response to this comment. CARB thanks the commenter for the comment.

7. Energized Electrical Cleaner (EEC)

a. Comments in support of the changes to the Energized Electrical Cleaner definition and new records retention requirement

CARB received multiple comments from a range of individuals and stakeholders that expressed support for the changes to the EEC definition

and the records retention requirement for automotive parts and accessories stores.

Comment 3: Energized electrical cleaners must be formulated with nonflammable chemicals because these products are used to clean electrical equipment while an electric current is running through it, or when a residual current exists. HCPA members support the proposed revisions to the definition because it provides the necessary clarity for products included -- and excluded -- in this product category. HCPA also supports the proposed requirement for an "Automotive Parts and Accessories Store" to retain current routinely generated sales records for a period of at least five years.

Comment 39: WAIB supports the proposed definition change for this category. Energized Electrical Cleaner must be non-flammable to prevent the potential for a fire when used on a live electrical connection. The current change allows for the formulation of nonflammable products. Also [*sic*] the wording that only "currently generated sales records be maintained" does not add additional burden to the Industry.

Comment 54: CRC is only commenting on the Energized Electrical Cleaner definition and Record Retention requirements 94512(f). CRC supports the new language for the Energized Electrical Cleaner definition. The new language aligns the VOC regulations with the Air Toxic rule. In addition, CRC does not oppose the record retention requirement at 94512(f) as long as our understanding that the wording "already routinely generated" implies that no new documents need to be created or stored by the retailer.

Comment 56: 3R can support the proposed new definition for the Energized Electrical Cleaner category. This wording aligns the definition with the Air Toxics Rule. Also, 3R supports the proposed requirement for retaining records as long as the wording "retain currently routinely generated" means no new records need to be developed or retained.

Comment OC-2: CRC Industries is a manufacturer of automotive and industrial products. CRC supports the changes to the energized electrical cleaner category. This clarifies the issue and does not require new record keeping.

Agency Response (to all comments in support): CARB staff made no changes based on these comments. CARB appreciates the support for this provision updating the definition in the EEC category and the addition of a records retention requirement for automotive parts and accessories stores. These toxics-containing products are only intended for use on specialized equipment under specialized circumstances, and not

for general-purpose degreasing or automotive repair activities. These updates ensure that EEC products do not include products sold to automotive repair facilities, and that automotive parts and accessories stores retain sales records so they are available for CARB enforcement and data-collection purposes. Indeed, as CARB staff explained in the ISOR (Chapter IV), 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.

b. Other comments on the Energized Electrical Cleaner provisions

Comment OC-5: A couple of the proposals that have been presented today raise -- I have concerns with, particularly with the EEC definition. I really strongly believe that this is going to put people's lives at risk, not hypothetical, maximum exposed individuals, like the risk assessment that was done for AMRs back in 2000, and done inappropriately, because I checked it. They used maximum everything, maximum emissions, closest receptor. I just couldn't believe that it was done. But it was done and it's water under the bridge. And now, it's come to the point where we're going to regulate a product that has no alternative. There is no safe alternative for this product. If you need to clean something close to an open source of combustion or a conductive electrical motor, you have nothing else to clean it with. There's just nothing on the market. We were supposed to find something, but we never did. So I just do not support this proposal. And it is only for automotive repair facilities, which should concern everybody, because if we can target just one industry, why can't we just target any other industry we don't like that's using some product we're not happy with. It's not fair. And we're regulating through definition not through the procedures that we have. We have a whole Air Toxics Control Measure process that puts everything out into the public. Secondly, the requirement to report, again, it's unfair. Why only automotive repair parts sales facilities have to report? They say they don't have to. So if they don't have to, the only purpose for this is to be -- basically to intimidate auto parts stores from carrying and selling the product that's necessary. So it really seems like just bullying and -- or something worse. I just don't know. And the last thing is even though everything has been talking about ozone, and VOCs, really what we're talking about is people's health and safety. And that really isn't quantified anywhere in the documentation. The pandemic has changed everything. Nothing that we based everything on in the past counts anymore. And I thank you for your time and consideration. Particularly, for the more costly proposals, 88 percent will be borne by people from outside the state. Have a great day.

Agency Response: CARB staff made no changes based on the received comments. When the commenter refers to "the risk assessment that was done for AMRs back in 2000," CARB staff believes the commenter is referring to the Airborne Toxics Control Measure for Automotive Maintenance and Repair Activities (AMR ATCM), adopted by the Board in 2000. CARB staff does not agree with the assertion the commenter makes that the risk assessment underpinning the AMR ATCM was "done inappropriately." Staff refers the reader to the extensive rulemaking record that underpins the AMR ATCM for more information, but would like to note that it is typical practice to use conservative assumptions, particularly when evaluating potential health impacts of toxic substances, to ensure the public health of all Californians, including disproportionately-impacted and sensitive populations, such as children and the elderly.

As staff explained in the ISOR, the definition of "Energized Electrical Cleaner" was adopted by the Board in 2004 so that TAC emission reductions could be achieved from the "Electrical Cleaner" and "Electronic Cleaner" categories, while providing an exception for specialized products containing TACs where no safe alternatives existed. During the 2004 rulemaking, staff also sought to maintain consistency with the 2000 AMR ATCM by adopting a product labeling requirement as part of the product definition that disclaimed the use of the product for automotive maintenance.

During the current rulemaking, staff developed an emissions inventory that showed sales of "Energized Electrical Cleaner" by automotive parts and accessories stores and sales to automotive repair facilities accounted for TAC emissions well in excess of the expected level for "Energized Electrical Cleaner" in 2004. (Appendix C of the ISOR). Thus, this rulemaking was focused on these automotive TAC endpoints which were escaping the intent of both the 2000 AMR ATCM, and the Consumer Products Regulation.

CARB staff disagrees with the commenter's assertion that any stakeholders were bullied as part of the rulemaking process, or that the intent of this regulation is to intimidate automotive parts and accessories stores. The intent is only to reduce emissions and protect the public health, consistent with CARB's goals and mandates, and CARB does so by addressing those products that affect emissions and the public health. Indeed, as detailed in Chapter XII of the ISOR, and echoed in many stakeholder comments, staff engaged in an extensive, open, and public rulemaking process that included three public workshops and three public work group meetings with regulated stakeholders and members of the public that included discussions on specific staff proposals for further restrictions on "Energized Electrical Cleaner" products. Staff refined its

proposal during the public rulemaking process to help ensure that EEC remains available for its intended use, while addressing off-label use by AMRs. The Proposed Amendments will not put anyone's life at risk, but actually will protect public health through reduced exposure to TACs from off-label uses of EEC products, which CARB determined through the extensive public process. As discussed above, staff's proposal only requires automotive parts and accessory stores to keep the records they already create as part of their routine business practice for five years. Finally, the Proposed Amendments are cost-effective, as discussed in the ISOR. The ISOR also analyzes the health and air quality benefits of the proposal in detail.

8. Comments on the Innovative Product Exemption Provisions

a. "Hair Finishing Spray," "Dry Shampoo," and "Personal Fragrance Product"

Several commenters raised concerns that the provisions proposed as part of the Staff Report for "Hair Finishing Spray," "Dry Shampoo," and "Personal Fragrance Product" were unclear, unworkable or unenforceable and therefore would not achieve CARB's stated air quality and GHG reduction goals.

(Comments 1, 3, 4, 6, 29, 37, 39, 48, 52, 56, OC-2.)

Agency Response: CARB staff made changes based on these comments. CARB staff appreciates stakeholder feedback regarding the need for additional clarity and specificity regarding proposed Hair Finishing Spray, Dry Shampoo, and Personal Fragrance Product IPE provisions, and worked with interested stakeholders to address these concerns. In collaboration with interested stakeholders, as part of 15-day changes, staff proposed modifications or the replacement of elements of the previously-proposed section 94511(c)(1), (2), (3), and (4). These proposed updates include a new definition for "Compressed Gas Propellant Innovative Product" in the updated section 94511(c)(1), an updated definition for "Representative HFC-152a Product" in updated section 94511(c)(3), updated optional criteria for and more specific criteria regarding how an applicant must demonstrate that no more innovative product is needed to conduct the same work and the representative product it replaces in updated section 94511(c)(4), a calculation for determining innovative product GHG emission reductions in new section 94511(c)(5), and refined language regarding calculation of a product's ozone forming potential (OFP) in new section 94511(c)(6). Each of these updated, more specific criteria, were developed in coordination with

interested stakeholders and made available for public comment during the 15-day comment period.

b. Weight of proposed innovate product's propellant

Some commenters further specified that the originally-proposed section 94511(c)(1) requirement that "the weight of a proposed innovative product's propellant or propellants does not exceed 50 percent of the weight of the innovative product's propellant or propellants" is unworkable or unclear due to challenges quantifying compress gas weight and a lack of specificity regarding how compressed gas weight should be determined.

