

AVAILABILITY OF
RULEMAKING DOCUMENTS

The Rulemaking File, which includes all the information on which this proposal is based, is available for viewing at the BSCC's office at the above address and may also be accessed through the BSCC's website at <http://www.bscc.ca.gov>.

AVAILABILITY OF MODIFIED TEXT

If the BSCC makes modifications that are sufficiently related to the originally proposed text, it will clearly indicate the changes and make the modified text available to the public for at least 15 days before the BSCC adopts the regulations as revised. The modified text may be accessed through the BSCC website at: <http://www.bscc.ca.gov>. Those persons who do not have access to the Internet may submit a written request to the contact persons listed below.

AVAILABILITY OF INITIAL STATEMENT OF
REASONS AND FINAL STATEMENT OF
REASONS

The Initial and Final Statement of Reasons may be accessed through the BSCC website at: <http://www.bscc.ca.gov>. Those persons who do not have access to the Internet may submit a written request to the contact persons listed below.

AVAILABILITY OF DOCUMENTS;
INTERNET ACCESS

Copies of the Notice of Proposed Action, the Initial Statement of Reasons, and the text of the regulation in strikeout and underline can be accessed through our website at: <http://www.bscc.ca.gov>. Those persons who do not have access to the Internet may submit a written request to the contact persons listed below.

CONTACT PERSON FOR SUBSTANTIVE
AND/OR TECHNICAL QUESTIONS

Inquiries concerning the proposed action may be directed to the primary contact person:

Ginger Wolfe, Standards and Compliance Officer
2590 Venture Oaks Way, Suite 200
Sacramento, CA 95833
Phone: (916) 445-5073
ginger.wolfe@bscc.ca.gov
Fax: (916) 327-3317

The auxiliary contact person is:

Eloisa Tuitama, Field Representative
2590 Venture Oaks Way, Suite 200
Sacramento, CA 95833
Phone: (916) 445-5073
Eloisa.Tuitama@bscc.ca.gov
Fax: (916) 341-7328

TITLE 17. AIR RESOURCES BOARD

NOTICE OF PUBLIC HEARING TO CONSIDER
PROPOSED AMENDMENTS TO THE
CONSUMER PRODUCTS REGULATION
AND METHOD 310

The California Air Resources Board (CARB or Board) will conduct a public hearing at the time and place noted below to consider approving for adoption the proposed amendments to the California Consumer Products Regulation.

DATE: May 25, 2018

TIME: 9:00 a.m.

LOCATION: Sacramento County
Administration Building
700 H Street
Sacramento, California 95814

This item will be considered at a meeting of the Board, which will commence at 9:00 a.m., May 25, 2018. Please consult the agenda for the hearing, which will be available at least ten days before May 25, 2018, to determine when this item will be considered.

WRITTEN COMMENT PERIOD AND
SUBMITTAL OF COMMENTS

Interested members of the public may present comments orally or in writing at the hearing and may provide comments by postal mail or by electronic submittal before the hearing. The public comment period for this regulatory action will begin on April 6, 2018. Written comments not physically submitted at the hearing must be submitted on or after April 6, 2018, and received **no later than 5:00 p.m. on May 21, 2018**. CARB requests that when possible, written and email statements be filed at least 10 days before the hearing to give CARB staff and Board members additional time to consider each comment. The Board also encourages members of the public to bring to the attention of staff in advance of the hearing any suggestions for modification of the proposed regulatory action. Comments submitted in advance of the hearing must be addressed to one of the following:

Postal
mail: Clerk of the Board,
California Air Resources Board
1001 I Street
Sacramento, California 95814

Electronic
submittal: <http://www.arb.ca.gov/lispub/comm/bclist.php>

Please note that under the California Public Records Act (Gov. Code, § 6250 et seq.), your written and oral comments, attachments, and associated contact information (e.g., your address, phone, email, etc.) become part of the public record and can be released to the public upon request.

Additionally, the Board requests but does not require that persons who submit written comments to the Board reference the title of the proposal in their comments to facilitate review.

AUTHORITY AND REFERENCE

This regulatory action is proposed under the authority granted in California Health and Safety Code, sections 38500, 38501, 38510, 38560, 38562, 38580, 39600, 39601, 39607, 41511 and 41712. This action is proposed to implement, interpret, and make specific sections 38505, 39600, 39607, 40000, 41511 and 41712 of the California Health and Safety Code.

INFORMATIVE DIGEST OF PROPOSED ACTION AND POLICY STATEMENT OVERVIEW (GOV. CODE, § 11346.5, subd. (a)(3))

Sections Affected: Proposed amendments to California Code of Regulations (CCR), title 17, sections 94509, 94513 and 94515; proposed amendments to sections 1, 2, 3, 4, 5, 6 and 7, Appendix A, Method 310, “Determination of Volatile Organic Compounds (VOC) in Consumer Products and Reactive Organic Compounds (ROC) in Aerosol Coating Products” (last amended August 1, 2014) which is incorporated by reference in title 17, CCR section 94515.

Documents Incorporated by Reference (Cal. Code Regs., tit. 1, § 20, subd. (c)(3)):

1. Method 310, Determination of Volatile Organic Compounds (VOC) in Consumer Products and Reactive Organic Compounds (ROC) in Aerosol Coating Products (last amended August 1, 2014);

2. 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 (last amended August 1, 2014):
- ASTM D6730–01(2016), Standard Test Method for Determination of Individual Components in Spark Ignition Engine Fuels by 100–Metre Capillary (with Precolumn) High–Resolution Gas Chromatography, (April 1, 2016).
 - ASTM D4057–12, Standard Practice for Manual Sampling of Petroleum and Petroleum Products, (December 1, 2012).
 - ASTM D4177–16e1, Standard Practice for Automatic Sampling of Petroleum and Petroleum Products, (October 1, 2016).
 - ASTM D4626–95(2015), Standard Practice for Calculation of Gas Chromatographic Response Factors, (April 1, 2015).
 - ASTM E203–01 Standard Test Method for Water Using Volumetric Karl Fisher Titration, (October 10, 2001).

Background and Effect of the Proposed Regulatory Action:

Section 41712 of the California Health and Safety Code requires CARB to adopt regulations to achieve the maximum feasible reduction in VOC emissions from consumer products (including aerosol coatings). As part of the regulatory process, CARB must determine that adequate data exist for it to adopt the regulations. CARB must also determine that the regulations are technologically and commercially feasible, and necessary to carry out the Board’s responsibilities under Division 26 of the Health and Safety Code. In addition, Health and Safety Code section 41712(c) provides that no regulation shall be adopted which requires the elimination of a product form. The Health and Safety Code further stipulates in section 41712(e) that public health agencies be consulted, and their recommendations be considered, prior to adopting regulations for health benefit products. Section 41712 is primarily directed at attaining State and federal air quality standards.

Pursuant to Health and Safety Code section 41712, CARB has adopted the Regulation for Reducing Volatile Organic Compound Emissions from Antiperspirants and Deodorants (the “Antiperspirants and Deodorants Regulation,” title 17, CCR, sections 94500–94506.5); the Regulation for Reducing Emissions from Consumer Products (the “Consumer Products Regulation,” title 17, CCR, sections 94507–94517); the Regulation for Reducing the Ozone Formed from Aerosol Coating Product Emissions (the

“Aerosol Coating Products Regulation,” title 17, CCR, sections 94520–94528); the Tables of Maximum Incremental Reactivity (MIR) Values (“Tables of MIR Values,” title 17, CCR sections 94700–94701); and the incorporated by reference Method 310, “Determination of Volatile Organic Compounds (VOC) in Consumer Products and Reactive Organic Compounds in Aerosol Coating Products” (“Method 310”), has been adopted to enforce the above regulations.

The Consumer Products Regulation sets forth VOC limits and other requirements for numerous categories of consumer products, including the Multi-Purpose Lubricant (MPL) products category. For certain categories, the regulation also prohibits use of specific toxic compounds and compounds with high global warming potential (GWP) values. The regulation was originally approved for adoption on October 11, 1990, and has been amended numerous times. The most recent amendments were approved for adoption on September 26, 2013.

Method 310 was adopted on September 25, 1997, and has been amended numerous times, most recently on August 1, 2014. Method 310 is used to determine compliance with various regulatory requirements, and is incorporated by reference in title 17, CCR sections 94506 (Antiperspirants and Deodorants), 94515 (Consumer Products), and 94526 (Aerosol Coating Products).

Staff Proposal

CARB staff has proposed amendments to the Consumer Products Regulation sections 94509, 94513, and 94515 to include an alternate compliance option to provide flexibility for manufacturers in meeting the requirements of the 10 percent by weight VOC limit for MPL products. The alternate compliance option would allow manufacturers to comply by meeting a 25 percent by weight VOC limit and a reactivity limit of 0.45 grams of ozone per gram of product. Staff is also proposing to extend the effective date of the existing 10 percent by weight VOC limit from December 31, 2018, to July 1, 2019, to provide adequate time for manufacturers of MPL products to evaluate their products and decide whether to comply via the alternate compliance option. Additionally, staff is proposing to prohibit the use of compounds with high global warming potentials (GWP) in MPL products.

The sections proposed for amendment are codified in title 17, California Code of Regulations (CCR), sections 94509, 94513, and 94515.

Amendments to the analytical method, Method 310, are also proposed. The proposed amendments to Method 310 are intended to clarify and update dates of test procedures. Specifically, staff is updating reference method citations and dates, correcting grammar for

consistency, and including several additional reference methods.

CARB may also consider other changes to the sections affected, as listed earlier in this notice, during the course of this rulemaking process.

Objectives and Benefits of the Proposed Regulatory Action:

CARB staff is proposing amendments to the consumer products regulation to achieve three objectives: The first is to maintain the ozone air quality benefits and the benefits claimed in the State Implementation Plan (SIP) that the 10 percent VOC limit would achieve. The 10 percent limit was expected to result in 1.27 ton per day reductions in VOC emissions, which were claimed as part of the SIP submitted to United States Environmental Protection Agency (U.S. EPA) in 2010. The proposed amendments ensure that the emissions from products using the alternate compliance option have equal or less ozone forming potential than the 10 percent by weight compliant products.

The second objective is to provide compliance flexibility to manufacturers that would enable them to continue to offer effective products to consumers but achieve similar ozone air quality benefits to those that comply with the mass-based 10 percent by weight VOC limit.

The third objective is to achieve these objectives without significantly impacting compliance costs or increasing the cost of MPL products on the market.

The proposed amendments achieve these goals by setting a product weighted maximum incremental reactivity (PWMIR) limit of 0.45 grams of ozone per gram of product, and requiring that the products not exceed the current 25 percent by weight VOC limit. It provides the needed flexibility for manufacturers of MPL products and it retains the ozone air quality benefits of the 10 percent by weight VOC limit, achieving benefits equivalent to SIP commitments.

CARB staff is also proposing amendments to Method 310. The proposed amendments would improve the clarity of the test method and update publication dates of test methods previously incorporated by reference. Additionally, several reference methods would be included for the purposes of implementing the alternate compliance option. No changes in public health and safety, or worker safety are expected as a result of this rulemaking.

Comparable Federal Regulations:

There are no direct comparable federal requirements for multi-purpose lubricant products. The “National Volatile Organic Compound Emission Standards for Consumer Products” (40 CFR Part 59, Subpart C, sections 59.201 *et seq.*) set national VOC emission stan-

dards for various categories of consumer products. The regulation became effective on September 11, 1998, and the VOC limits became effective on December 10, 1998. There are similarities and differences between the California and National Consumer Products Regulations. However, the National Consumer Products Regulation does not include VOC limits for MPL products or limits on chemicals with high global warming potential.

An Evaluation of Inconsistency or Incompatibility with Existing State Regulations (Gov. Code, § 11346.5, subd. (a)(3)(D)):

During the process of developing the proposed regulatory action, CARB conducted a search of any similar regulations on this topic and concluded these regulations are neither inconsistent nor incompatible with existing state regulations.

MANDATED BY FEDERAL LAW OR REGULATIONS
(Gov. Code, §§ 11346.2, subd. (c), 11346.9)

The proposed regulatory action is not mandated by federal law or regulations.

DISCLOSURE REGARDING THE PROPOSED REGULATION

Fiscal Impact/Local Mandate Determination Regarding the Proposed Action (Gov. Code, § 11346.5, subs. (a)(5)&(6)):

The determinations of the Board’s Executive Officer concerning the costs or savings incurred by public agencies and private persons and businesses in reasonable compliance with the proposed regulatory action are presented below.

Under Government Code sections 11346.5, subdivision (a)(5) and 11346.5, subdivision (a)(6), the Executive Officer has determined that the proposed regulatory action would not create costs or savings to any State agency or in federal funding to the State, costs or mandate to any local agency or school district, whether or not reimbursable by the State under Government Code, title 2, division 4, part 7 (commencing with section 17500), or other nondiscretionary cost or savings to State or local agencies.