(Comments 37, 39, 48.)

Agency Response: CARB staff made changes based on these comments. CARB staff appreciates stakeholder comments regarding potential challenges in quantifying compressed gas propellent weight, and possible resulting IPE implementation challenges. Staff worked with stakeholders to develop language that would achieve the same objectives as the previously-proposed regulatory language, without the need to quantify compressed gas propellant weigh. These proposed changes were made available for public comment during the 15-day comment period.

The section 94511(c)(1)(A) proposed as part of 15-day changes would require that a product manufactured before January 1, 2029, achieve at least a 50 percent GHG reduction relative to the representative product it replaces. This proposed requirement provides a clear and transparent GHG emission reduction eligibility requirement for an innovative "Hair Finishing Spray," "Dry Shampoo," or "Personal Fragrance Product," and replaces elements of previously-proposed section 94511(c)(1) that would have achieved similar GHG reductions through a more complex and difficult-to-implement requirement that at least 50 percent by volume of the proposed innovative product's propellant ingredients be compressed gas.

c. Regulatory development and public feedback

Some commenters expressed concern that staff proposed IPE provisions for "Hair Finishing Spray," "Dry Shampoo," and "Personal Fragrance Product" late in the regulatory development process, with insufficient time for adequate public feedback.

(Comments 1, OC-2, 6, 39, 48.)

Agency Response: CARB staff made no changes based on thes comment. CARB provided sufficient time for adequate public feedback and met all the requirements of the Administrative Procedure Act. CARB staff discussed the need for these provisions conceptually at three public workshops and one public work group meeting between November 7, 2019 and July 28, 2020. Following these conceptual discussions, staff held numerous meetings with interested stakeholders to develop draft proposed underline/strikeout regulatory provisions for the "Hair Finishing Spray," "Dry Shampoo," and "Personal Fragrance Product" discussed at the November 10, 2020 public workshop. CARB staff further refined this November 10, 2021, draft proposed regulatory language in collaboration with interested stakeholders before publication of its formal proposal in the ISOR published with the 45-day notice on February 2, 2021. As described above, staff also worked closely with interested stakeholders to further update its proposal and address remaining stakeholder concerns in the 15-day change. We appreciate the participation of public participants in developing and refining this proposal during this rule development process.

d. End-of-product use

Some commenters commented on challenges in formulating consumer products with compressed gas, including the potential for a drop in container pressure as a container gets evacuated. One commenter further indicated that this challenge would result in product remaining in the aerosol container at the end of product use, which would inhibit product recyclability and result in more cans entering the hazardous waste stream.

(Comments 6, 38, 39, 52, 55, 56.)

Agency Response: CARB staff made changes based on these comments. Staff's proposal is intended to spur technical innovation in these three categories, so that product manufacturers develop and market advanced technology aerosol products. These are voluntary provisions intended to spur manufacturer innovation to overcome the identified obstacles and ensure consumer acceptance. It should be noted that these challenges have been overcome in other product categories. For example, compressed gas air fresheners have overcome the identified technical obstacles through engineering advancements, and they are fully recyclable.

CARB staff also recognize that compressed gas propellants can result in a lowering of can pressure as the can starts to empty, which makes it harder to evacuate the product. Staff discussions with product manufacturers

indicate that such products are unlikely to achieve market acceptance and would not be considered market-ready for public sale.

In addition, the IPE application requirements in section 94511(c)(4), which were updated in the 15-day changes to address this concern, require an innovative product, relative to the product it replaces, to "have at least similar efficacy as other consumer products in the same category, based upon consumer or scientific testing generally accepted for that product category by the consumer products industry, demonstrated product spray rate, percent or efficacy of active ingredients, or information that the applicant may provide or that CARB may request." CARB's review of a proposed innovative product during a product's IPE application period will therefore ensure that products that do not effectively evacuate the can will not be eligible for an IPE, as this product would not be considered to have similar efficacy to market-ready products that fully evacuate the can.

e. Reactivity-based IPE

Some commenters indicated that reactivity-based IPE provisions for aerosol "Hair Finishing Spray," "Dry Shampoo," and "Personal Fragrance Product" could achieve air quality and GHG benefits, while providing additional reformulation flexibility to product manufacturers. Most of these commenters requested that CARB update the compressed gas IPE proposal during 15-day changes to allow liquefied propellant products to also be eligible for proposed IPE provisions for compressed gas propellants if they utilize product reactivity to demonstrate equivalent air quality benefits. Several commenters also indicated that such as approach would meet staff's goal that proposed IPE provisions also achieve GHG reductions.

(Comments 3, 4, 6, 29, 37, 38, 39, 48, 52, 55, 56, 59, OC-2.)

Agency Response: CARB staff made changes in response to these comments. CARB staff concurs with stakeholder comments regarding the potential air quality and GHG benefits of reactivity-based emission reduction strategies, and updates to staff's proposal published during the 15-day change period were crafted to enable the development of innovative "Hair Finishing Spray," "Dry Shampoo," and "Personal Fragrance Product" that achieves the same OFP and GHG benefits as an innovative product in these three categories utilizing compressed gas propellant.

Specifically, in section 94511(c), staff proposed to add to the originally proposed IPE proposal a distinction between "Innovative Compressed

Gas Propellant Product" and "Innovative Liquefied Propellant Products," and provided references to the specific criteria that a product must meet to be considered one of these IPE product types. This proposed distinction and criteria would maintain an IPE eligibility pathway for innovative products that use compressed gas propellants, while also providing eligibility criteria for innovative products that do not use compressed gas propellants but achieve the same OFP and GHG benefits required of an "Innovative Compressed Gas Propellant Product." The proposed inclusion of eligibility criteria for innovative products that do not utilize compressed gas propellants is intended to provide flexibility for additional product types, and could increase opportunities for product innovation and provide additional GHG reductions. Staff appreciates stakeholder comments and discussion of innovative approaches to develop market-ready aerosol "Hair Finishing Spray," "Dry Shampoo," and "Personal Fragrance Product" that help meet California's increasingly challenging air quality and climate goals.

f. Comments that the IPE provisions, as proposed, are unclear and confusing, and requesting sample calculations for the determination of OFP, GHG emissions, and/or compressed gas volume.

(Comments 1, 4, 29, 48, 56.)

Comment 1: NAA cannot support this provision because the lack of definition and calculations to accurately be able to develop a product to meet the criteria. Also, with the lack of calculations and detail, how can the Industry be assured that CARB can accurately ensure that VOC emissions are not exceeded. The discrepancy with the Representative Product for Dry Shampoo is disturbing. How was this information developed? The lack of any type of reasonable example is troublesome. If there are manufacturers supporting this provision, why are there no examples?

Comment 4: Second issue is the Compressed Gas Innovative Product Exemption (IPE) for compressed gases. WD-40 Company has a long history of working with compressed gases such as CO2. While our product works well, and we applaud the staff's initiative to provide another provision to assist in reformulation, as written, the IPE for Compressed Gases is unclear and confusing.

Comment 29: PLZ appreciates the staff for their creative thinking with the proposed IPE on Compressed Gases to lower the use of GWP compounds. However, as written PLZ cannot support this proposal. Currently, the proposal is unclear and confusing making the provision

unworkable. Within the proposal there is no calculation to determine how to obtain 50% reduction in GWP compounds. Likewise, these is no calculation to determine the ozone formation potential of a new product. Thus, we believe the provision to be unenforceable.

Comment 48: Aeropres commends the staff for trying to provide flexibility to the regulation through the Compressed Gas IPE. Unfortunately, after closer review the current language in the IPE provision is confusing and unclear. If CARB staff were to clarify the volume and ozone formation potential issues, then the provision would begin to be clearer. Perhaps adding calculations to these two criteria would clarify the issue.

Comment 56: In addition, the current wording in the proposed provision for compressed gases lacks clarity. CARB staff should add calculations for calculating the volume and ozone potential formation that are referenced in the provision.

Agency Response to Comments 1, 4, 29, 48, and 56: CARB staff made changes in response to these comments. Based on the data and conversations with stakeholders, CARB staff disagrees with the assertion that the IPE provisions are unclear, unenforceable, or will not achieve emission reductions. However, some commenters viewed CARB's proposal as being unclear when it came to determining the volume of compressed gas propellant, and that volume was needed in order to determine the OFP of the product. As part of the 15-day changes, and in response to public comments, staff proposed changes to the original proposal to remove the need for methodologies to determine compressed gas volume, including calculations, as a requirement for a product to qualify as an innovative product in the IPE. This amendment moots the confusion about how to determinate OFP in section 94511(c)(6), since it removes the confusion about the underlying volume calculations.

Also during the 15-day changes, and also in response to public comments, staff proposed to add regulatory language describing how GHG emissions are to be calculated in section 94511(c)(5).

g. Other comments regarding Innovative Product Exemption provisions for "Hair Finishing Spray," "Dry Shampoo," and "Personal Fragrance Product"

Comment 55: Within the discussion of the rationale for Section 94511 (C)(3) it reads: "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." We believe there is an error in the language in the first sentence above and have clarified the second sentence so that it is clearer. We are supportive of what we believe the intent of this section is and for the flexibility it gives to the innovative product exemption process for products that use compressed gas propellant systems. We suggest that the above statement be modified to read as follows: "This amendment is needed to help ensure that the use of the innovative product does not result in an increase in GWP and OFP relative to the representative product it replaces. If more of the innovative product must be used than the representative product (for example, if more than one can of the innovative product is needed to replace one can of the representative product) then the OFP and GHG benefits of staff's proposal may be offset by increased product usage."

Agency Response: These comments did not include any objection or recommendation regarding the Proposed Amendments, only as to the ISOR, so CARB made no changes to the proposal in response to these comments. However, CARB did, in response to these comments, clarify and update the February 2, 2021, ISOR language as part of 15-day changes published on August 19, 2021. This clarified language reads, in part: "This amendment is needed to help ensure that the use of the innovative product does not result in an increase in GWP and OFP relative to the representative product it replaces. If more of the innovative product must be used than the representative product (for example, if more than one can of the innovative product is needed to replace one can of the representative product), then the OFP and GHG benefits of staff's proposal may otherwise be offset by increased product usage."

Comment 55: We would like to highlight Section 94511 (C)(4)(A), which reads: "(4) The ozone-forming potential of the proposed innovative product does not exceed that of the representative HFC-152a product. (A) Assignment of a substance's Maximum Incremental Reactivity (MIR) value for the purpose of determining a product's ozone forming potential shall be conducted pursuant to subsections 94509(r)(5)(A)- (D) and (F)-(I)." We suggest changing the word "substance" to "ROC" (Reactive Organic Compounds) so that it reads: "(4) The ozone-forming potential of the proposed innovative product does not exceed that of the representative HFC-152a product. (A) Assignment of a ROC's Maximum Incremental

Reactivity (MIR) value for the purpose of determining a product's ozone forming potential shall be conducted pursuant to subsections 94509(r)(5)(A)- (D) and (F)-(I)." This change would make it clear that only the MIR of ROC will be used in determining the ozone-forming potential of the proposed innovative products, and not non-reactive compounds.

Agency Response: CARB staff made changes in response to the received comment. CARB staff proposed to replace the term "substance" with "ROC" as part of the 15-day changes.

Comment 3: Furthermore, the use of compressed gases or lowering the amount of hydrocarbon propellants may not produce a sufficient amount of dispersant energy to completely empty the contents of the container, causing the partially empty product container to be disposed in the household hazardous waste stream rather than being recycled. While this consideration is outside the scope of the Consumer Products Regulation, this could have a negative impact on California's environment and manufacturers' sustainability profiles.

Comment 38: Shield wants to go on record that this IPE for compressed gas has potential downsides. One being increasing packaging which contradicts CalRecycle's efforts to reduce single use packaging.

Agency Response: CARB staff made no changes to the proposal based on these comments. CARB staff determined, based on discussions with CalRecyle staff and industry stakeholders, that there is nothing inherent in consumer products that use compressed gas propellants, relative to traditional propellants, that would result in the increased use of packaging or create any specific recycling challenge relative to other aerosol consumer products that do not use compressed gas. Compressed gas propellants have been used extensively for years in manual aerosol air fresheners, and such cans are typically recyclable. Discussions with CalRecycle support staff's assessment that aerosol products that use compressed gas are recycled at rates similar to those that use liquefied propellant.

Comment 38: The negatives to compressed gas were shown during your on-site visit. The manufacturing process of charging aerosol cans with nitrogen presents safety concerns since a very small amount of nitrogen increases internal pressure of the can exponentially. Aerosol cans can easily burst in the manufacturing process.

Agency Response: CARB staff made no changes in response to this comment. Compressed gas aerosol products have been manufactured for years in the manual aerosol air freshener category, with multiple

manufacturers offering multiple product lines. CARB staff anticipates that manufacturers will not pursue these voluntary provisions without the ability to do so safely, and in compliance with all applicable safety requirements. Finally, manufacturers may determine that "Hair Finishing Spray," "Dry Shampoo," or "Personal Fragrance Product" using compressed air, compressed carbon dioxide, or liquefied propellants, which are eligible for an IPE pursuant to these provisions, are more able to meet their product safety, delivery, and consumer acceptance needs.

Comment 3: Currently approved IPEs for "Single Phase Air Freshener" - proposed Section 94511(l)(2)

HCPA member companies support the proposed provision because it clarifies that a currently approved IPE for a Single-phase Aerosol Air Freshener product subject to a 30% VOC limit will continue to be approved and in effect for products that transition from "Single Phase Air Freshener" to "Automatic Aerosol Air Freshener" on January 1, 2023.

Agency Response: This comment did not include any objection or recommendation regarding the Proposed Amendments, so CARB made no changes to the proposal in response to the comment. CARB thanks the commenter for the comment.

Comment 55: Some commenters expressed support for the February 2, 2021 IPE proposal for "Hair Finishing Spray," "Dry Shampoo," and "Personal Fragrance Product," indicating that it would enable manufacturers to develop innovative new products that utilize compressed gas propellant. These stakeholders concur that existing VOC standards, based upon a product's VOC content by weight, may deter use of lighter compressed has propellants, and that staff's proposal provide an important mechanism to overcome these obstacles while achieving air quality benefits and GHG reductions.

Agency Response: This comment did not include any objection or recommendation regarding the Proposed Amendments, so CARB made no changes to the proposal in response to the comment. CARB thanks the commenter for the comment.

Comment 59: CARB needs to address (a) the significant administrative burden required of companies wishing the [*sic*] use the new IPE process and (b) the length of time it takes currently for CARB to review and approve an IPE proposal. If obtaining an IPE is so cumbersome that companies are reluctant to even apply for it, CARB will not see the reduction in benefits that is [*sic*] foresees. PCPC and its members are committed to working with CARB to determine the optimum

requirements and process for obtaining an IPE which will give consumers an aerosol product which has significantly lower greenhouse gas potential yet still meets the OFP requirements of the 2023 and 2031 regulations.

Agency Response: CARB staff made no changes based on this comment. The IPE is intended to allow a product manufacturer to demonstrate that, through some innovative element of a product, a product that exceeds the applicable VOC standard results in equal or less ozone formation relative to the representative product it represents. The Proposed Amendments include provisions for products that also achieve significant GHG emission reductions relative to a representative product. The IPE is intended to encourage product innovations, such as more effective ingredients, more effective nozzles or propellants, or other product improvements, that reduce real word emission impacts. The IPE therefore sets parameters that encourage a diversity of product innovations, while ensuring that real world emission benefits are achieved. In some cases, this requires applicants to submit, and CARB to review, data, studies, testing, or other information to substantiate applicant claims. These provisions are all necessary to ensure that the emission benefits are real.

During the regulatory development process for the Proposed Amendments, staff worked with stakeholders to develop application requirements that provide certainty to prospective applicants, while ensuring proposed innovative products achieve the intended air quality and GHG benefits. For example, Table 94511(c)(3) provides "Representative HFC-152a Product" formulations for the "Hair Finishing Spray," "Dry Shampoo," "and "Personal Fragrance Product" meeting the applicable VOC standards. Prospective applicants have the option to utilize the default applicable representative product for the purposes of comparison to their proposed innovative product. For past IPE applications, identification of an appropriate "representative product" has been a source of uncertainty for prospective applicants, and has required detailed discussions and provision of product data to CARB. Table 94511(c)(3), for those who opt to use it, eliminates the need for this representative product selection process. Updated section 94511(d)(j) (Modification of Product Ingredients for an Existing Exemption), for the first time provides a clear mechanism for minor changes to be made to product fragrance or other specified ingredients which will facilitate slight changes to already-approved IPE products, such as approval of an innovative "Dry Shampoo" based upon previous CARB approval of a similar product. The cost-effectiveness of the proposed optional IPE provisions was analyzed in the ISOR and takes into account additional work by manufacturers needed to ensure IPE goals are met. Overall, these

provisions were crafted with stakeholder input to provide additional regulatory certainty to IPE applicants, and to facilitate CARB review of IPE applications, while ensuring achievement of anticipated air quality and GHG benefits.