Housing Costs (Gov. Code, § 11346.5, subd. (a)(12)):

The Executive Officer has also made the initial determination that the proposed regulatory action will not have a significant effect on housing costs.

Significant Statewide Adverse Economic Impact Directly Affecting Business, Including Ability to Compete (Gov. Code, §§ 11346.3, subd. (a), 11346.5, subd. (a)(7), 11346.5, subd. (a)(8)):

The Executive Officer has made an initial determination that the proposed regulatory action would not have a significant statewide adverse economic impact directly affecting businesses, including the ability of California businesses to compete with businesses in other states, or on representative private persons.

Results of the Economic Impact Analysis/Assessment (Gov. Code, § 11346.5, subd. (a)(10)):

NON-MAJOR REGULATION: Statement of the Results of the Economic Impact Assessment (EIA):

Effect on Jobs/Businesses:

The Executive Officer has determined that the proposed regulatory action would not affect the creation or elimination of jobs within the State of California, the creation of new businesses or elimination of existing businesses within the State of California, or the expansion of businesses currently doing business within the State of California.

These determinations are based on an economic assessment that leads the Executive Officer to expect no adverse economic impacts from the proposed regulatory action. A detailed assessment of the economic impacts of the proposed regulatory action can be found in the Economic Impact Analysis in the Initial Statement of Reasons (ISOR).

Benefits of the Proposed Regulation:

The objective of the proposed regulatory action is to provide flexibility for manufacturers of MPL products to comply with the mass-based 10 percent by weight VOC limit. This added flexibility may allow manufacturers to formulate the effective products that consumers expect while providing the same ozone air quality benefits as products meeting the 10 percent by weight mass-based VOC limit and at a lower cost.

A summary of these benefits is provided. Please refer to “Objectives and Benefits,” under the Informative Digest of Proposed Action and Policy Statement Overview Pursuant to Government Code § 11346.5(a)(3) discussion above.

Cost impacts on a representative private person or business (Gov. Code, § 11346.5(a)(9)):

In developing this regulatory proposal, CARB staff evaluated the potential cost impacts on representative private persons or businesses. No manufacturer is required to participate and only those which determine it is in the best financial interest of the company are expected to do so. If no manufacturers participate, these amendments have no cost. If all four California manufacturers choose to participate, then incurred costs will be \$84,064 from reporting and recordkeeping over the

5-year lifetime of the regulation. Staff estimates \$133,440 in cost savings to these California businesses as a result of avoided reformulation cost due to the proposed amendments. Thus, the net impact of the proposed amendments is a cost savings to California businesses. Staff expects there would be no impact on consumers.

Effect on Small Business (Cal. Code Regs., tit. 1, § 4, subs. (a) and (b)):

The Executive Officer has also determined under California Code of Regulations, title 1, section 4, that the proposed regulatory action would affect two California small businesses, which are among the four California companies staff identified as having MPL products that do not comply with the 10 percent VOC limit. Staff identified 22 companies located outside California that have products that do not meet the 10 percent VOC limit.

Consideration of Alternatives (Gov. Code, § 11346.5, subd. (a)(13)):

Before taking final action on the proposed regulatory action, the Board must determine that no reasonable alternative considered by the Board, or that has otherwise been identified and brought to the attention of the Board would be more effective in carrying out the purpose for which the action is proposed, would be as effective and less burdensome to affected private persons than the proposed action, or would be more cost-effective to affected private persons and equally effective in implementing the statutory policy or other provisions of law.

The Executive Officer analyzed four alternatives to the proposed amendments and determined that all alternatives would be less effective in carrying out the purpose for which the action is proposed.

ENVIRONMENTAL ANALYSIS

CARB, as the lead agency for the proposed amendments to the Consumer Products Regulation, has prepared an environmental analysis (EA) under its certified regulatory program (California Code of Regulations, title 17, sections 60000 through 60008) to comply with the requirements of the California Environmental Quality Act (CEQA; Public Resources Code section 21080.5). The EA determined that the proposed amendments would not result in any significant adverse impacts on the environment. The basis for reaching this conclusion is provided in Chapter VI of the ISOR. Written comments on the EA will be accepted during a 45-day public review period starting on April 6, 2018, and ending at 5:00 p.m. on May 21, 2018.

SPECIAL ACCOMMODATION REQUEST

Consistent with California Government Code Section 7296.2, special accommodation or language needs may be provided for any of the following:

- An interpreter to be available at the hearing;
- Documents made available in an alternate format or another language; and
- A disability-related reasonable accommodation.

To request these special accommodations or language needs, please contact the Clerk of the Board at (916) 322-5594 or by facsimile at (916) 322-3928 as soon as possible, but no later than 10 business days before the scheduled Board hearing. TTY/TDD/Speech to Speech users may dial 711 for the California Relay Service.

Consecuente con la sección 7296.2 del Código de Gobierno de California, una acomodación especial o necesidades lingüísticas pueden ser suministradas para cualquiera de los siguientes:

- Un intérprete que esté disponible en la audiencia;
- Documentos disponibles en un formato alterno u otro idioma; y
- Una acomodación razonable relacionados con una incapacidad.

Para solicitar estas comodidades especiales o necesidades de otro idioma, por favor llame a la oficina del Consejo al (916) 322-5594 o envíe un fax a (916) 322-3928 lo más pronto posible, pero no menos de 10 días de trabajo antes del día programado para la audiencia del Consejo. TTY/TDD/Personas que necesiten este servicio pueden marcar el 711 para el Servicio de Re-transmisión de Mensajes de California.

AGENCY CONTACT PERSONS

Inquiries concerning the substance of the proposed regulatory action may be directed to the agency representative, Jose Gomez, Manager, Technical Development Section (916) 324-8033 or (designated back-up contact) Daniel Garrett, Air Pollution Specialist, Technical Development Section (916) 324-0388.

AVAILABILITY OF DOCUMENTS

CARB staff has prepared a Staff Report: Initial Statement of Reasons (ISOR) for the proposed regulatory action, which includes a summary of the economic and environmental impacts of the proposal. The report is entitled: Public Hearing to Consider Proposed Amendments to the Consumer Products Regulation and CARB Test Method 310.

Copies of the ISOR and the full text of the proposed regulatory language, in underline and strikeout format

to allow for comparison with the existing regulations, may be accessed on CARB's website listed below, or may be obtained from the Public Information Office, Air Resources Board, 1001 I Street, Visitors and Environmental Services Center, First Floor, Sacramento, California, 95814, as of April 3, 2018.

Further, the agency representative to whom nonsubstantive inquiries concerning the proposed administrative action may be directed is Bradley Bechtold, Regulations Coordinator, (916) 322-6533. The Board staff has compiled a record for this rulemaking action, which includes all the information upon which the proposal is based. This material is available for inspection upon request to the contact persons.

HEARING PROCEDURES

The public hearing will be conducted in accordance with the California Administrative Procedure Act, Government Code, title 2, division 3, part 1, chapter 3.5 (commencing with section 11340).

Following the public hearing, the Board may take action to approve for adoption the regulatory language as originally proposed, or with non-substantial or grammatical modifications. The Board may also approve for adoption the proposed regulatory language with other modifications if the text as modified is sufficiently related to the originally proposed text that the public was adequately placed on notice and that the regulatory language as modified could result from the proposed regulatory action. If this occurs, the full regulatory text, with the modifications clearly indicated, will be made available to the public, for written comment, at least 15 days before final adoption.

The public may request a copy of the modified regulatory text from CARB's Public Information Office, Air Resources Board, 1001 I Street, Visitors and Environmental Services Center, First Floor, Sacramento, California, 95814.

FINAL STATEMENT OF REASONS AVAILABILITY

Upon its completion, the Final Statement of Reasons (FSOR) will be available and copies may be requested from the agency contact persons in this notice, or may be accessed on CARB's website listed below.

INTERNET ACCESS

This notice, the ISOR and all subsequent regulatory documents, including the FSOR, when completed, are available on CARB's website for this rulemaking at <http://www.arb.ca.gov/regact/2018/cp2018/cp2018.htm>.

TITLE 17. CALIFORNIA INSTITUTE FOR REGENERATIVE MEDICINE

NOTICE OF INTENTION TO AMEND THE CONFLICT-OF-INTEREST CODE OF THE CALIFORNIA INSTITUTE FOR REGENERATIVE MEDICINE

NOTICE IS HEREBY GIVEN that the California Institute for Regenerative Medicine (CIRM), pursuant to the authority vested in it by section 87306 of the Government Code, proposes amendments to its conflict-of-interest code. A comment period has been established commencing on April 6, 2018 and closing on May 21, 2018. All inquiries should be directed to the contact listed below.

The CIRM proposes to amend its conflict-of-interest code to include employee positions that involve the making or participation in the making of decisions that may foreseeably have a material effect on any financial interest, as set forth in subdivision (a) of section 87302 of the Government Code. The amendment carries out the purposes of the law and no other alternative would do so and be less burdensome to affected persons.

Changes to the conflict-of-interest code include: updating the place and manner of filing statements of economic interests, updating position titles and agency organization, and also making other technical changes. No changes are proposed to the definitions of disclosure categories (Appendix B).

Information on the code amendment is available on the CIRM's website: <https://www.cirm.ca.gov/our-funding/pending-regulations>.

Any interested person may submit written comments relating to the proposed amendment by submitting them no later than May 21, 2018, or at the conclusion of the public hearing, if requested, whichever comes later. Comments may be submitted to cirmcoicode@cirm.ca.gov or to the contact and address listed below. At this time, no public hearing is scheduled. A person may request a hearing no later than May 7, 2018.

The CIRM has determined that the proposed amendments:

1. Impose no mandate on local agencies or school districts.
2. Impose no costs or savings on any state agency.
3. Impose no costs on any local agency or school district that are required to be reimbursed under Part 7 (commencing with Section 17500) of Division 4 of Title 2 of the Government Code.
4. Will not result in any nondiscretionary costs or savings to local agencies.

State of California
AIR RESOURCES BOARD

**PUBLIC HEARING TO CONSIDER THE PROPOSED AMENDMENTS TO
THE CONSUMER PRODUCTS REGULATION AND METHOD 310**

STAFF REPORT: INITIAL STATEMENT OF REASONS

DATE OF RELEASE: APRIL 3, 2018
SCHEDULED FOR CONSIDERATION: MAY 25, 2018

Location:

Sacramento County Administration Building
700 H Street
Sacramento, California 95814

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



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LIST OF ACRONYMS

AB	Assembly Bill
ACP	Alternative Control Plan
ASTM	American Society for Testing and Materials International
Board	California Air Resources Board
CARB	California Air Resources Board
CCAA or Act	California Clean Air Act
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CO ₂	Carbon Dioxide
FSOR	Final Statement of Reasons
GHG	Greenhouse Gas
g O ₃ /g ROC	Grams of Ozone per gram of Reactive Organic Compound
g O ₃ /g product	Grams of Ozone per gram of product
GWP	Global Warming Potential
ISOR	Initial Statement of Reasons
LVP-VOC	Low Vapor Pressure Volatile Organic Compound
MIR	Maximum Incremental Reactivity
NAAQS	National Ambient Air Quality Standards
ppm	Parts per Million
PWMIR	Product-weighted Maximum Incremental Reactivity
ROC	Reactive Organic Compound
ROE	Return on Owner's Equity
SB	Senate Bill
SIP	State Implementation Plan
TAC	Toxic Air Contaminant
Method 310	Air Resources Board Method 310, Determination of Volatile Organic Compounds (VOC) in Consumer Products and Reactive Organic Compounds (ROC) in Aerosol Coating Products
VOC	Volatile Organic Compound
U.S. EPA	United States Environmental Protection Agency

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EXECUTIVE SUMMARY

Background

In this rulemaking, California Air Resources Board (CARB or Board) staff is proposing amendments to the Regulation for Reducing Emissions from Consumer Products (Consumer Products Regulation) and CARB Test Method 310: Determination of Volatile Organic Compounds (VOC) in Consumer Products and Reactive Organic Compounds (ROC) in Aerosol Coating Products (Method 310). The primary purpose of the proposed amendments is to provide flexibility in meeting the 10 percent by weight VOC limit for multi-purpose lubricant (MPL) products, which under the existing regulation would apply for the first time on December 31, 2018.

The Board approved amendments to the Consumer Products Regulation in 2008, reducing the VOC limit for MPL products to 25 percent by weight effective December 31, 2013, and 10 percent by weight effective December 31, 2015 (CARB, 2008). A Technical Assessment to determine feasibility of the VOC limits prior to their implementation was required for these technology-forcing limits. In 2013, the Board approved a three-year extension for the 10 percent by weight VOC limit to allow manufacturers additional time to reformulate products (CARB, 2013). The regulation also required Responsible Parties to report their reformulation and research and development efforts to meet the 10 percent by weight VOC limit. Staff used this information to conduct a Technical Assessment to determine the feasibility of the 10 percent by weight VOC limit.

Staff's analysis of the Technical Assessment determined that the 10 percent by weight VOC limit continued to prove challenging. The analysis indicated that the air quality benefits anticipated from the 10 percent reformulation had largely been met by the previous reformulation effort. Staff determined that additional reformulation flexibility should be given to manufacturers, while locking in the air quality benefits achieved by the 25 percent by weight VOC reformulation effort. Staff analyzed the product weighted maximum incremental reactivity (PWMIR) of products reported and found that formulation flexibility could be provided without compromising the air quality benefits by incorporating a reactivity limit.

Reactivity limits are based on sound science and have been used by the Aerosol Coating Products Regulation since 2000 when the regulation was amended to establish Reactivity Limits based on the maximum incremental reactivity (MIR) scale (CARB, 2000). In 2008, the United States Environmental Protection Agency (U.S. EPA) also promulgated a national reactivity-based regulation for aerosol coatings (U.S. EPA, 2008).

This Executive Summary, together with the Staff Report, is the Initial Statement of Reasons for Proposed Rulemaking required by the California Administrative Procedure Act. Appendix A contains the proposed amendments to the Consumer Products Regulation. Appendix B contains the proposed amendments to Method 310. The proposed regulatory changes provided in Appendices A and B are shown in underline and ~~strikeout~~ format.

Staff Proposal

CARB staff has proposed amendments to the Consumer Products Regulation to include an alternate compliance option to provide flexibility for manufacturers in meeting the requirements of the 10 percent by weight VOC limit for MPL products. The alternate compliance option would allow manufacturers to comply by meeting a 25 percent by weight VOC limit and a PWMIR limit of 0.45 grams of ozone per gram of product (g O₃/g product). Staff is also proposing to extend the effective date of the existing 10 percent by weight VOC limit from December 31, 2018, to July 1, 2019, to provide adequate time for manufacturers of MPL products to evaluate their products and decide whether to comply via the alternate compliance option or the 10 percent by weight VOC limit. Additionally, staff is proposing to prohibit the use of compounds with high global warming potentials (GWP) in MPL products.

The sections proposed for amendment are codified in title 17, California Code of Regulations (CCR), sections 94509, 94513, and 94515.

Amendments to the analytical method, Method 310, are also proposed. The proposed amendments to Test Method 310 are intended to clarify and update dates of test procedures. Specifically, staff is updating reference method citations and dates, correcting grammar for consistency, and including several additional reference methods.

Emission Reductions and Impacts

The flexibility that would be provided by the proposed amendment would achieve the same air quality benefits as the 10 percent by weight VOC limit because it would require that products complying under the alternate compliance option form no more ozone than the average 10 percent compliant product. The mass of VOC for products meeting the alternate compliance option would be expected to remain at current levels. The proposed amendments would provide flexibility for manufacturers to continue offering products with the performance that consumers expect while meeting the air quality objectives of the regulation. The alternate compliance option does not increase cost over the existing requirements and may result in lower compliance costs.

The proposed reactivity limit would not require reductions in total VOC content, but would likely require the use of ingredients with lower reactivity. This would result in a reduction of the ozone formed from products choosing the alternate compliance option. By allowing the alternate compliance option, overall reactivity of products would be reduced rather than total mass of VOCs. The proposed reactivity limit provides equivalent ozone air quality benefits to the future effective 10 percent by weight mass based VOC limit and provides more reformulation options at a potentially lower cost.

Staff's Recommendation

Staff recommends that the Board adopt the proposed amendments to the Consumer Products Regulation and Method 310.

I. INTRODUCTION AND BACKGROUND

A. Introduction

In this rulemaking, California Air Resources Board (CARB or Board) staff is proposing amendments to the Consumer Products Regulation and Method 310.

This report is CARB staff's technical justification and analysis of the proposed amendments. It is part of the Initial Statement of Reasons (ISOR) for the Proposed Amendments to the California Consumer Products Regulation and Method 310. The proposed amendments to the Consumer Products Regulation and Method 310 are in Appendix A and Appendix B, respectively.

Included in this report is the following information:

- Background information on the consumer products program;
- The purpose for proposing the amendments;
- A description of the public problems, the proposed solutions, and the rationale supporting the solutions;
- A summary of the proposed action in plain language;
- A summary and rationale for the regulatory proposals;
- An analysis of the expected environmental impacts;
- An assessment of how the proposed action aligns with CARB's environmental justice policies;
- The economic impacts associated with complying with the proposed amendments; and
- The public process staff used to develop the proposal.

The primary purpose of the proposed amendments to the Consumer Products Regulation is to provide reformulation flexibility by establishing an alternate reactivity based limit for MPL products. The purpose for proposing amendments to Test Method 310 is to make corrections for clarity and consistency and to add several reference test methods.

The proposed amendments designed to fulfill these purposes would be codified in title 17, California Code of Regulations, sections 94509, 94513, and 94515.

B. Background

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

To date, the Board has taken numerous actions to fulfill the legislative mandate pertaining to the regulation of consumer products. An overview of the CARB's authority

to regulate consumer products, a synopsis of the regulations adopted to date, and a comparison of California and national consumer products regulations follows.

1. Enabling Legislation

The Health and Safety Code sets forth CARB's authority to regulate consumer products to control VOC emissions and greenhouse gas (GHG) emissions. Section 41712 specifies requirements to reduce VOC emissions primarily as a ground-level ozone control strategy. Section 38500 *et seq.*, establishes authority to reduce emissions of GHGs from consumer products as part of CARB's climate change mitigation strategy. Authority to mitigate potential adverse environmental impacts of proposed regulations is set forth in Public Resources Code section 21000 *et seq.* A summary of each of these requirements in State law follows.

a. Health and Safety Code section 41712

As part of the State's effort to reduce air pollutants, in 1988 the California Legislature (Legislature) added section 41712 to the California Clean Air Act (CCAA or "the Act") in the Health and Safety Code. Section 41712, along with subsequent amendments, requires CARB to adopt regulations to achieve the maximum feasible reduction in VOC emissions from consumer products. The CCAA specified that attainment of the California State ambient air quality standards is necessary to promote and protect public health, particularly of children, older people, and those with respiratory diseases. The Legislature also directed that these standards be attained by the earliest practicable date.

Prior to adopting regulations, the Board must determine that adequate data exist to establish that the regulations are necessary to attain State and federal ambient air quality standards. Commercial and technological feasibility of the regulations must also be demonstrated. The Act further stipulates that regulations adopted must not eliminate any product form, and that recommendations from health professionals be considered when developing VOC control measures for health benefit products.

b. Health and Safety Code section 38500 *et seq.*

In 2006, Assembly Bill (AB) 32, The California Global Warming Solutions Act of 2006, was signed into law. This law created a comprehensive, multi-year program to reduce GHG emissions in California. The California Health and Safety Code, commencing with section 38500, contains these provisions. AB 32 requires CARB to develop regulations and consider market-based compliance mechanisms that will ultimately reduce California's GHG emissions to the 1990 baseline level by 2020. In addition to the requirements of AB 32, Senate Bill (SB) 32, signed by Governor Brown in 2016, requires statewide GHG emissions be reduced to 40 percent below 1990 levels by 2030.

c. Public Resources Code section 21000 *et seq.*

In addition to requirements set forth in California's Health and Safety Code, the California Environmental Quality Act (CEQA) requires that environmental impacts of proposed regulations be evaluated. If significant adverse environmental impacts are identified, mitigation measures must be put in place, if available, to reduce or eliminate such impacts. The provisions of CEQA are contained in California's Public Resources Code, commencing with section 21000 *et seq.*

2. Existing Consumer Products Regulations

For more than twenty years, the Board has taken actions to fulfill California's legislative mandates pertaining to the regulation of consumer products. Three regulations adopted by CARB have set VOC limits for 130 consumer product categories (CARB, 2017b).

The three regulations that set VOC limits for consumer products, by 2020, will reduce VOC emissions by about 50 percent compared to 1990 levels. Also, limits on the use of ingredients with higher global warming potential (GWP) values in 18 consumer products categories will provide reductions of approximately 0.23 million metric tons of carbon dioxide equivalents (MMT CO_{2e}) per year by 2020.

Exposure to toxic air contaminants (TAC) has also been reduced by prohibiting use of certain compounds in 83 categories. Total emissions of TACs have been reduced by over 13 tons per day relative to 1990 levels.

In addition, the Alternative Control Plan (ACP) regulation was adopted in 1995 to provide compliance flexibility to companies. The four consumer products regulations adopted by CARB are codified in title 17, California Code of Regulations, sections 94500 to 94575 as follows:

- Antiperspirants and Deodorants (Article 1, sections 94500-94506.5);
- Consumer Products (Article 2, sections 94507-94517);
- Aerosol Coating Products (Article 3, sections 94520-94528); and
- Alternative Control Plan (Article 4, sections 94540-94555).

Tables of MIR Values have also been adopted to implement the Aerosol Coating Products Regulation. These values are codified in Subchapter 8.6, Article 1, sections 94700 and 94701.

3. Consumer Products and State Implementation Plan (SIP)

Federal clean air laws require areas with unhealthy levels of ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide and inhalable particulate matter to develop State Implementation Plans (SIP) describing how they will attain the national ambient air quality standards (NAAQS).

A SIP is a compilation of new and previously submitted plans, programs (such as monitoring, modeling, permitting, etc.), local air district rules, and State and federal regulations. The Code of Federal Regulations (CFR) title 40, Chapter I, Part 52, Subpart F, section 52.220 sets forth all of the items which are included in the California SIP.

Because VOCs are ozone precursors, reducing VOC emissions has been necessary to work toward attainment of the ambient air quality standards for ozone. In 1988, with the enactment of the CCAA, the importance of controlling emissions from consumer products was set forth. In 1994, emission reductions from consumer products became part of the SIP to meet the federal standard for ozone.

The 2007 SIP, the State Strategy for California's 2007 State Implementation Plan (CARB, 2007), is California's plan to attain the NAAQS for ozone of 0.08 parts per million (ppm) averaged over eight hours. In the 2007 SIP, CARB set a target to achieve an additional statewide VOC reduction of 30 to 40 tons per day from consumer products by January 1, 2014.

With respect to the ozone standard, the U.S. EPA set a standard of 0.075 ppm in 2008. On April 30, 2012, U.S. EPA issued a final rule that directs key aspects of the implementation of this standard.

U.S. EPA has also issued a proposed rule that will guide implementation of the 2008 8-hour ozone standard of 0.075 ppm and will address SIP deadlines and other implementation issues. CARB submitted new SIPs for the 0.075 ppm ozone standard in 2016. The 2016 SIP (CARB, 2017a) contains a control measure for consumer products and a commitment to achieve an additional 10 tons per day of VOC emission reductions statewide by 2031. CARB staff anticipates presenting the control measure for Board consideration in 2020.

Up-to-date information on SIP activities can be found on CARB's website at: <http://www.arb.ca.gov/planning/sip/sip.htm>.

4. Consumer Products and the California Global Warming Solutions Act of 2006 (AB 32)

Various consumer products may contain GHGs in their formulations. Most often, these GHGs are propellants such as hydrofluorocarbons or carbon dioxide (CO₂). To a lesser extent some GHGs are used as solvents. A reduction of 0.23 MMT CO₂e has already been achieved from existing consumer product regulations. We continue to evaluate whether GHG emission reductions from other consumer product categories are feasible.

5. National Consumer Products Regulation

On September 11, 1998, U.S. EPA promulgated a national consumer products regulation, the “National Volatile Organic Compound Emission Standards for Consumer Products” (40 CFR Part 59, Subpart C, sections 59.201 *et seq.*) (U.S. EPA, 1998). This action set national VOC emission standards for various categories of consumer products. The regulation became effective on September 11, 1998, and the VOC limits became effective on December 10, 1998. There are similarities and differences between the California and national consumer products regulations. However, the national regulation does not preclude states from adopting more stringent regulations.

The national regulation does not regulate a number of product categories that are currently regulated under the CARB regulation. Of the categories that are regulated under both regulations, many of CARB’s limits are more stringent than the national limits. Therefore, CARB’s Consumer Products Regulation has achieved significant additional reductions over those that would be achieved by the national rule.

The U.S. EPA has also promulgated a national regulation for aerosol coatings: “National Volatile Organic Compound Emission Standards for Aerosol Coatings” (40 CFR Part 59, Subpart E, sections 59.500 *et seq.*) (U.S. EPA, 2008) modeled on CARB’s Aerosol Coating Products Regulation. This is a reactivity-based regulation. The National Aerosol Coatings Regulation was promulgated on March 24, 2008, with a compliance date of July 1, 2009.