Comment OC-2: Staff has failed to prove the provision is technologically and commercially feasible per State law. With reviewing over one million formulas, staff failed to show one formula that complies with this provision. No matter if this is voluntary or not, it still needs to meet State law requirements.

Agency Response: CARB staff made changes based on this comment. Health and Safety Code section 41712(b)(2) requires CARB's Consumer Products regulations to be commercially and technologically feasible, but does not define those terms. There is no requirement in the law that a formula exist at the time of the regulation that complies with the proposed provision for a proposed regulation to be "commercially and technologically feasible." In this case, staff has determined, based upon discussions with interested product manufacturers and formulators, and through the evaluation of potential compressed gas product formulations and compressed gas products available in other jurisdictions, that this proposal provides a pathway for the development of technically and commercially feasible products that would comply with this proposed provision.

The proposal is further feasible because it provides optional flexibility for those manufacturers who develop innovative "Hair Finishing Spray," "Dry Shampoo," or "Personal Fragrance Product'" that use compressed gas propellant instead of HFC-152a.

In addition, as part of 15-day changes, staff proposed expanding its proposal to include eligibility for "Innovative Liquefied Propellant Product." Stakeholders commented at the March 25, 2021, Board hearing and during the 15-day comment period that inclusion of "Innovative Liquefied Propellant Product" as part of the proposal for innovative aerosol "Hair Finishing Spray," "Dry Shampoo," and "Personal Fragrance Product" would provide additional product formulation flexibility, and could spur development of a wider range of innovative products, while achieving the measure's intended air quality and climate goals. Public stakeholders have indicated that this additional flexibility, provided by updates made during the 15-day changes period, further enhances the measure's technical and commercial feasibility.

Comment OC-2 WD-40 is a California consumer product company, Diversified CPC International, and Aeropres Corporation are both propellant suppliers with plants in California, and the National Aerosol Association representing aerosol manufacturers and marketers all support the resolution number three and number six to continue working on the VOC exemption for the HFO-1233zd, and continuing work on the Innovative Product Exemption for reactivity**.**

Agency Response: This comment did not include any objection or recommendation regarding the Proposed Amendments, so CARB made no changes to the proposal in response to the comment. CARB thanks the commenter for the comment.

9. Comments on Costs and Other Economic Aspects of the Provisions

Comment 3: HCPA members generally concur that the economic impact assessment for this proposed regulation was conducted in a manner consistent with other CARB rulemakings. HCPA commends CARB staff's efforts during this rulemaking process in contacting consumer product industry stakeholders in September 2020 to provide input on updated product ingredient costs for use in developing the estimated cost impacts of the Proposed Amendments.

However, industry has been impacted significantly by the outbreak of the COVID-19 Pandemic, which has disrupted supply chains, and the availability of essential product ingredients, causing prices to increase for some ingredients. Manufacturers, suppliers, and fragrance houses have been focused on making necessary modifications to product formulations. Consequently, HCPA member companies could not give the appropriate time and attention to properly assess the future costs of reformulating products to comply with the new or revised VOC standards and the other provisions of this proposed regulation.

Comment 59, Part 1: In Appendix D of the ISOR, CARB provides general formulations which meet current and proposed VOC maxima. PCPC cannot comment on the cost estimates provided, since such data are business confidential. Member companies have been asked to provide comments directly to CARB, so that any business information can be maintained as confidential. PCPC can, however, comment on the ways that the new VOC regulations can be met. In general, companies will need to devote considerable time to reformulation, consumer testing, stability testing, and microbiology to ensure that the necessary changes result in a consumer acceptable product.

Agency Response to Comments 3 and 59 Part 1: CARB staff made no changes based on these comments. The cost-effectiveness of the

Proposed Amendments was analyzed in depth, consistent with past regulations and law, in the ISOR, and accounted for estimated manufacturer costs of compliance.

Comment 3: As stated previously in these comments, eliminating the source of malodor is often not achievable, particularly in low-income communities. Affordable approaches to mitigating indoor malodor, such as air freshening products, provide an effective option. Recent market data indicates that buying rates of air care products are highest in households with annual incomes less than $20,000. This may be due in part because lower-income households are disproportionately affected by environmental odors, odors arising from crowded conditions, and by economic limitations on their ability to deal with odor sources, such as those associated with sub-standard housing. Therefore, HCPA would like to comment that any price increase due to the significant cost of reformulating air freshener products will most likely have a disproportional impact on low-income consumers.

Agency Response: CARB staff made no changes based on this comment. CARB staff disagrees with this stakeholder's assertions that these amendments will adversely impact the affordability of Manual Aerosol Air Freshener, and that any cost impacts will disproportionately affect low-income communities. The Staff Report's economic analysis for Manual Aerosol Air Freshener indicates that, due to lower anticipated ingredient costs, Manual Aerosol Air Freshener's cost per product will be lower than that for non-compliant product (as shown in Staff Report Table IX-2). Furthermore, any costs must be weighed against the health benefits to low-income communities of reduced VOCs.

Comment 3: As an initial matter, CARB staff assumes that manufacturers will not begin to incur costs for reformulating Aerosol Crawling Bug Insecticide products until 2028. This timeframe is inadequate for reformulating these products to comply with the January 1, 2030, compliance date set forth in Section 94509(a). This process will require approximately five to six years before a reformulated crawling bug insecticide can be sold or offered for sale in California as detailed below:

- 1 year for developing new formulation
- 1 year efficacy, physical chemistry, and toxicity testing
- 1 year (and possibly two years) for storage stability testing
- 1 year for EPA to evaluate any new formulation (which can take longer if EPA requires additional information/tests), longer if inert ingredient registration is also required

- 1 year to for CDPR[2] to register the product for sale and use in California

Therefore, HCPA member companies will likely begin work to reformulate these FIFRA-registered products in 2023. Consequently, CARB cost estimates in Table IX-1 should be revised to reflect costs beginning in 2023 and continuing through 2035.

Furthermore, CARB's total direct recurring and non-recurring costs of approximately $10,000,000 for Aerosol Crawling Bug Insecticide appear to be too low. HCPA member companies estimate the cost for reformulating the 66 products identified in the ISOR to comply with the proposed eight percent VOC standard by weight would range from approximately $14,850,000 (i.e., $225,000 per product) on the low-end to approximately $23,100,000 (i.e., $350,000 per product) on the high-end. In addition, CARB cost estimates do not include the costs of re-labeling and re-packaging Bed Bug Insecticides.

Agency Response: CARB staff made changes in response to this comment. CARB staff concurs with stakeholder comments regarding the estimated reformulation costs for Aerosol Crawling Bug Insecticide used in the ISOR. Thus, through the 15-day changes published on August 19, 2021, Staff proposed to change the proposal in response to this comment by incorporating more conservative product reformulation cost estimates for "Aerosol Crawling Bug Insecticide." These are: inclusion of relabeling costs for "Bed Bug Insecticide" products that were exempted from the more stringent VOC standard; an earlier initiation date for non-recurring costs, from 2028 to 2023; and a higher assumed non-recurring cost range per product reformulation, from $116,917 to $330,815, to $225,000 to $350,000.

Comment 59, Part 2: Appendix E in the ISOR provides CARB's estimates of the costs associated with complying with the new VOC mandates. As these costs are company-specific, confidential, and subject to significant differences among manufacturers, PCPC has asked member companies to individually comment on the estimates provided. Companies have been asked to designate, as appropriate, any confidential business information.

Agency Response: As noted in the ISOR, CARB staff sent its 2020 Cost Survey to 820 manufacturers of products in the seven categories proposed for VOC standards, and a fragrance-related cost survey to over 1,000 manufacturers and formulators potentially impacted by the Two Percent Fragrance Exemption sunset. Manufacturer responses to these two surveys, as well as extensive feedback from interested product

[2] California Department of Pesticide Regulation.

manufacturers and other stakeholders, contributed to development of CARB's economic cost estimates. HCPA and its members provided feedback during rule development regarding CARB's assumed product ingredient cost estimates. CARB updated cost numbers for select ingredients and utilized the most recently available and accurate recurring cost estimates.

Comment 55: We would like to note that the estimated non-recurring cost estimates found in Appendix E (Table E-1), and seen below, are very low for reformulating products. As seen in Table-1, the estimated non-recurring costs can range from $14,628-$133,335 for personal care products. However, artwork alone per product may range from $2,000-$8,000 per SKU (Stock Keeping Unit), and then there are additional costs for product reformulation, stability and efficacy studies, consumer safety assessments, capital investment for changes in manufacturing, validation testing, just to name a few. Even the high estimates included in this table are low.

Agency Response: CARB staff made no changes based on the received comment. CARB staff appreciates the comment. CARB staff would like to reiterate that the low and high non-recurring cost values in Table E-1 that are identified by the commenter as being too low are not the non-recurring cost values used in the economic analysis. The low and high-cost values identified in Table E-1 are based on numbers in the Chemical Engineering Plant Cost Index (CEPCI), adjusted to 2019 dollars, based upon a CEPCI value of 607.5. The CEPCI cost values identified in Table E-1 are one data point in determining product non-recurring costs in the ISOR.

To supplement this traditional method of estimating nonrecurring costs, CARB conducted the 2020 Cost Survey to inform staff's evaluation of nonrecurring compliance costs. The numbers in Table E-1 were then compared to and averaged with the numbers in Table E-2. The values in Table E-2 were derived from our 2020 Cost Survey of industry stakeholders.

In June 2020, CARB sent more than 820 cost surveys to manufacturers of products proposed for VOC standards as part of this rulemaking. These category-specific surveys asked manufacturers to estimate a range of costs to comply with each of the proposed VOC standards. CARB staff worked closely with public stakeholders, including the Household and Commercial Products Association, the Personal Care Products Council, and the Fragrance Creators Association, to ensure that product manufacturers were aware of this opportunity to provide compliance cost estimates to CARB. Staff would like to direct attention to Tables E-3 through E-12. The values shown in these tables are an average of the

CEPCI numbers in Table E-1 and the cost survey results in Table E-2, and are an accurate representation of non-recurring cost estimates for affected product categories.

More information regarding the CEPCI method of determining non-recurring consumer product reformulation costs can be found in Appendix J of the Initial Statement of Reasons: Proposed Amendments to the Antiperspirants and Deodorants Regulation, the Consumer Products Regulation, the Aerosol Coating Products Regulation, the Tables of MIR Values, Test Method 310, and Proposed Repeal of the Hairspray Credit Program (CARB; 2013).

10. Comments on Method 310 Modifications

Comments 49 and OC-3: The following comments should be incorporated into Method 310 to clarify the issues surrounding polysilazane systems. These references will clarify the Method for future testing of these products. These comments are to the draft Method 310 as accompanying the Public Hearing Notice Posted 2/5/21. 3 Testing to Determine VOC. Please insert a new subsection as follows, which although established for "multi-component" coatings, provides the closest analogy to a polysilazane system, wherein moisture in the air provides one of the coreactants needed for a complete chemical reaction to occur. Note that US EPA 24 states that "The sample shall stand for a minimum of 1 hour, but no more than 24 hours prior to being oven dried at 110C+/-5C for 1 hour." In the multi-component section. Additionally, ASTM D2369 in Table 1, Summary of Methods, under Method E, also notes an induction time of 24 hours at ambient conditions before placement in the oven, for such a system: "3.3.9 For air-dried materials that may require an induction period for the components to fully cure, allow the sample to stand for up to 24 hours at ambient conditions before heating at 110°C for 60 minutes, using one or more of the following: EPA Method 24, ASTM D2369." 4 Calculation of VOC Content. For non-aerosol products, please include a factor for ammonia in both equations, those that contain LVP-VOC as well as those that do not. The potential exists for ammonia to be present in either type of product. This calculation clarifies the role of ammonia: "4.2.2.2 For non-aerosol products containing LVP-VOC, the percent VOC content shall be calculated using the following equation: % VOC = [(1− H) × (1−LVP) – A – EL] × 100". A = weight + fraction of ammonia (as NH4) in a non-aerosol sample." Summary These additions to Method 310 will assist in dealing with polysilazane systems where moisture in the air provides one of the coreactants in a chemical reaction.

Agency Response: CARB staff made no changes based on this comment. CARB staff does not support inserting a new subsection to Method 310 to

clarify that "The sample shall stand for a minimum of 1 hour, but no more than 24 hours prior to being oven dried at 110C+/-5C for 1 hour." Method 310 already references U.S. EPA Method 24, which allows the sample to stand for a minimum of 1 hour, but no more than 24 hours, prior to being oven dried at 110C+/-5C for 1 hour.

CARB staff also does not support including a factor for ammonia in Method 310 equations that contain LVP-VOC or those that do not. Ammonia is an inorganic compound, does not meet the definition of a VOC, and as such is not counted towards the total percent VOC content. For further clarification in response to this comment, the following sentence was proposed to be added to section 4 of Method 310 in the 15-day changes: "Volatile compounds, such as ammonia, that do not meet the definition of a VOC in the Consumer Products Regulations, will not count towards the total percent VOC content."

Comment 3: HCPA members are neutral on the proposed updates to Method 310.

Agency Response: This comment did not include any objection or recommendation regarding the Proposed Amendments, so CARB made no changes to the proposal in response to the comment. CARB thanks the commenter for the comment.

11. Comments on Other Aspects of the Provisions of the Regulation and of the Consumer Products Program in General

Comment 35: Although tailpipes and smokestacks typically figure in the social construction of urban smog, a startling new study suggests that homes, white-collar offices, and people themselves may contribute more than ever imagined to the volatile organic compounds (VOCs) found in urban air. In 2010, a US National Oceanic and Atmospheric Administration (NOAA) team led by Brian McDonald was puzzled by high levels of VOCs in Pasadena air that could not be linked to vehicular combustion (Carswell, 2018). Though a combination of traditional roadway measurements, plus data from California Air Resources Board (a division of Cal EPA) on indoor emissions from consumer products (specifically pesticides, coatings, printing inks, adhesives, cleaning agents, and personal care products), the team concluded that VOC emission factors from common consumer chemical products in homes and offices were "one to two orders of magnitude higher than from automobile exhaust" (McDonald et al., 2018)[3]. VOC pollution was also surprisingly

[3] McDonald, B. C.; de Gouw, J. A.; Gilman, J. B.; Jathar, S. H.; Akherati, A.; Cappa, C. D.; Jimenez, J. L.; Lee-Taylor, J.; Hayes, P. L.;McKeen, S. A.; Cui, Y. Y.; Kim, S.-W.; Gentner, D. R.; Isaacman-VanWertz, G.;

disproportionate to fossil fuel consumption. Ninety-five percent of oil in the U.S. is used for fuel, whereas just five percent gets refined into pesticides, personal care products, adhesives, and the like (Amos, 2018). Albeit a small slice of the overall national energy pie, consumer products nevertheless accounted for an astonishing half of VOCs in Los Angeles smog. News editors frolicked with ironic headlines, "Smog Has As Much Deodorant As Diesel In It" (Forbes), "Want Cleaner Air? Try Using Less Deodorant" (NY Times), "Shampoo is Causing Air Pollution, but Let's not Lose our Heads" (New Scientist). Although a few articles mention cologne or body sprays as a culprit, the titles largely placed blame on women's personal care products. If McDonald's team is correct about one the world's most infamous cities for traffic jams, then thousands upon thousands of outdoor air quality studies focused on mobile-source pollution emissions could be overestimated by forty percent or more. That astonishing error rate might be worse, because in reading McDonald's paper with a close gendered eye, I noticed that this male-dominated (17/20) team had not factored in dryer vents as another key source of home/personal emissions (personal communication, Chris Cappa). Although McDonald's study team cited another article by Australian civil engineer and world expert, Anne Steinemann (Steinemann et al., 2011), they overlooked another study of hers that quantified acetylaldehyde emissions from house laundry vents. Her team concluded that VOC pollution from just one synthetically scented dryer load would be equivalent to three percent of vehicular emissions in a Seattle neighborhood (Steinemann, Gallagher, Davis, & MacGregor, 2013). Add together the daily laundry of a whole community, and the portrait of urban air quality would change dramatically (personal communication, Anne Steinemann). Many severely chemically sensitive people cite laundry fumes as one of the key triggers that keeps them housebound. I urge you to put teeth into this regulation. I am among the 1-3% of the population severely incapacitated by synthetic fragrances. Most stores, schools, theaters are inaccessible to me because of everyday personal care smog. Most days, I cannot even be in my yard or take a walk because of the laundry venting in my neighborhood. Attached are the referenced studies as well as a recent article I was inspired to write on the "ins and outs" of pollution.

Agency Response: CARB staff made no changes based on this comment. CARB thanks the commenter for the comment and reference research papers submitted.

Goldstein, A. H.; Harley, R. A.; Frost, G. J.; Roberts, J.M.; Ryerson, T. B.; Trainer, M. Volatile chemical products emerging as largest petrochemical source of urban organic emissions. Science 2018, 359, 760−764.