CARB’s regulation is more effective because it applies to all products sold, supplied, or offered for sale in California. U.S. EPA’s rule exempts from compliance manufacturers whose national sales are less than 7,500 kg (16,500 pounds) per year. CARB’s regulation also applies to commercial application of aerosol coatings. Additionally, the reactivity limits for most of aerosol coating product categories were lowered further in 2013.

The national regulations for consumer products and aerosol coatings do not prohibit the use of certain TACs. To date, the California Consumer Products Regulation and the Aerosol Coating Products Regulation include prohibitions on the use of certain TACs in 83 categories, resulting in a reduction of toxic compound emissions of over 13 tons per day.

C. Regulatory History

This section summarizes the history of CARB’s regulation of consumer products with emphasis on the category that is the subject of this rulemaking.

1. Consumer Products Regulation

CARB's regulation of consumer products began in 1989 with adoption of the Antiperspirants and Deodorants Regulation. The "general" Consumer Products Regulation was approved for adoption in 1990 and has been amended numerous times.

Multi-purpose Lubricant products were first regulated in California under "Midterm Measures I" of the Consumer Products Regulation approved in July of 1997, and a description of these products is also included in the staff report for that rulemaking (CARB, 1997). At that time, the Board adopted a 50 percent by weight VOC limit for these products, which became effective on January 1, 2003. In 2008, the Board approved for adoption a 25 percent VOC limit and a 10 percent VOC limit that were to become effective in 2013 and 2015, respectively. The most recent amendments to the Consumer Products Regulation were approved for adoption on September 26, 2013. These amendments extended the compliance date for the 10 percent VOC limit for MPL products from December 31, 2015, to December 31, 2018, to address commercial and technological feasibility.

2. Method 310

Air Resources Board Method 310, Determination of Volatile Organic Compounds (VOC) in Consumer Products and Reactive Organic Compounds (ROC) in Aerosol Coating Products (Method 310), was first adopted in 1997 and has been amended several times. This method sets forth a process to develop analytical methods and standard operating procedures to determine compliance with various regulatory provisions.

II. THE PROBLEM THAT THE PROPOSAL IS INTENDED TO ADDRESS

In this chapter, we describe the problem and issues that the proposed amendments are intended to address.

A. Description of Public Problem Proposal is Intended to Address

The majority of California residents continue to be exposed to pollutant concentrations that exceed health-based ambient air quality standards for ozone and particulate matter. Volatile organic compound emissions from consumer products are known to contribute to the formation of ground-level ozone and particulate matter. Despite developing regulations that have to date reduced consumer product VOC emissions by over 209 tons per day, it is estimated that current VOC emissions are still approximately 204 tons per day. This represents about 13 percent of the overall statewide VOC inventory in 2018. Moreover, as California's population grows, an increase in consumer product emissions to approximately 231 tons per day statewide in 2031 is expected if no further action is taken.

1. Problems Identified with the Provisions for MPLs

Reformulating MPL products to meet the future effective 10 percent by weight VOC limit continues to prove challenging to manufacturers. In some cases, meeting a 10 percent by weight VOC limit may result in products with reduced efficacy and may result in additional costs to manufacturers.

In 2008, CARB approved amendments to the Consumer Products Regulation reducing the VOC limit for MPL products from 50 percent by weight and establishing two technology-forcing limits: a 25 percent by weight VOC limit effective December 31, 2013, and a 10 percent by weight VOC limit effective December 31, 2015. Because the limits were technology forcing, staff conducted Technical Assessments to determine feasibility of the VOC limits prior to their implementation. Solid or semisolid products (primarily greases) were not considered a significant source of VOC emissions and were excluded from the VOC limit.

In 2012, staff conducted a Technical Assessment for the 25 percent VOC limit. Staff determined that while meeting the 25 percent VOC limit was technologically feasible, it had proven challenging for manufacturers with reformulation requiring more time and resources than anticipated (CARB, 2012). As a result, in a 2013 rulemaking, the Board approved a three-year extension to the compliance date for the 10 percent VOC limit for MPL products from December 31, 2015, to December 31, 2018, to allow manufacturers additional time to reformulate products to meet the 10 percent by weight VOC limit.

In 2017, staff conducted the Technical Assessment for the 10 percent by weight VOC limit (CARB, 2017c). The results of the Technical Assessment indicated that the 10 percent VOC limit remained a significant challenge to more than 90 percent of the MPL market (see Appendix C). Staff concluded that additional flexibility could be provided to industry to comply while maintaining the ozone air quality benefits of the 10 percent by weight VOC limit. This could be achieved by setting a product weighted maximum incremental reactivity (PWMIR) limit of 0.45 g O₃/g product, and requiring that the products not exceed the current 25 percent by weight VOC limit.

The sales weighted PWMIR of products meeting the 10 percent VOC limit and those that meet the current 25 percent VOC limit reported in the Technical Assessment are shown in Table 1. The sales weighted average PWMIR of current MPL products (excluding oils) compliant with the 10 percent VOC limit is 0.49 g O₃/g product. If that group is extended to include the MPL products compliant with the current 25 percent VOC limit, the sales weighted average PWMIR is 0.44 g O₃/g product. This analysis also shows that, on average, the ozone air quality benefits of reformulation to meet the 25 percent VOC limit are similar to those achieved, on average, from products reformulated to meet the 10 percent VOC limit.

Table 1
Summary of Technical Assessment of
Multi-purpose Lubricant Products (Excluding Oils)

Multi-purpose Lubricant VOC Range	Sales Weighted Average VOC Weight Percent	Sales Weighted Product Weighted MIR	Number of Reported MPL Formulas	Number of Companies Reporting MPLs	Percent of Reported MPL Market Represented	Group Mass (lbs/yr)
0-10	0.6	0.49	37	10	6.3	257,958
0-25	22.5	0.44	91	31	97.4	3,976,849
0-50	23.2	0.44	97	35	100.0	4,084,590

III. SUMMARY OF THE SPECIFIC PURPOSE AND RATIONALE FOR EACH ADOPTION, AMENDMENT, OR REPEAL

The proposed amendments are needed to provide compliance flexibility to the regulated industry to meet the applicable requirements for MPL products. The information in this chapter provides a summary of the provisions and CARB staff’s determination that each provision proposed is: (1) reasonably necessary to carry out the purpose of the regulation; and (2) reasonably necessary to address the problem for which the amendments are proposed. The proposed amendments to the Consumer Products Regulation and CARB Test Method 310 can be found in Appendices A and B, respectively.

Amendments are being proposed to the following sections in the Consumer Products Regulation: section 94509, “Standards for Consumer Products;” section 94513, “Reporting Requirements;” and section 94515, “Test Methods.”

A. Proposed Amendments to the Consumer Products Regulation

Summary of Section 94509(a)

CARB staff is proposing to amend the Table of Standards contained in section 94509(a) as well as several other requirements in section 94509. These proposals are described below.

Staff is proposing to amend section 94509(a) of the Consumer Products Regulation to add the alternate compliance option for meeting the 10 percent by weight VOC limit for MPL products. The purpose of this amendment is to provide compliance flexibility by allowing manufacturers the option to comply using a reactivity-based approach. Products subject to the proposed alternate compliance option would be required to meet the currently applicable 25 percent by weight VOC limit and a reactivity limit of 0.45 g O₃/g product.

Staff is also proposing to extend the 10 percent by weight VOC limit effective date from December 31, 2018, to July 1, 2019, to provide Responsible Parties adequate time to evaluate their products and decide whether to comply with the 10 percent by weight VOC limit or use the alternate compliance option.

Rationale for Section 94509(a)

This change is necessary because after many years of working to reformulate MPL products only a relatively small percentage of the market is meeting the upcoming 10 percent by weight VOC limit. The Multi-purpose Lubricant Products Technical Assessment of the feasibility of meeting the 10 percent by weight VOC limit by the compliance date of December 31, 2018, found that the proposed limit was still proving to be a challenge for industry (Appendix C). Additionally, review of the reactivity for ingredients used to replace VOCs in MPL products found that some product formulas that met the 10 percent by weight VOC limit had higher potential to form ozone than some products at the 25 percent by weight VOC limit.

The proposed reactivity limit may not necessarily require reductions in total VOC content, but likely will require lower reactivity ingredients be used to reduce the ozone formed from products choosing the alternate compliance option. By allowing products comply via the alternate compliance option to reduce their overall reactivity, rather than total mass of VOCs, the proposed reactivity limit provides equivalent air quality benefits to the future effective 10 percent by weight mass-based VOC limit, and provide more reformulation options at potentially less cost.

Staff determined that it is necessary to extend the effective date of the limit in the Table of Standards to allow manufacturers adequate time to evaluate their products to determine whether to comply by meeting the 10 percent by weight VOC limit or use the alternate compliance option. The six month extension provides manufacturers the additional necessary time to reformulate products to comply with the 10 percent by weight VOC limit or the reactivity limit.

Summary of Section 94509(n)

Staff is proposing to amend section 94509(n) to add Multi-purpose Lubricant to Table 94509(n)(1). This addition will prohibit use of compounds with Global Warming Potential (GWP) values of 150 or greater in the MPL product category.

Rationale for Section 94509(n)

While high GWP compounds currently are not used in MPL formulations, certain high GWP chemicals could be used in reformulated MPL products. This provision is proposed as a mitigation measure against future use of compounds with GWP values at or above 150.

Staff is proposing to add new subsection (r) to section 94509, including subparts (1), (2), (3), (4), and (5). Section 94509(r)(1) defines the terms specific to the sections being added.

Summary of Section 94509(r)(1)(A)

Staff is proposing to define “Base Reactive Organic Gas Mixture (Base ROG Mixture)” as the mixture of reactive organic gases utilized in deriving the maximum incremental reactivity scale.

Rationale for Section 94509(r)(1)(A)

This definition is being proposed to address the situation where a MIR value is not available for a chemical compound or mixture. The MIR value for Base ROG Mixture would be the default value used in such a case.

Summary of Section 94509(r)(1)(B)

Staff is proposing to define “Chemical Compound” as a molecule of definite chemical formula and chemical structure.

Rationale for Section 94509(r)(1)(B)

The proposed reactivity limit requires that each chemical compound with an MIR value be used in determining the overall reactivity of MPL products. Thus, it is necessary to define what a chemical compound is for the purposes of the proposed provision.

Summary of Section 94509(r)(1)(C)

Staff is proposing to define “Chemical Mixture” as a substance comprised of two or more chemical compounds.

Rationale for Section 94509(r)(1)(C)

The proposed reactivity limit requires that each chemical mixture with an MIR value be used in determining the overall reactivity of MPL products. Thus, it is necessary to define what a chemical mixture is for the purpose of the proposed provision.

Summary of Section 94509(r)(1)(D)

Staff is proposing to define “Ingredient” as a chemical compound or a chemical mixture.

Rationale for Section 94509(r)(1)(D)

The proposed definition of ingredient is needed because each ingredient in the formulation is required to be reported as part of the initial reporting of MPL products that would comply using the alternate compliance option.

Summary of Section 94509(r)(1)(E)

Staff is proposing to define “Maximum Incremental Reactivity (MIR)” as the maximum change in weight of ozone formed by adding a compound to the Base ROG Mixture per weight of compound added, expressed to hundredths of a gram (g O₃/g ROC).

Rationale for Section 94509(r)(1)(E)

The alternate compliance option sets a proposed reactivity limit to ensure that the air quality benefits of the upcoming 10 percent VOC limit are maintained. The reactivity limit is based on the MIR scale. Thus, we are proposing to define MIR consistent with the science-based definition of MIR.

Summary of Section 94509(r)(1)(F)

Staff is proposing to define “Product Formulation” as the weight fraction of all ingredients.

Rationale for Section 94509(r)(1)(F)

The definition of product formulation is intended to clarify what will be used in determining a product’s overall reactivity.

Summary of Section 94509(r)(1)(G)

Staff is proposing to define "Production Records" to mean product formulation information disclosing the actual quantity of all ingredients used to manufacture a MPL product on the date of manufacture. The definition also identifies various types of information that would be considered a production record.

Rationale for Section 94509(r)(1)(G)

This definition is intended to provide clarity to manufacturers as to what information CARB will accept for MPL products selected for compliance verification. The production records are intended to assist CARB staff in determining the compliance status of MPL products.

Summary of Section 94509(r)(1)(H)

Staff is proposing to define “Product-Weighted MIR (PWMIR)” to mean the sum of all weighted-MIR for all ingredients in a “Multi-purpose Lubricant” product. The PWMIR is the total product reactivity expressed to hundredths of a gram of ozone formed per gram of product (g O₃/g product), excluding container and packaging.

Rationale for Section 94509(r)(1)(H)

The proposed definition of PWMIR is needed to determine the reactivity of MPL products that would comply using the alternate compliance option.