CARB staff routinely review and contribute to new research publications related to the Consumers Products program. CARB staff has reviewed and frequently communicated with the authors of the references you provided. CARB staff has been actively reviewing the research work by Brian McDonald *et al.* on VOC emissions from Personal Care Products and by Anne Steinemann on fragrances in consumer products.

The research paper by McDonald *et al.* in Science magazine in 2018 highlighted the increased significance of VOC emissions from consumer products and the prominence of emissions from the Personal Care Product sector. The results of CARB's most extensive three-year survey of consumer products were published shortly after the McDonald 2018 Science magazine publication. The three-year mandatory CARB survey included 491 consumer product categories. A total of 72 of these categories had never been surveyed before. Approximately 1,500 companies reported a total of nearly 1 million products and 8.45 million product ingredients. The results of CARB's three-year survey showed an increase of approximately 20 percent in Reactive Organic Gas (ROG) emissions from consumer products in 2015 compared to the prior CARB inventory. Most notable was the emergence to primacy of the Personal Care Sector that showed an increase in ROG emissions of over 40 percent compared to the prior CARB inventory. In the updated CARB emission inventory, the Personal Care Sector is now the highest contributor to emissions amongst all consumer product sectors.

The CARB methodology for estimating emissions utilized a bottom-up approach accounting for individual product sales and formulations. The sales information gathered by CARB was an excellent match with the sales information estimated by McDonald *et al.* derived using a novel top-down methodology for estimating emissions. However, in addition to product sales, CARB staff also collected highly granular product ingredient information and then applied it to product sales data to calculate emissions. For the calculation of emissions, the McDonald *et al.* study combined their estimated top-down sales data with older and more aggregated consumer product speciation data. McDonald *et al.* then compared their emission estimates to the older CARB inventory (prior to the three-year survey updated inventory) and determined that CARB underestimated emissions. CARB stands by its updated inventory derived from the three-year survey because the emission estimates are based on a more updated and granular speciation of Consumer Product categories than the work by McDonald *et al.* In 2020, the updated emission inventory of consumer products developed from the data collected from CARB's most extensive three-year survey, was used as the basis to inform the emission reduction strategy reflected in the Proposed Amendments.

Additionally, CARB staff have been reviewing the published articles and communicating with Anne Steinemann and others on fragrances in consumer products, which informed the proposed sunsetting of the fragrance exemption in the Proposed Amendments. The attention of CARB staff on fragrances in consumer products is also reflected in a focused Fragrance Survey that led to a more granular speciation of fragrance mixtures and formulations.

Staff disagree with the assertion by the commenter that there is a need to "put teeth into the regulation." The Proposed Amendments already contains enforceable provisions. As described in the ISOR, CARB's existing Consumer Products Regulations have reduced VOC emissions in the sector by nearly 50 percent between 1990 and 2020 relative to uncontrolled levels. VOCs are precursors to the formation of ground-level ozone and secondary particulate matter, which negatively affect public health and air quality.

The existing Consumer Products Regulations and these Proposed Amendments are designed to further reduce the emission of VOCs from the use of consumer products, and thus further improve air quality and public health in California. The Proposed Amendments are just as enforceable.

Comment 3: HCPA respectfully requests that CARB modify Enforcement Advisory Number 131 to include an updated explanation of how the CARB Enforcement Division will interpret and apply the proposed changes to sections 94510(c) and 94510(d).

Agency Response: CARB staff made no changes based on the received comment. This comment is outside the scope of the proposal and not specifically directed at CARB's proposed action or the procedures CARB followed in proposing or adopting the action, so CARB is not required to respond. The regulation itself is the controlling law. CARB's Enforcement Division enforces the regulation based on the regulatory language and in accordance with CARB's Enforcement Policy and applicable State law.

Comment 2: Will there be any changes on the VOC for paint removers since methylene chloride is banned in paint removers by the Department of Toxic Control? Methylene chloride, along with acetone, was a low VOC in paint removers.

Agency Response: CARB staff made no changes based on the received comment. This comment is outside the scope of the proposal, and is not directed at CARB's proposed action or the procedures CARB followed in proposing or adopting the action, so CARB is not required to respond.

CARB remains committed to continuing to evaluate changes to the consumer products and addressing any issues in future rulemakings.

Comment 39: WAIB supports the new definition and VOC limit for Plastic Pipe Cement.

Agency Response: This comment did not include any objection or recommendation regarding the Proposed Amendments, so CARB made no changes to the proposal in response to the comment. CARB thanks the commenter for the comment.

Comment 56: 3R supports the proposed new definition and VOC limit for a Plastic Pipe Cement.

Agency Response: This comment did not include any objection or recommendation regarding the Proposed Amendments, so CARB made no changes to the proposal in response to the comment. CARB thanks the commenter for the comment.

Comment 59: In the ISOR, CARB has proposed that the use of Parachlorobenzotrifluoride, Methylene Chloride, Perchloroethylene, and Trichloroethylene be prohibited in Hair Care and Personal Fragrance Products. As PCPC is not aware of any use of these materials in the named products, there is no objection to this prohibition.

Agency Response: CARB staff made no changes in response to this comment. 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. Extension of the prohibition of the use of these four compounds prevents such reformulations, keeping the regulation consistent across categories and continuing to protect public health.

Comment 3: HCPA respectfully requests that CARB revise the current definition for the "Institutional Product" or "Industrial and Institutional (I&I) Product" category to more clearly define products that are subject to the Consumer Products Regulation.

HCPA member companies support CARB's authority to regulate consumer and commercial products at the statewide VOC standard. While it is abundantly clear that CARB's complex Consumer Products Regulation applies to "household products," there is some potential ambiguity as to

whether products sold to industrial facilities are subject to statewide VOC standards. Therefore, HCPA believes that CARB should revise the current definition for the "Industrial and Institutional (I&I) Product" category to provide a clear "bright line" regulatory delineation between: (1) consumer and commercial product categories that are subject to these statewide VOC limits; and (2) industrial products that are used only in the manufacturing process, which are outside of the scope of CARB's comprehensive statewide regulation.

Comment 22: Product Label Definition / Web-Based Claims

SC Johnson supports CARB's decision to defer consideration of this issue for a future rulemaking. This is a complex matter [*sic*] and we look forward to continued engagement with CARB staff to determine a regulatory response that appropriately addresses the agency's concerns about excess VOC emissions and ensuring greater consistency between a manufacturer's product label and internet claims. Because of this issue's complexity, it's vital that the "solution" fits the "problem" that CARB seeks to resolve.

Comment 50: PCA respectfully requests that CARB revise the current definition for the "Institutional Product" or "Industrial and Institutional (I&I) Product" category to more clearly define what products that [*sic*] are subject to the Consumer Products Regulation. It seems to us that there is some potential ambiguity as to whether products sold to industrial facilities are subject to statewide VOC standards. Therefore, PCA believes that CARB should revise the current definition for the "Industrial and Institutional (I&I) Product" category to provide a clear regulatory delineation between: (1) consumer and commercial product categories that are subject to these statewide VOC limits; and (2) industrial products that are used only in the manufacturing process, which are outside of the scope of CARB's comprehensive statewide regulation. CARB Advisory Number 307 provides some clarity in determining whether "industrial" products are regulated by the stringent statewide VOC limit. In pertinent part, the Advisory states that the current regulatory definition for the term "Institutional Product" or Industrial and Institutional (I&I) Product" excludes "... products that are incorporated into or used exclusively in the manufacture or construction of the goods or commodities at the site of the establishment … .43 However, as a practical matter, it is often difficult for both CARB and product manufacturers to determine whether products sold to industrial facilities throughout the state fit into this narrowly-drawn exclusion. To remove potential ambiguity about the applicability of CARB's statewide VOC standards to products that are sold to industrial facilities, PCA recommends that CARB consider the following revision to the current definition of "Institutional Products" or "Institutional and Industrial (I&I) Products," § 94508. Definitions. (a) For

the purpose of this article, the following definitions apply: * * * * (77) "Institutional Product" or "Industrial and Institutional (I&I) Product" means a consumer product that is designed for use in the maintenance or operation of an establishment that: (A) manufactures, transports, or sells goods or commodities, or provides services for profit; or (B) is engaged in the nonprofit promotion of a particular public, educational, or charitable cause. "Establishments" include, but are not limited to, government agencies, factories, schools, hospitals, sanitariums, prisons, restaurants, hotels, stores, automobile service and parts centers, health clubs, theaters, or transportation companies. "Institutional Product" does not include household products and products that are: incorporated into or used exclusively in the manufacture or construction of the goods or commodities at the site of the establishment (A) exclusively sold directly or through distributors to establishments which manufacture or construct goods or commodities; and (B) labeled exclusively for "use in the manufacturing process only." This recommended revision is identical to the narrowly-tailored exemption provision in the current definition for the General Purpose Degreaser, Lubricant and Single Purpose Degreaser product categories.

Agency Response to Comments 3, 22, and 50: CARB staff made no changes based on these comments. The regulatory definition of "Institutional Product" or "Industrial and Institutional (I&I) Product" and product labeling is not being amended as part of the Proposed Amendments and as such, are outside the scope of the regulatory action.

Comment 55: We believe that some products using HFO 1234ZE [*sic*] may already be able to be formulated under the existing VOC based regulations; however, the many challenges with formulating with HFO 1234ZE [*sic*] propellant were discussed in our comment letter dated December 6, 2019. These challenges include product compatibility and performance, as well as supply change challenges caused by the single supplier of this propellant. To reiterate, HFO 1234ZE [*sic*] is not the solution for all types of aerosol products.

Comment 46-47: I urge you to mores [*sic*] strongly regulate antiperspirant and deodorant products.

Agency Response to Comments 55 and 46-47: These comments are not related to the Proposed Amendments because Antiperspirant and deodorant products are not part of these Proposed Amendments, so CARB staff made no changes to the proposal based on the comments Staff were able to meet the required VOC reduction targets without proposing lower VOC standards for antiperspirant and deodorant products. Staff will continue to evaluate the need for additional VOC reductions from other products for future rulemaking.

Comment 55: In the ISOR, CARB has proposed to prohibit the use of parachlorobenzotrifluoride, methylene chloride, perchloroethylene, and trichloroethylene in hair care and personal fragrance products. We have no objection to this prohibition.

Agency Response: This comment did not include any objection or recommendation regarding the Proposed Amendments, so CARB made no changes to the proposal in response to the comment. CARB thanks the commenter for the comment.

Comment 53: Exactly who is doing or will do what, when, why, and under what authority, using which records, data, where the data came from, if the data is validated or per reviewed and is very difficult for a member of the public to determine.

The public notice Authority and Reference section states that the proposed regulatory action is proposed under the authority granted in California Health and Safety Code, sections 38500, 38501, 38510, 38551, 38560, 38566, 38580, 39000, 39002, 39003, 39515, 39516, 39600, 39601, 39602, 39607, 39650, 39656,39659, 39701, 41503.5, 41504, 41511, 41700, and 41712. In addition, the notice states that this action is proposed to implement, interpret, and make specific actions 38510, 38560, 38566, 38580, 39002, 39600, 39515, 39516, 39601, 39607, 39659, 39701, 40000, 41511, 41700, and 41712.

The terms ARB, CARB, state board, Board, and Executive Officer, and CARB staff are used interchangeably throughout the proposed regulatory action. In addition, Health & Safety Code section 39516 presumptively delegates all powers, duties, purposes, functions, and jurisdictions (powers) vested in the state board to the executive officer. This section also authorizes the executive officer to delegate these powers to subordinates.

The term CARB can mean the agency, the state board members, the executive officer, or one or several of the executive officer's subordinates. The term executive officer can mean the executive officer personally or there subordinate to which the executive officer has re-delegated powers.

For the record and the sake of clarity and transparency please provide the information requested below.

Please identify and indicate whom each of these terms represents when each of these terms is used in the actions proposed to implement, interpret, and make specific sections 38510, 38560, 38566, 38580, 39002, 39600, 39515, 39516, 39601, 39607, 39659, 39701, 40000, 41511, 41700,and 41712.

Agency Response: CARB staff made no changes based on this comment because changes are not necessary, as the terms are defined and which term is meant can be understood from context. The comment is vague. For the purposes of responding to this question, staff assume that the phrase "these terms" refers to "ARB, CARB, state board, Board, and Executive Officer, and CARB staff." As noted in the comment, these terms are all used almost interchangeably in the Proposed Amendments. The reason for this is that the State Legislature also uses these terms virtually interchangeably. The Legislature created the state agency known as the "State Air Resources Board" through Health and Safety Code section 39003. Via Health and Safety Code section 39510, the Legislature created within that agency a Board called the "state board," as well as a managing office headed by the Executive Officer. The authorizing regulations, including Health and Safety Code section 41712, also refer to "the state board," encompassing all of the agency, including the Board, the Executive Officer, and CARB staff.

As noted in the comment, Health and Safety Code section 39516 states that the CARB Board's (that is, the 14 voting members) duties are presumed to be delegated to CARB's Executive Officer unless the Board specifically reserves those duties to the Board itself. Health and Safety Code section 39516 allows the Executive Officer to redelegate duties to subordinates (that is, staff at the agency) unless the Executive Officer is explicitly required to act personally by a Board rule or other law. In the case of these Proposed Amendments, the law does not explicitly require the Executive Officer to act personally. The CARB Board (the 14 voting members) presides over the public hearing at which regulations like the Proposed Amendments are approved for adoption. Otherwise, it is easiest to see who is required to act by looking at the governing definitions, in California Code of Regulations, title 17, section 94508. California Code of Regulations, title 17, section 94508, subdivision (41) provides that where the regulation states "Executive Officer," it can mean either the Executive Officer personally or staff. ARB, CARB, state board, and Board are all used interchangeably to refer to the agency as a whole, which can encompass the Board of 14 voting members, the Executive Officer, and staff. Which specific part of the agency is acting can be determined from context in the ISOR.

A discussion of peer review and authority, and all the data supporting this regulatory proposal is provided in the rulemaking record, in accordance with legal requirements.

Comment 53: Please identify and list which powers, duties, purposes, functions, and jurisdictions which the state board may lawfully delegate,

the state board, by affirmative vote recorded in the minutes of the state board, specifically has reserved the same for the state board's own action.

Agency Response: CARB staff made no changes based on the received comment. The comment is beyond the scope of the Proposed Amendments and lacks specificity and therefore, CARB is not required to respond. CARB staff responds to this comment as it pertains to the Proposed Amendments only. Health and Safety Code section 39516 provides that the CARB Board's (that is, the 14 voting members) duties are presumed to be delegated to CARB's Executive Officer unless the Board specifically reserves those duties to itself. In the case of the Proposed Amendments, the Board (the 14 voting members) has not specifically reserved any duties under the Consumer Products Regulations to itself as of today, so the regulation is implemented and enforced by the Executive Officer through CARB staff by delegation under Health and Safety Code section 39516 and California Code of Regulations, title 17, section 94508, subdivision (41).

Comment 53: Please identify and list the powers, duties, purposes, functions, and jurisdictions on which the executive officer is specifically required to act personally.

Agency Response: CARB staff made no changes based on the received comment. This comment is outside the scope of the proposal, lacks specificity, and is not specifically directed at CARB's proposed action or the procedures CARB followed in proposing or adopting the action, so CARB is not required to respond. CARB staff responds to this comment as it pertains to the Proposed Amendments only. Health and Safety Code section 39516 allows the Executive Officer to redelegate duties to subordinates (that is, staff at the agency) unless the Executive Officer is explicitly required to act personally by a Board rule or other law. In the case of these Proposed Amendments, the law does not explicitly require the Executive Officer to act personally. Therefore, where the Proposed Amendments use "Executive Officer," it is used to mean the definition given in California Code of Regulations, title 17, section 94508, subdivision (41); that is, the Executive Officer, or agency staff to whom the work is delegated.

Comment 53: Please provide records of all actions including the date, any related material used to base the actions, metric, and analytics for all actions that affect sections to California Code of Regulations, title 17, sections 94501, 94502, 94506, 94508, 94509, 94510, 94511, 94513, 94515, 94521,94522, 94524, 94526, 94540, 94541, 94542, 94543, 94544, 94545, 94546, 94547,94548, 94549, 94550, 94551, 94552, 94553, 94554, 94555, 94700; Proposed Amendments to sections 1,2,3,4,5,6,8 and

Appendix A of Method 310, which is incorporated by reference in California Code of Regulations, title 17, sections 94506, 94515 and 94526.

Agency Response: CARB staff made no changes based on this comment. The comment lacks specificity, is unclear, and is outside the scope of the Proposed Amendments. Staff assumes the comment is asking for all records on which these Proposed Amendments are based. These are attached as references to the ISOR, and the rulemaking package includes all the information supporting the Proposed Amendments. If the requester would like to view the rulemaking record, it is available for viewing by visiting CARB's rulemaking website, at https://ww2.arb.ca.gov/rulemaking/2021/consumerproducts2021, or by contacting Chris Hopkins at (279) 208-7347 or Bradley Bechtold at (916) 322-6533.