Summary of Section 94509(r)(1)(I)

Staff is proposing to define “Reactive Organic Compound (ROC)” to mean any compound containing at least one atom of carbon and that has the potential, once emitted, to contribute to ozone formation in the troposphere.

Rationale for Section 94509(r)(1)(I)

The definition of reactive organic compound is needed to ensure that all chemical compounds with the potential to form ozone are accounted for in calculating the PWMIR of MPL products.

Summary for Section 94509(r)(2)

Section 94509(r)(2) specifies that, in order to qualify for the alternate compliance option, Responsible Parties will need to identify which products will be using this option. The VOC content, not exceeding 25 percent by weight, has to be reported to CARB along with the product formulation. Information that manufacturers are required to report in section 94509(r)(2) must be received by CARB at least 90 days before the 10 percent by weight VOC limit comes into effect on July 1, 2019. After July 1, 2019, VOC content (not exceeding 25 percent by weight) and product formulation must be received by CARB at least 30 days before a product, using the alternate compliance option, becomes available on the market.

This section also specifies that if a product is not eligible for the alternate compliance option, it will be subject to the 10 percent by weight VOC limit. To avoid hindering the effectiveness of any future VOC limits in related product categories, products making claims that would make them subject to the most restrictive VOC limit provision do not qualify for the alternate compliance option. Products subject to an Alternative Control Plan do not qualify for the alternate compliance option. Products that exceed the 0.45 g O₃/g product reactivity limit do not qualify for the alternate compliance option.

Rationale for Section 94509(r)(2)

Staff is proposing this section to have the Responsible Party provide information that would allow staff to track which products are complying using the proposed alternate compliance option. The notification requirements will provide CARB staff the necessary information to monitor the effectiveness of the proposed provisions.

Summary for Section 94509(r)(3)

Section 94509(r)(3) states the PWMIR limit for the alternate compliance option. The proposed PWMIR limit is 0.45 g O₃/g product and a product must not exceed 25 percent by weight VOC.

Rationale for Section 94509(r)(3)

Section 94509(r)(3) sets a reactivity limit and a VOC limit that would ensure that products under the compliance option would provide the same ozone air quality benefits as products that would comply with the 10 percent by weight VOC limit.

Summary for Section 94509(r)(4)

Section 94509(r)(4) provides the equation that will be used to calculate the PWMIR for products using the alternate compliance option. All ingredients present in the final formulation in an amount of 0.1 percent by weight or greater must be included in the calculation of the PWMIR. This section also states that MIR values set forth in Subchapter 8.6, Article 1, section 94700 or 94701, dated October 2, 2010, and the MIR values specified in section 94509(r)(5) will be used for product ingredients until at least July 1, 2021.

Rationale for Section 94509(r)(4)

Section 94509(r)(4) is intended to provide the methodology to be used to calculate the PWMIR of MPL products. It also specifies the level at which an ingredient does not have to be counted in the calculation of PWMIR. This section allows manufacturers of MPL products to ensure that their formulations of MPL products will comply with the reactivity limit.

Summary for Section 94509(r)(5)

Section 94509(r)(5) assigns MIR values for specific ingredients. Ingredients that are not given MIR values in section 94509(r)(5) are assigned MIR values as they appear in sections 94700 or 94701 of the Consumer Products Regulations. This section also specifies criteria for ingredients not listed in either section 94700 or 94701.

Rationale for Section 94509(r)(5)

The purpose of section 94509(r)(5) is to provide the specific MIR values for ingredients in MPL products to implement the new alternate compliance option. By specifying which MIR values are to be used in calculating the PWMIR, this provision provides part of the framework necessary to implement the proposed alternate compliance option.

Summary of Section 94513(c)

Staff is proposing to amend section 94513 by revising section 94513(c). Modification to section 94513(c) is proposed to clarify that any information submitted to CARB must contain a signed statement verifying that all information submitted is accurate, true, and complete. Modifications also clarify that all confidential information received by CARB will be handled in accordance with the confidentiality procedures specified in title 17, California Code of Regulations, sections 91000-91022.

Rationale for Section 94513(c)

This section is needed to provide Responsible Party accountability for the information provided to CARB to ensure that all information submitted is true, accurate, and complete. The rationale for adding clarifying language to section 94513(c) is to address the need for CARB to acquire complete and accurate information to ensure compliance with the regulatory requirements.

Summary of Section 94513(h)(1)

Section 94513(h)(1) states that the sales of products using this option will be required by CARB annually, and reports must be submitted by March 31 of each year. The annual reporting would sunset on April 1, 2023.

Rationale for Section 94513(h)(1)

Section 94513(h)(1) would require annual reporting in order for staff to evaluate the use and success of the alternate compliance option over time. Staff proposes that this annual reporting requirement sunset on April 1, 2023. Staff would use initial reporting of product formulation to ensure the reported product formula complies with the qualifying factors of the alternate compliance option. Furthermore, staff would use annually reported product sales to determine the effect that the alternate compliance option has on the market.

Summary of Section 94513(h)(2)

Section 94513(h)(2) sets forth various ingredient reporting requirements for formulations of MPL products using the alternate compliance option. Section 94513(h)(2) requires that certain formulation data be reported. This section defines the types of ingredients to report and their concentrations.

Rationale for Section 94513(h)(2)

Section 94513(h)(2) would ensure that CARB staff have accurate information regarding products that would comply via the alternate compliance option..

Summary of Section 94513(h)(3)

Section 94513(h)(3) states that production records for products using this option must be kept by the Responsible Party. CARB will have the option to obtain up to three years of these records upon request when a product is selected for compliance verification.

Rationale for Section 94513(h)(3)

Section 94513(h)(3) would state that up to three years of production batch records are needed if a product is selected for compliance verification by CARB. This would provide staff with adequate information to determine the VOC content and PWMIR of the products using this option. Staff would use this and other information to verify compliance.

Summary of Section 94513(h)(4)

Staff is proposing section 94513(h)(4) to inform Responsible Parties that they must provide any other information necessary to determine the PWMIR of the MPL product to be tested including the MIR value for each ingredient used to calculate the PWMIR of the product.

Rationale for Section 94513(h)(4)

Section 94513(h)(4) would allow CARB access to all information needed to accurately calculate PWMIR and determine product compliance under the alternate compliance option.

Summary of Section 94513(h)(5)

Section 94513(h)(5) is proposed to specify that if a product is selected for compliance verification, the Responsible Party will have 25 working days to provide all requested information to CARB.

Rationale for Section 94513(h)(5)

Section 94513(h)(5) would require Responsible Parties to report information to CARB within a reasonable amount of time so that staff could begin compliance determination. Staff believes the 25 working days is adequate time for Responsible Parties to provide the required information.

Summary of Section 94513(h)(6)

Staff is proposing section 94513(h)(6) to stipulate that information provided by Responsible Parties to CARB would be handled consistent with State law, as specified in title 17, California Code of Regulations, sections 91000-91022.

Rationale for Section 94513(h)(6)

Section 94513(h)(6) would allow Responsible Parties to provide their product information to CARB knowing that the information is protected and treated appropriately.

Summary of Section 94515

Staff is proposing to amend section 94515 to correct a typographical error in section 94515(a)(2).

Rationale for Section 94515(a)(2)

The purpose of this amendment is to correct a typographical error in the Regulation for Consumer Products to properly reflect text from Method 310, section 3.6.2. The Regulation for Consumer Products inadvertently stated a 5 percent distillation cut whereas Method 310 states a 1 percent distillation cut will be used.

Summary of Section 94515(k)

Staff is proposing to add new subsection (k) to section 94515. Section 94515(k) specifies the test methods for the alternate compliance option, wherein, section 94515(k)(1) specifies that Method 310 will be used when testing products using this option.

Rationale for Section 94515(k)

Method 310 is the most appropriate test method for the alternate compliance option. Method 310 is used to determine compliance with other Consumer Products Regulation provisions, including the Aerosol Coatings Regulation for determining PWMIR values. This precedent made Method 310 the most appropriate option for determining the PWMIR of MPL products using this option.

B. Proposed Amendments to Method 310

Summary of Method 310, Section 1

Staff proposes changes to Sections 1 of Method 310 to delete language that is no longer necessary from a previous version. Staff also proposes to make grammatical and typographical changes, for consistency.

Rationale for Method 310, Section 1

Method 310 sets forth the analytical procedures and processes used to determine the VOC content of consumer products. Staff is proposing these minor corrections to Section 1 of Method 310 for clarity and consistency.

Summary of Method 310, Section 2

Staff proposes changes to Sections 2 of Method 310 to delete language that is no longer necessary from a previous version. Staff also proposes to make grammatical and typographical changes, for consistency.

Staff also proposes changes to Sections 2 of Method 310 to reflect the addition of reference methods. These methods are: ASTM D6730-01(2016), Standard Test Method for Determination of Individual Components in Spark Ignition Engine Fuels by 100-Metre Capillary (with Precolumn) High Resolution Gas Chromatography (ASTM, 2016a); ASTM D4057-12, Standard Practice for Manual Sampling of Petroleum and Petroleum Products (ASTM, 2012); ASTM D4177-16e1, Standard Practice for Automatic Sampling of Petroleum and Petroleum Products, (ASTM, 2016b); ASTM D4626-95(2015), Standard Practice for Calculation of Gas Chromatographic Response Factors (ASTM, 2015); and ASTM E203-01, Standard Test Method for Water Using Volumetric Karl Fisher Titration (ASTM, 2001).

Rationale for Method 310, Section 2

Method 310 sets forth the analytical procedures and processes used to determine the VOC content of consumer products. Staff is proposing minor corrections to Section 2 of Method 310 for clarity and consistency.

Staff is also proposing to incorporate the reference methods listed above as section 2.36, 2.37, 2.38, 2.39, and 2.40. These methods are being added to determine compliance with the proposed reactivity-based option for MPL products.

Summary of Method 310, Section 3

Staff proposes changes to Sections 3 of Method 310 to delete language that is no longer necessary from a previous version. Staff also proposes to make grammatical and typographical changes, for consistency.

Staff also proposes changes to Sections 3 of Method 310 to reflect the addition of reference methods. These methods are: ASTM D6730-01(2016), Standard Test Method for Determination of Individual Components in Spark Ignition Engine Fuels by 100-Metre Capillary (with Precolumn) High Resolution Gas Chromatography (ASTM, 2016a); ASTM D4057-12, Standard Practice for Manual Sampling of Petroleum and Petroleum Products (ASTM, 2012); ASTM D4177-16e1, Standard Practice for Automatic Sampling of Petroleum and Petroleum Products, (ASTM, 2016b); ASTM D4626-95(2015), Standard Practice for Calculation of Gas Chromatographic Response Factors (ASTM, 2015); and ASTM E203-01, Standard Test Method for Water Using Volumetric Karl Fisher Titration (ASTM, 2001).

Rationale for Method 310, Section 3

Method 310 sets forth the analytical procedures and processes used to determine the VOC content of consumer products. Staff is proposing minor corrections to Section 3 of CARB Method 310 for clarity and consistency.

Staff is also proposing to incorporate the reference method citations listed above as section 3.3.2 and 3.3.8. These methods are being added to determine compliance with the proposed reactivity-based option for MPL products.

Summary of Method 310, Section 4

Staff proposes changes to Sections 4 of Method 310 to delete language that is no longer necessary from a previous version. Staff also proposes to make grammatical and typographical changes, for consistency.

Staff proposes modifying language to Section 4 of Method 310.

Rationale for Method 310, Section 4

Method 310 sets forth the analytical procedures and processes used to determine the VOC content of consumer products. Staff is proposing minor corrections to Method 310 for clarity and consistency.

Staff proposes modifications to the language in Section 4 of Method 310, which clarify the factors used in the VOC calculations.

Summary of Method 310, Section 5

Staff proposes changes to Sections 5 of Method 310 to delete language that is no longer necessary from a previous version. Staff also proposes to make grammatical and typographical changes, for consistency.

Staff also proposes changes to Sections 5 of Method 310 to reflect the addition of reference methods. These methods are: ASTM D6730-01(2016), Standard Test Method for Determination of Individual Components in Spark Ignition Engine Fuels by 100-Metre Capillary (with Precolumn) High Resolution Gas Chromatography (ASTM, 2016a); ASTM D4057-12, Standard Practice for Manual Sampling of Petroleum and Petroleum Products (ASTM, 2012); ASTM D4177-16e1, Standard Practice for Automatic Sampling of Petroleum and Petroleum Products, (ASTM, 2016b); ASTM D4626-95(2015), Standard Practice for Calculation of Gas Chromatographic Response Factors (ASTM, 2015); and ASTM E203-01, Standard Test Method for Water Using Volumetric Karl Fisher Titration (ASTM, 2001)

Rationale for Method 310, Section 5

Method 310 sets forth the analytical procedures and processes used to determine the VOC content of consumer products. Staff is proposing minor corrections to Section 5 of Method 310 for clarity and consistency.

Staff is also proposing to incorporate the reference method citations listed above as section 5.3.2 and 5.3.9. These methods are being added to determine compliance with the proposed reactivity-based option for MPL products.

Summary of Method 310, Section 6

Staff proposes changes to Sections 6 of Method 310 to delete language that is no longer necessary from a previous version, for consistency.

Rationale for Method 310, Section 6

Method 310 sets forth the analytical procedures and processes used to determine the VOC content of consumer products. Staff is proposing minor corrections to Section 6 of Method 310 for clarity and consistency.

Summary of Method 310, Section 7

Staff proposes changes to Sections 7 of Method 310 to make grammatical changes, for consistency.

Rationale for Method 310, Section 7

Method 310 sets forth the analytical procedures and processes used to determine the VOC content of consumer products. Staff is proposing minor corrections to Section 7 of CARB Method 310 for clarity and consistency.

Summary of Method 310, Appendix A

Staff proposes changes to Appendix A of Method 310 to delete language that is no longer necessary from a previous version. Staff also proposes to make grammatical and typographical changes, for consistency.

Staff also proposes to change the term “Tedlar Bag” to “Propellant Collection Bag”.

Rationale for Method 310, Appendix A

Method 310 sets forth the analytical procedures and processes used to determine the VOC content of consumer products. Staff is proposing minor corrections to Appendix A of Method 310 for clarity and consistency.

Staff proposes changing the term “Tedlar Bag” to “Propellant Collection Bag” in Appendix A of Method 310, to eliminate the use of a brand name in favor of existing laboratory terminology.

IV. BENEFITS ANTICIPATED FROM THE REGULATORY ACTION, INCLUDING THE BENEFITS OR GOALS PROVIDED IN THE AUTHORIZING STATUTE

The proposed amendments would enable manufacturers of MPL products to comply with the 10 percent by weight VOC limit by meeting a 25 percent by weight VOC limit and a 0.45 g O₃/g product reactivity limit. The amendments would not force manufacturers to participate and only those manufacturers that determine it is in their best interest are expected to do so. These manufacturers would avail themselves of the alternate compliance option to achieve compliance.

Analysis of the MPL data indicates that a significant number of formulations from several manufacturers already meet the 10 percent VOC limit. The analysis also shows that these formulations constitute a small percentage of the market. Staff’s review of the manufacturers’ efforts to reformulate MPL products to comply indicates that significant challenges remain in reformulating over 90 percent of the MPL market. CARB identified 26 multi-purpose lubricant manufacturers that have products that do not meet the upcoming 10 percent by weight VOC limit, four of which are located in California.

Therefore, staff has concluded that providing a reactivity-based alternate compliance option to meet a reactivity limit while requiring that products also meet the current 25 percent by weight VOC limit would allow manufacturers additional flexibility to

formulate products while preserving the ozone air quality benefits that would be achieved by the 10 percent mass-based VOC limit.

Staff's review of product reactivity reveals that, on a sales-weighted basis, the reactivity of MPL products meeting the 10 percent VOC limit closely matches that of products meeting the 25 percent VOC limit. In view of reactivity considerations, staff believes that the air quality benefits of the 10 percent by weight VOC limit are being achieved ahead of schedule.

In order to lock in these benefits while providing additional compliance flexibility to manufacturers, staff is proposing amendments to the Consumer Products Regulation to include the alternate compliance option.

Staff is also proposing a restriction to prevent the use of high GWP compounds in MPLs. We expect this proposal to have overall beneficial impacts on climate change by preventing use of compounds with higher GWP values.

In summary, the proposed alternate compliance option maintains the air quality benefits, provides compliance flexibility, and does not increase compliance costs. No changes in public health and safety, and worker safety are expected as a result of this rulemaking.

V. AIR QUALITY

The consumer products program has been and continues to be an important part of California's overall efforts to reduce smog-forming VOCs, TACs, and GHGs that are emitted from the use of chemically formulated consumer products. VOC emissions contribute to the formation of ground-level ozone and fine particulate pollution. The consumer products regulation focuses on reducing emissions from consumer products as a ground-level ozone control strategy. Staff estimates that the Consumer Products program has reduced VOC emissions from consumer products by about 50 percent since its inception. While the ozone forming potential of consumer product emissions is less than some other source categories (for e.g., mobile sources), further reductions in VOC emissions from consumer products and other VOC sources are needed if progress toward ozone and fine particulate attainment is to be achieved.

The MPL product category is one of about 130 categories regulated in the Consumer Products Regulation. MPL products were first regulated under "Midterm Measures I" of the Consumer Products Regulation approved in July of 1997, and a description of these products is also included in the staff report for that rulemaking (CARB, 1997). At that time, the Board adopted a 50 percent by weight VOC limit for these products, which became effective on January 1, 2003. Solid or semisolid products (primarily greases) were not considered a significant source of VOC emissions, and were excluded from the VOC limit.

In 2008, CARB approved amendments to the Consumer Products Regulation reducing the VOC limit for MPL products from 50 percent by weight VOC and establishing two

technology-forcing limits: a 25 percent by weight VOC limit effective December 31, 2013, and a 10 percent by weight VOC limit effective December 31, 2015. Because the limits were technology forcing, the regulation included a provision requiring staff to conduct a Technical Assessment to determine feasibility of the VOC limits prior to their implementation

In subsequent 2013 rulemaking, the Board approved a three-year extension for complying with the 10 percent by weight VOC limit for MPL products to December 31, 2018, to allow manufacturers additional time to reformulate products. The 2013 rulemaking also set a March 31, 2017, deadline for Responsible Parties to report their reformulation and research and development efforts to meet the 10 percent by weight VOC limit to CARB for the Multi-purpose Lubricant Technical Assessment. The purpose of the Technical Assessment was to determine the feasibility of the 10 percent by weight VOC limit.

Staff's Technical Assessment determined that the 10 percent by weight VOC limit continues to prove challenging. Industry provided information on reformulation efforts and research and development costs, including the most promising reformulations that had been achieved in the years leading up to the Technical Assessment. While MPL products on the market today meet the 25 percent by weight VOC limit, only about 8 percent of the market meets the future effective 10 percent by weight VOC limit. The analysis indicated that the air quality benefits anticipated from the 10 percent reformulation have largely been met by the previous reformulation effort. After conducting the Technical Assessment and taking all factors into consideration, staff determined additional reformulation flexibility should be given to manufacturers, while locking in the sought after air quality benefits already achieved by the previous reformulation efforts.

Staff analyzed the PWMIR of products reported in the Technical Assessment. The analysis shows that the range in product weighted reactivity for products meeting the 10 percent VOC limit is similar to those meeting the 25 percent VOC limit. Staff concluded that formulation flexibility could be provided by allowing products to continue to have a VOC content not exceeding 25 percent but require those products have a reactivity level slightly lower than the sales-weighted average reactivity for 10 percent compliant products. While this proposal would result in higher VOC mass emissions, the composition of those emissions would be such that the ozone forming potential would be equal or less than the compliant 10 percent by weight VOC emissions.

VI. ENVIRONMENTAL ANALYSIS

A. Introduction

This chapter provides an environmental analysis for the proposed amendments to the Consumer Products Regulation. Based on CARB's review, staff has determined that implementing the proposed amendments would not result in any potentially significant adverse impacts on the environment. This analysis provides the basis for reaching this

conclusion. This section of the Staff Report also discusses environmental benefits expected from implementing the proposed amendments to the consumer products regulation.

B. Environmental Review Process

CARB is the lead agency for the proposed amendments to the Consumer Products Regulation and has prepared this environmental analysis pursuant to its regulatory program certified by the Secretary of the Natural Resources Agency (14 CCR 15251(d); 17 CCR 60000-60008). In accordance with Public Resources Code section 21080.5 of the California Environmental Quality Act (CEQA), public agencies with certified regulatory programs are exempt from certain CEQA requirements, including but not limited to preparing environmental impact reports, negative declarations, and initial studies (14 CCR 15250). CARB has prepared this environmental analysis (EA) to assess the potential for significant adverse and beneficial environmental impacts associated with the proposed regulation, as required by CARB's certified regulatory program (17 CCR 60005(b)). The resource areas from the CEQA Guidelines Environmental Checklist were used as a framework for assessing the potential for significant impacts (17 CCR 60005(b)).

If comments received during the public review period raise significant environmental issues, staff will summarize and respond to the comments in the Final Statement of Reasons (FSOR) prepared for the proposed amendments. The written responses to environmental comments will be approved prior to final action on the proposed amendments (17 CCR 60007(a)). If the proposed amendments are adopted, a Notice of Decision will be posted on CARB's website and filed with the Secretary of the Natural Resources Agency for public inspection (17 CCR 60007(b)).

C. Prior Environmental Analysis

The Consumer Products Regulation was first promulgated in 1990. The regulation has been amended numerous times resulting in adoption of VOC limits for about 130 different categories. In each rulemaking an environmental analysis was conducted to determine whether any adverse environmental impacts would result from the amendments. Overall, these analyses determined that the amendments designed to reduce VOC emissions, along with mitigation measures, would have positive impacts on the environment.

The VOC limit of 50 percent by weight for MPL products became effective in 2003. In 2008, the Board approved for adoption a 25% VOC limit and a 10 percent VOC limit that were to become effective in 2013 and 2015, respectively. The environmental analyses conducted for the 2008 rulemaking did not identify any adverse impacts and determined that consumer product VOC emissions would continue to decline.

D. Proposed Amendments to the Consumer Products Regulation

Project Description

In this proposed rulemaking, the proposed amendments establish an alternate compliance option for multi-purpose lubricant products to ensure that the air quality benefits of VOC emissions expected from meeting the upcoming 10 percent VOC limit are maintained while providing flexibility to the affected industry to continue to formulate effective products for consumers.

CARB staff is also proposing amendments to Test Method 310 to clarify and update reference method citations and dates, correct grammar for consistency, and include several additional reference methods. Staff is also proposing to add reference methods to Method 310 that would facilitate the reactivity analysis for MPL products using the alternate compliance option.

As previously described in chapter II of this Staff Report, the proposed amendments include the following changes:

- add the alternate compliance option for MPL products,
- prohibits the use of high GWP chemicals in MPL products;
- adds definitions;
- establishes a reactivity limit for MPL products adds reporting requirement for those manufacturers complying via the option; and
- requires recordkeeping.

Methods of Compliance

The proposed amendments include provisions that establish an alternate compliance option for multi-purpose lubricants. The amendments contain some provisions that are administrative in nature, as well as other provisions that are more extensive than administrative changes. These are described in more detail below.

The regulation currently does not mandate annual reporting. However, the proposed amendments will require new annual reporting of sales for products complying under the alternate compliance option for the next 5 years. Manufacturers are also required to keep records of production for products complying through the alternate compliance option. In order to be eligible to comply via the alternate compliance option the proposed amendments require that certain information be provided to CARB within the timeframes outlined in the regulation.

To comply via the alternate compliance option, products would be required to meet a reactivity limit of 0.45 grams ozone per gram product, and have a VOC content of 25 percent or less instead of meeting the 10 percent VOC limit. Manufacturers complying under the alternate compliance option may be have to reformulate their products in

order to meet these requirements. Staff believes that reformulation under the alternate compliance option would be more flexible because chemicals have different reactivity values. Thus, companies have more options when formulating to meet the reactivity limit.

E. Environmental Impacts

Beneficial Impacts

The proposed amendments provide an alternate way of complying with the upcoming 10 percent VOC limit. By specifying a reactivity limit, the alternate compliance option ensures that the air quality benefits are maintained. As discussed in Chapter V, VOC emissions react in the atmosphere to form ozone. The reactivity limit defines the maximum ozone forming potential of products complying under the alternate compliance option. The reactivity limit proposed is based on staff's assessment of the ozone forming potential of the MPL products already meeting the 10 percent VOC limit. To ensure that the alternate compliance option maintains the expected ozone air quality benefits, staff is proposing a reactivity limit slightly lower than the sales-weighted average reactivity of the products meeting the 10 percent VOC limit. Thus, while the mass emissions may be higher under the alternate compliance option, the air quality impact will not increase relative to the 10 percent VOC limit.

The proposal would also ensure that the use of compounds with GWP values of 150 or greater is prohibited in MPL products. While high GWP compounds currently are not used in MPL formulations, certain high GWP chemicals could be used in reformulated MPL products. This provision is proposed to ensure against future use of compounds with high GWP values, which is beneficial because it would prevent the potential emissions of greenhouse gases from MPL products.

Resource Areas with No Impacts

Staff received comments expressing concerns that the proposed amendments would allow for more hazardous and flammable MPL products. Staff recognizes that MPL products are formulated with hydrocarbon solvents and other chemicals that are flammable and potentially hazardous. However, staff believes that the proposal would not result in products with significantly increased flammability or hazard profiles as discussed below.