Comment 53: Please identify and list internal parties that reviewed the data, metrics, analytics and the actions that affect sections to California Code of Regulations, title 17, sections 94501, 94502, 94506, 94508, 94509, 94510, 94511, 94513, 94515, 94521,94522, 94524, 94526, 94540, 94541, 94542, 94543, 94544, 94545, 94546, 94547,94548, 94549, 94550, 94551, 94552, 94553, 94554, 94555, 94700; Proposed Amendments to sections 1,2,3,4,5,6,8 and Appendix A of Method 310, which is incorporated by reference in California Code of Regulations, title 17, sections 94506, 94515 and 94526.

Agency Response: CARB staff made no changes based on the received comment. This comment is outside the scope of the proposal, irrelevant, or not specifically directed at CARB's proposed action or the procedures CARB followed in proposing or adopting the action, so CARB is not required to respond. The persons who reviewed information related to the Proposed Amendments include CARB agency staff and the CARB Board Members.

Comment 53: Please identify and list any third parties that reviewed the data, metrics, analytics and the actions that affect sections to California Code of Regulations, title 17, sections 94501, 94502, 94506, 94508, 94509, 94510, 94511, 94513, 94515, 94521,94522, 94524, 94526, 94540, 94541, 94542, 94543, 94544, 94545, 94546, 94547,94548, 94549, 94550, 94551, 94552, 94553, 94554, 94555, 94700; Proposed Amendments to sections 1,2,3,4,5,6,8 and Appendix A of Method 310, which is incorporated by reference in California Code of Regulations, title 17, sections 94506, 94515 and 94526.

Agency Response: CARB staff made no changes based on the received comment. This comment is outside the scope of the proposal, irrelevant, or not specifically directed at CARB's proposed action or the procedures

CARB followed in proposing or adopting the action, so CARB is not required to respond. The Proposed Amendments, as well as the information and documents relied upon in developing and supporting the Proposed Amendments, were, and are, available to the public on CARB's website and in hardcopy upon request, and could have been viewed by any number of people. The Proposed Amendments and supporting documentation underwent an extensive public review process, including stakeholder meetings, public workshops, public comment periods, and a public Board Meeting. Please see section V, below, for more information about peer review.

Comment OC-13: First, we, on balance, can support the proposed limits and definitions contained in the amendments that are the subject of today's hearing. I would underscore, however, that many of these proposed changes will require significant reformulations, but we're committed to expending the time and resources needed to reformulate our products to meet these stringent VOC standards.

Agency Response: This comment did not include any objection or recommendation regarding the Proposed Amendments, so CARB made no changes to the proposal in response to the comment. CARB thanks the commenter for the comment.

CARB received the following comments that expressed support for the addition of "diethyl carbonate," "1-chloro-3,3,3-trifluoropropane," "HFO-1233zd," and "alkane mixed-minimally 90% C13 and higher" to the "Tables of Maximum Incremental Reactivity (MIR) Values":

(3, 4, 6, 29, 39, 48, 56, OC-2).

Agency Response: These comments did not include any objection or recommendation regarding the Proposed Amendments, so CARB made no changes to the proposal in response to the comments. CARB thanks the commenter for the comment.

CARB received the following comments requesting that HFO-1233zd be excluded from the definition of "VOC" in the Consumer Products Regulation:

(4, 7, 37, OC-2, OC-4).

Agency Response: CARB staff made no changes to the proposal in response to these comments. CARB staff was directed by the Board in Resolution 21-7 to evaluate opportunities, in coordination with the Office of Environmental Health Hazard Assessment (OEHHA), to exempt substances with negligible reactivity, GWP, and human health and environmental impacts, from the VOC classification, in order to provide

greater product formulation flexibility without adversely impacting CARB's air quality goals or the public health. CARB staff continues to work with stakeholders and OEHHA to evaluate the feasibility of HFO-1233zd as a candidate for exclusion from the VOC definition, but the feasibility is not clear enough to allow adoption as part of this proposal. If the feasibility evaluation is supportive of such an exclusion in the future, staff may propose a regulatory amendment for Board consideration.

E. Agency Responses to Comments Received during the 15-day comment period

Consistent with Government Code section 11346.9, subdivision (a)(3), CARB staff have included a summary of each objection or recommendation made regarding the Proposed Amendments, together with an explanation of how the Proposed Amendments have been changed to accommodate each objection or recommendation, or the reasons for making no change. This requirement applies only to objections or recommendations specifically directed at the agency's proposed action or to the procedures followed by the agency in proposing or adopting the action. Also consistent with Government Code section 11346.9, subdivision (a)(3), CARB staff have generally aggregated, summarized, and responded to repetitive or irrelevant comments as a group. A comment is "irrelevant" if it is not specifically directed at the agency's proposed action or to the procedures followed by the agency in proposing or adopting the action."

1. Comments on Method 310 Modifications

Comment L: 3R supports the language added on ammonia. This language clarifies the role of ammonia in the calculation.

Agency Response: This comment did not include any objection or recommendation regarding the Proposed Amendments, so CARB made no changes to the proposal in response to the comment. CARB thanks the commenter for the comment.

2. Comments on Modifications to the Fragrance Exemption

Comment F: HCPA supports the proposed update to section 94510(c)(1), eliminating any potential uncertainty about compliance with applicable volatile organic compound (VOC) standards for any "General Purpose Cleaner" (nonaerosol) and "General Purpose Degreaser" (nonaerosol) products manufactured before January 1, 2023.

Comment K: NAA supports the proposed update for the General-Purpose Cleaners & Degreasers non-aerosol, manufactured before January 1, 2023, containing fragrances.

Comment L: 3R supports the proposed update for the General-Purpose Cleaners & Degreasers non-aerosol, manufactured before January 1, 2023, containing fragrances.

Agency Response: These comments did not include any objection or recommendation regarding the Proposed Amendments, so CARB made no changes to the proposal in response to the comments. CARB thanks the commenters for the comments.

3. Comments on the Addition of a Definition of Monoterpene

Comment F: HCPA also supports the proposed addition of a definition for "Monoterpene" and adding a table of "Specified Monoterpenes" to identify specific chemical names and their associated Chemical Abstracts Service (CAS) registry number. The proposed definition and the table with inclusion of CAS numbers removes any potential ambiguity by ensuring that the exemption applies only to these specified monoterpenes.

Comment K: Also, NAA supports the inclusion of the Monoterpenes table listing the specific chemicals and Chemical Abstract Service (CAS) numbers. This adds clarity to the regulation.

Comment L: Also, 3R supports the inclusion of the Monoterpenes table listing the specific chemicals and Chemical Abstract Service (CAS) numbers. This adds clarity to the regulation.

Agency Response: These comments did not include any objection or recommendation regarding the Proposed Amendments, so CARB made no changes to the proposal in response to the comments. CARB thanks the commenters for the comments.

Additional Comment and Response: Staff received a comment **(A)** requesting a reference document (SciFinder, 2021) included in the 15-day changes and used as the basis for the CAS numbers in Table 94510(c). Staff emailed the reference document to the email address provided by the commenter.

4. Comments on the Addition of an LVP-VOC Reference to the Alternative Control Plan Definitions

Comment F: Modifications to section 94542, Definitions: HCPA members support the proposed definition modifications. Having the definition of a "LVP" or "LVP Compound" reference the definition within section 94508(a) ensures that there will always be consistency for this term between the General Consumer Products Regulation and the

Alternative Control Plan Regulation for Consumer Products and Aerosol Coatings Products.

Agency Response: This comment did not include any objection or recommendation regarding the Proposed Amendments, so CARB made no changes to the proposal in response to the comment. CARB thanks the commenter for the comment.

5. Comments on Updates to the Innovative Product Exemption

CARB received the following stakeholder comments that expressed their support for the modifications to the Innovative Product Exemption proposal.

(B, C, D, E, F, G, H, I, J, K, L).

Agency Response: These comments did not include any objection or recommendation regarding the Proposed Amendments, so CARB made no changes to the proposal in response to the comments. CARB thanks the commenters for the comments. CARB staff agree that the addition of additional criteria to the Innovative Product Exemption to allow for the use of liquified propellants along with compressed gas propellants in these products will achieve GHG reductions without an increase in ozone emissions.

V. Peer Review

Health and Safety Code Section 57004 sets forth requirements for peer review of identified portions of rulemakings proposed by entities within the California Environmental Protection Agency, including CARB. Specifically, the scientific basis or scientific portion of a proposed rule may be subject to this peer review process. CARB determined that this rulemaking did not require peer review because all the scientific bases and portions of the peer review do not use, and are not based on, new scientific concepts or methodologies, only those already used in the Consumer Products Regulations or generally-accepted or already peer-reviewed methodologies.