To address these concerns, staff reviewed the formulations of the products meeting the 10 percent VOC limit and products that would meet the proposed alternate compliance option requirements of a PWMIR below 0.45 g O₃/g product and a VOC content not exceeding 25 percent. Staff's review indicates that these two groups of products are formulated using similar ingredients. Table 2 shows the chemical compounds that collectively comprise more than 90 percent of the mass of products that comply with the 10 percent by weight VOC limit and those that comprise over 90 percent of the mass of products that would comply with the proposed alternate compliance option. Staff's

review indicates that these products are formulated using very similar ingredients. The main difference expected between 10 percent compliant product and product that would comply via the alternate compliance option is the relative amounts of these chemicals.

Table 2
Comparison of Ingredient
10 Percent VOC Compliant Products vs Alternate Compliance Option Products

Chemical Name	Meet the 10 Percent VOC Limit	Meet the Alternate Compliance Option
Carbon dioxide	x	x
Grouped LVPs	x	x
Heavy Naphthenic Mineral Oil		x
Hydrocarbon Solvent, Bin #11	x	x
Hydrocarbon Solvent, Bin #16	x	x
Hydrocarbon Solvent, Bin #19	x	
Hydrocarbon Solvent, Bin #24	x	
Perfluoropolyether	x	
Water	x	x
White mineral oil	x	

As shown in Table 2, hydrocarbon solvents bin numbers 19 and 24 were not reported in the MPL products that would meet the alternate compliance option. Hydrocarbon solvents are categorized into a system of “bins” to estimate their reactivity values. These bins are described by chemical types (such as alkane and aromatic fractions) and boiling point range.

Both, hydrocarbon solvents bins 19 and 24 meet the low vapor pressure-volatile organic compound (LVP-VOC) definition and are not counted toward the total product VOC content. Aromatic compound content of hydrocarbon solvent bin number 19, from 2 to 8 percent, is higher than that of hydrocarbon solvents bin numbers 11 and 16 (less than 2 percent), which were reported in the products compliant with the option. Thus, the hydrocarbon solvent bin 19 reactivity value is slightly higher than the reactivity value for bin 16. Hydrocarbon solvent bin number 24 contains predominately aromatic compounds. Its reactivity value is significantly higher than the values for bin 11 and bin 16. Therefore, the likelihood of either hydrocarbon solvent bin 19 or especially bin 24 being used in products that choose to comply via the proposed alternate compliance option is low because they have relatively high reactivity values. Therefore, the main difference expected is the relative quantities of these ingredients already in use because the most likely course for reformulation is to substitute hydrocarbon solvents with lower reactivity values for those with higher reactivity values.

Because the alternate compliance option allows a higher VOC content, it is likely that chemicals that are VOCs would be present in higher amounts (a 15 percent maximum

difference) as compared to 10 percent products. The composition of products meeting the 10 percent VOC limit and those meeting the alternate compliance option employ very similar chemistries. As discussed above, hydrocarbon solvent bin 19 and bin 24 were reported in the 10 percent compliant products. These solvents have higher aromatic content than the hydrocarbon solvents used in the products compliant with the option. In general, aromatic compounds tend to have higher toxicity as compared to alkanes. Thus, staff believes that the difference in composition between 10 percent compliant products and those that would comply via the proposed option would not result in MPL products with significantly different hazard or flammability profiles. Therefore, staff concludes that there is no significant potential for an adverse environmental impact to the hazards and hazardous materials resource area.

In addition, CARB staff has reviewed the proposed regulatory amendments and concluded that the amendments would not result in any significant or potentially significant adverse impacts on the environment because compliance with the proposed amendments would not result in any physical change to the existing environment. The amendments establish an alternate compliance option that requires products to meet a reactivity limit of 0.45 g O₃/g product and have no more than 25 percent by weight VOC, thus ensuring that the expected ozone air quality benefits are maintained.

It is recognized that different types of VOCs are emitted into the atmosphere from the use of MPL products. VOCs react at different rates and via different reaction mechanisms to form ozone in the atmosphere. Therefore, VOCs differ significantly in their effects on ozone formation. These differences in effects on ozone formation are referred to as the ozone "reactivities" of the VOCs (Carter, 1994). A more detailed discussion on the science of the photochemical reactivity of VOCs is presented in Chapter 2 of the staff report for the Aerosol Coatings Regulation (CARB, 2000). To set the proposed reactivity limit, staff quantified the sales-weighted reactivity of products complying with the mass-based 10 percent by weight VOC limit and calculated reactivity limit that would ensure an equivalent ozone benefit. While products complying under the alternate compliance option would have higher VOC content, because the proposed reactivity limit is designed to achieve slightly more ozone benefit than the products compliant with the 10 percent VOC limit, the proposed amendments ensure that the expected ozone air quality benefits claimed in the SIP are maintained. The expected benefit of the 10 percent limit were part of a SIP revision submitted to the U.S. EPA. One of the goals of the proposed amendments is to ensure that those benefits are maintained.

Further, compliance with the proposed amendments would not involve any activity that would involve or affect aesthetics, agricultural and forestry resources, air quality, biological resources, cultural resources, geology and soils, greenhouse gases, hydrology and water quality, land use planning, mineral resources, noise, population and housing, public services, recreation, or traffic and transportation because they would not require any action that could affect these resources. Staff's review of compositional data for both products meeting the 10 percent VOC limit and products that would meet the alternate compliance option, shows that their formulations are

similar. Thus, staff believes that no new manufacturing facilities would need to be constructed, and it would not affect existing transportation methods or volumes for these products. No discussion of alternatives or mitigation measures is necessary because no significant adverse environmental impacts were identified.

VII. ENVIRONMENTAL JUSTICE

State law defines environmental justice as the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies (Government Code, section 65040.12, subdivision (c)). CARB is committed to making environmental justice an integral part of its activities. The Board approved its Environmental Justice Policies and Actions (Policies) on December 13, 2001, to establish a framework for incorporating environmental justice into CARB's programs consistent with the directives of State law (CARB, 2001). These policies apply to all communities in California, but recognize that environmental justice issues have been raised more in the context of low-income and minority communities.

Staff has determined that the amendments proposed in this rulemaking are consistent with our environmental justice policies. Among the goals of the proposed amendments is to lower the ozone forming potential of MPL products, thereby improving air quality. Use of compounds with higher global warming potentials would also be prohibited in this product category.

Consumer products are considered area sources and, as such, their use is not focused in a particular area leading to a potential "hot spot." Generally, use of consumer products including MPL products is fairly uniform across the state, tracking with human population, and their emissions are spread over the course of a day, rather than concentrated at a particular time of day. For these reasons, we believe that reducing emissions from the use of multi-purpose lubricants would benefit all Californians. Staff does not expect any communities, especially those with low-income and minority populations, regardless of location, to be disproportionately impacted by adoption of the proposed amendments.

VIII. ECONOMIC IMPACTS ASSESSMENT

A. Introduction

This Chapter provides our analysis of the estimated economic and fiscal impacts associated with the implementation of the proposed alternate compliance option to the 10 percent VOC limit for MPL products, and the proposed GWP limit. The proposed amendments are designed to allow flexibility in meeting the requirements for MPL products. The alternate compliance option would allow Responsible Parties to choose whether to meet the upcoming 10 percent by weight limit or remain at the existing 25 percent by weight VOC limit and also meet a reactivity limit of 0.45 g O₃/g product. In recent years, it has been recognized that when control strategies take into account

differences among VOCs and their effects on ozone formation, the use of less reactive VOCs in providing a cost-effective means to achieve ozone reductions is encouraged.

While staff has quantified the economic impacts to the extent feasible, some projections are necessarily qualitative, and based on general observations and facts known about the multi-purpose lubricant products sector. This analysis, therefore, serves to provide a general picture of the economic impacts typical businesses subject to the proposed limits might encounter. Individual companies may experience different impacts than projected.

The alternate compliance option would allow additional reformulation flexibility, since as noted earlier, reformulating products to meet the 10 percent limit has proven challenging. The alternate compliance option maintains the air quality benefits of the 10 percent by weight VOC limit while meeting the SIP commitments made for this category.

B. Summary of Findings

The proposed amendments allow, but do not require, Responsible Parties to comply using the alternate compliance option. However, for those that choose to comply via the alternate compliance option, there are reporting, recordkeeping, and in some cases reformulation costs.

CARB staff identified 54 products from 26 companies that do not comply with the upcoming 10 percent by weight VOC limit. These companies could choose the alternate compliance option and would be affected by the proposed amendments, four of which are located in California. Two of the California-based businesses are considered to be small businesses because they are independently owned and operated and have fewer than 100 employees. The four California companies have eight products that do not meet the 10 percent VOC limit. While all 26 companies could potentially benefit from the alternate compliance option, the cost analysis focus only on the four California companies because the proposed amendments are not expected to increase product prices.

Table 3, presents staff's assumption and data used to estimate the compliance cost. In estimating the cost, staff used the average of the high and low cost estimates from the 2008 analysis.

**Table 3
Reformulation Costs for MPL Products***

Annualized costs from 2008 ISOR			
	Low	High	Average
Aerosol	\$1,442.55	\$12,911.98	\$7,177.26
Nonaerosol	\$1,229.71	\$6,290.45	\$3,760.08
Annualized cost (2017 dollars)			
Adjustment factor (convert 2007 dollars to 2018)		1.22	
Aerosol	\$1,687.78	\$15,107.01	\$8,397.40
Nonaerosol	\$1,438.76	\$7,359.83	\$4,399.29

* Assumes the reformulation cost to comply under the alternate compliance option is the same as to reformulate to comply with 10 percent VOC (2008 ISOR estimated cost of reformulating from 25% VOC to 10% VOC) (CARB, 2008).

One way to estimate the potential change in cost to produce a product is to determine the change in raw materials cost. The previous analysis conducted as part of the adoption of the 10 percent VOC limit indicates that reformulations from the current 25 percent VOC limit to the future 10 percent VOC limit results in negligible raw material cost (net savings or no cost) (CARB, 2008). To the extent that the projected cost savings or increases are ultimately passed on to the consumer, the actual retail price of products after the proposed limits become effective may be higher or lower than suggested by this analysis.

Staff used the average reformulation cost for both the aerosol and nonaerosol products in estimating the compliance costs. These cost are from the cost analysis conducted when the 10 percent limit was adopted (CARB, 2008). The costs were adjusted to 2018 dollars by multiplying them by a factor of 1.22 (BLS, 2018). To estimate the compliance cost for the four California companies, staff multiplied the annual average cost per product by the number of products and added the annual reporting cost when complying under the proposed option.

Staff estimates total compliance costs of \$217,500 for the four California companies. Cost for the four manufacturers to comply with the 10 percent by weight VOC limit is estimated to be about \$266,880. If the four companies choose to comply using the alternate compliance they would have a slight cost savings of about \$49,380. In summary, staff believes that companies would use the alternate compliance option even if there is a small cost increase because of the additional reformulation flexibility it provides.

Staff believes that the regulation cost methodologies are conservative, and are thus in most cases, overestimated. There are several factors that contribute to the overestimation of costs. The mid-range cost (used to determine the overall cost and cost effectiveness of the regulation) is the average of the estimated high and low cost scenarios. The low cost scenario assumes that companies would choose the lowest cost reformulation pathway, making minor adjustments to a product's formulation, or

simply eliminating higher VOC products. We believe that most manufacturers would choose the lowest cost reformulation option. For the high cost scenario, it is assumed that there is significant research and development, and new equipment is needed to reformulate the product. We believe that few manufacturers would choose to take the high cost reformulation approach.

In the 2008 economic analysis (CARB, 2008), staff assumed that it would be challenging and costly to comply with the VOC limits for multi-purpose lubricants. Staff calculated the estimated costs of reformulation for each of the proposed tiers (25 percent VOC and 10 percent VOC) of the Multi-purpose Lubricant proposal. Additionally, cost estimates were performed for aerosol and non-aerosol products, respectively. The analysis showed that greater costs would be incurred during the first tier reformulation (50 to 25 percent VOC) than the second tier reformulation (25 to 10 percent VOC). This is because of the assumption that significant high-end costs will be incurred in the first tier reformulation, but not all of these costs would necessarily be duplicated in the second tier reformulation. If major plant modifications or new equipment purchases are needed to meet either tier of the VOC limits, a manufacturer would likely choose to make these significant changes during one plant modification, rather than making significant changes more than once. In fact, certain companies may choose to reformulate only once (i.e. reformulate to meet the second tier VOC limit before 2013). Regardless of whether this assumption is correct, we believe that it is appropriate to assume that high-end reformulation costs will be incurred during either the first tier reformulation or the second tier reformulation, but not both. Either assumption, that higher costs would be incurred during a given tier relative to the other, would yield the same amount of total costs being incurred to meet both tiers.

C. Economic Impacts Analysis on California Businesses, Consumers, and Employment

Legal Requirements

Section 11346.2(b) and 11346.3(b) of the Government Code requires an economic impact analysis (EIA) for non-major regulations. The EIA assesses the potential for adverse economic impacts on California business enterprises and individuals when proposing to adopt or amend any administrative regulation. The assessment must include a consideration of the impact of the proposed regulation on California jobs; business expansion, elimination or creation; and the ability of California business to compete with similar businesses in other states.

Also, state agencies are required to estimate the cost or savings to any State or local agency and school district in accordance with instructions adopted by the Department of Finance. The estimate shall include any nondiscretionary cost or savings to local agencies and the cost or savings in federal funding to the State.

Evidence Supporting Finding if No Significant Statewide Adverse Impact Directly Affecting Business

As discussed in the summary above, staff expects the proposed amendments will not result in a significant adverse economic impact on business. The amendments would require reporting and recordkeeping for MPLs that will comply using the alternate compliance option. These consist of a one-time reporting of formulation and product name (estimated to take 4 hours), annual reporting of sales (estimated to take 4 hours per year), and recordkeeping (estimated to take 52 hours per year). Thus, reporting and recordkeeping is expected to take 60 hours in the first year and 56 hours in ongoing years. A weighted wage of \$74 for computing cost was estimated using Bureau of Labor Statistics data for 2014 for California (BLS, 2014). Median wage values for individual job classifications that are typically responsible for reporting and implementing new requirements were combined into major functional bins (i.e., managerial, engineer, scientist/technicians). These primary bins were multiplied by an adjustment factor of 1.67 (U.S. EPA, 2010) to account for labor-related benefits and overhead. The three adjusted bins were then averaged to compute an overall composite average loaded wage rate of \$73.82 per hour. Table 4 summarizes the primary data used to calculate the average wage rate used for the fiscal analysis; values in Table 4 are rounded for simplicity.

**Table 4
Wage Rate Range in California**

	Base Wage (\$/hour)	Loaded Wage (\$/hour)
Staff	Avg Median	Avg Median
Managerial	56	95
Engineer	45	76
Scientist & Technicians (combined)	31	51
Average Wage	44	74

Assuming \$74 dollars per hour, reporting and recordkeeping would cost each business \$4,440 in the first year and \$4,144 in ongoing years. The hourly wage includes an estimate for overhead and benefits, and uses the methods of the 2016 amendments to the Regulation for the Mandatory Reporting of Greenhouse Gas Emissions (CARB, 2016). If all 4 California businesses opt to use the proposed alternate compliance option, the total statewide reporting and recordkeeping cost will be \$84,064 over the 5 year lifetime of the regulation.

This does not consider an estimated \$133,440 in cost-savings to business as a result of the proposed amendments. Four MPL products that would require reformulation to meet the 10 percent by weight VOC limit would no longer be required to reformulate under the proposed amendments. Staff estimates the average one-time reformulation cost is \$6,672 per MPL product per year) resulting in a total cost-savings to business of \$133,440 (\$6,672x5 yearsx4 products). Staff used the average reformulation cost for aerosol and nonaerosol MPL products from Table VII-5, of the 2008 staff report (CARB, 2008). The average cost was adjusted to 2018 dollars by multiplying them by a factor of 1.22 from the Bureau of Labor Statistics Inflation Calculator (BLS, 2018). Thus the net impact of the proposed amendments is a cost-savings to California businesses.

Potential Impact on California Businesses

We believe there would not be any noticeable impact on California businesses because the overall cost of the alternate compliance option is a potential modest cost relative to the 10 percent limit. Further, we do not expect a noticeable change in employment; business creation, elimination or expansion; and business competitiveness in California.

Return on Owners' Equity

This portion of the economic impacts analysis is based on a comparison of the return on owners' equity (ROE) for affected businesses before and after inclusion of the cost to comply with the proposed alternative. Because the proposed amendments have a small cost savings in the compliance costs, there would be no impact on the ROE of a typical business. Additionally, because the alternate compliance option does not capture the potential benefit of increased formulation flexibility, companies would likely avail themselves of the alternate compliance option.

Affected Businesses

Any business which manufactures or markets multi-purpose lubricant products in California subject to the proposed to the 10 percent VOC limit could be directly affected by this regulation. Also potentially affected are businesses that supply raw materials or equipment to manufacturers or marketers, and those that distribute or sell multi-purpose lubricant products in California. The focus of this analysis, however, will be on manufacturers, marketers, and distributors that are most affected by the proposed measure.

Based on the 2016 Technical Assessment Survey, 56 companies manufactured, marketed, or distributed MPL products in 2016 (see Appendix C). These companies manufacture, market, and distribute a broad range of multi-purpose lubricant products. Of the companies manufacturing these products, four firms (mostly medium- or small-sized firms) are located in California. These 56 companies fall primarily into North American Industry Classification System code (NAICS) 324191, Lubricant Manufacturing.

Typical California businesses could be affected by the proposed alternate compliance option to the extent that the implementation of this option would change their profitability. As noted, because the proposed amendments would have a minor decrease in compliance cost for the four California companies, staff does not expect a noticeable change on companies' profitability.

Potential Impact on Business Creation, Elimination or Expansion

The proposed measures would have no noticeable impact on the status of California businesses. This is because the proposed alternate compliance option is similar to the costs that would be incurred to comply with the 10 percent limit, which are not expected to impose a significant impact on the profitability of businesses in California. There would be no impact on business creation, elimination or expansion (CARB, 2008).

Potential Impact on Business Competitiveness

The proposed alternate compliance option would have no significant impact on the ability of California businesses to compete with businesses in other states. Because the proposed alternate compliance option would apply to all businesses that manufacture or market MPL products regardless of their location, the staff's proposal should not present any economic disadvantages specific to California businesses.

Potential Impact on California Consumers

The potential impact of the proposed alternate compliance option on consumers depends upon the ability of affected businesses to pass on the cost increases to consumers. Because there is a potential cost savings from the alternate compliance option, we do not expect a change in retail prices.

The proposed amendments could affect consumers adversely if they result in reduced performance attributes of the products. However, this scenario is unlikely to occur. Based on discussions with manufacturers, the alternate compliance option should enable manufacturers to maintain the performance of their products that currently meet the 25 percent by weight VOC limit.

Potential Impact on California Employment

The proposed amendments are not expected to cause a noticeable change in California employment and payroll.

D. Analysis of Potential Impacts to California State or Local Agencies

Staff did not identify any Local or State agencies that would be directly impacted. If Local and State agencies use MPL products, there would not be a noticeable impact because the price of these products is not expected to change due to the proposed amendments.

CARB anticipates the need for one additional Air Pollution Specialist (APS) to assist in verification and analysis of laboratory samples in support of the proposed amendments. This position would develop reference methods, analyze samples, operate laboratory instruments, review and report results, train other laboratory staff on new methods, and perform program maintenance logistics (calibration, instrument maintenance, troubleshooting). The APS position is anticipated to cost \$165,000 in the 19/20 fiscal year, \$164,000 in 20/21 fiscal year, and \$164,000 in the 21/22 fiscal year.

IX. EVALUATION OF REGULATORY ALTERNATIVES

Government Code section 11346.2, subdivision (b)(4) requires CARB to consider and evaluate reasonable alternatives to the proposed regulatory action and provide reasons for rejecting those alternatives. This section discusses alternatives evaluated and provides reasons why these alternatives were not included in the proposal. As explained below, no alternative proposed was found to be less burdensome and equally effective in achieving the purposes of the regulation in a manner that ensures full compliance with the authorizing law. The Board has not identified any reasonable alternatives that would lessen any adverse impact on small business.

Alternative One – No Action

A “No Action” alternative would be to forgo adopting the proposed amendments, making no regulatory changes, thereby allowing the 10 percent by weight VOC limit to become effective on December 31, 2018. The “No Action” alternative would risk eliminating some companies from the market place. Consumers would be at risk of not having access to MPL products that are needed to perform essential, everyday lubricating functions. As discussed in Chapter VI currently only about eight percent of the market meets the 10 percent VOC limit.

Alternative Two – Extend the Effective Date

As discussed in Chapter I, staff previously extended the effective date from December 31, 2015, to December 31, 2018. Results of the recent 2017 Technical Assessment show that for many applications, a viable formulation that addressed technological and commercial challenges had yet to emerge. Given that manufacturers demonstrated in the technical assessment that they had been attempting to develop potential reformulation options since 2008, staff determined that a further extension would not be warranted.

Alternative Three – Rescind the 10 Percent by Weight VOC Limit

Staff also evaluated the option to rescind the 10 percent by weight VOC limit and make the finding that the 10 percent by weight VOC limit is not technologically or commercially feasible. This alternative was rejected because staff determined that the 10 percent by weight VOC limit is technically feasible. This alternative could have

created an apparent VOC emission reduction SIP shortfall of up to 1.27 tons per day statewide (0.5 tons per day in the South Coast air basin).

Alternative Four – Set a Reactivity Limit without a VOC Limit

At the request of industry, staff has additionally evaluated the option to eliminate VOC limits in the multi-purpose lubricant category and implement only a reactivity limit. This precedent has been set by the reactivity limit currently in place for the Aerosol Coatings product category. However, that limit was set in place because no further VOC reductions for that category were considered feasible. At eight percent market compliance, staff cannot determine that the 10 percent by weight VOC limit for MPL products is infeasible, though staff does acknowledge it is challenging. Also, staff acknowledges the efforts and successes of those manufacturers whose products were able to be reformulated to meet the 10 percent by weight VOC limit. Furthermore, based on the results of the technical assessment, moving this category entirely to a reactivity limit would even require some companies that reformulated to meet the 10 percent limit to reformulate once again. Staff has therefore ruled out a reactivity only limit for this category.

Small Business Alternative

The Board has not identified any reasonable alternatives that would lessen any adverse impact on small business.

Performance Standards in Place of Prescriptive Standards

The proposed regulation does not mandate the use of specific technologies or equipment, or prescribe specific actions or procedures.

Health and Safety Code section 57005 Major Regulation Alternatives

The proposed regulation will not result in a total economic impact on state businesses of more than \$10 million in one or more years of implementation. Therefore, this proposal is not a major regulation as defined by Health and Safety Code section 57005.

X. JUSTIFICATION FOR ADOPTION OF REGULATIONS DIFFERENT FROM FEDERAL REGULATIONS CONTAINED IN THE CODE OF FEDERAL REGULATIONS

A. National Consumer Products Regulation

On September 11, 1998, U.S. EPA promulgated a national consumer products regulation, the “National Volatile Organic Compound Emission Standards for Consumer Products” (40 CFR Part 59, Subpart C, sections 59.201 et seq.). This action set national VOC emission standards for various categories of consumer products. The regulation became effective on September 11, 1998, and the VOC limits became

effective on December 10, 1998. There are similarities and differences between the California and national consumer products regulations. However, the national regulation does not preclude states from adopting more stringent regulations.

The National Consumer Products Regulation is less effective than the California Consumer Products Regulation in reducing VOC emissions from consumer products. The national regulation does not regulate a number of product categories that are regulated under the CARB regulation, including MPL products. Therefore, CARB's Consumer Products Regulation has achieved significant additional reductions over those that would be achieved by the national rule.

As of the date of this staff report, there are no national consumer products regulations related to reducing GHG emissions or limiting the reactivity of ingredients formulated in MPL products.

XI. PUBLIC PROCESS FOR DEVELOPMENT OF THE PROPOSED ACTION (PRE-REGULATORY INFORMATION)

Consistent with Government Code sections 11346, subdivision (b), and 11346.45, subdivision (a), and with the Board's long-standing practice, CARB staff held public workshops and had other meetings with interested persons during the development of the proposed regulation. These informal pre-rulemaking discussions provided staff with useful information that was considered during development of the regulation that is now being proposed for formal public comment.

Our process for development of these proposed amendments included a number of formal and informal opportunities for public participation. Participation is open to any member of the public. CARB has established an electronic list serve to disseminate information regarding the consumer products program, which includes over 4000 subscribers. Subscribers to the Consumer Products List Serve received emails alerting them of meetings and available materials for review regarding this proposed rulemaking. Staff posted relevant information to CARB's public Consumer Products Program website.

On December 30, 2016, an email list serve notice was sent out announcing that materials regarding the upcoming special reporting requirements (technical assessment) for MPL products were posted to CARB's website. The special reporting requirements were for MPL products subject to the 10 percent by weight VOC limit that will become effective on December 31, 2018. The MPL product data was due to CARB by March 31, 2017.

Results of staff's technical assessment for Multi-purpose Lubricant products, including data and proposals were discussed at a public workshop held on October 12, 2017. Fifty-six companies reported information on their reformulation efforts to meet the 10 percent by weight VOC limit. Product information collected in the technical assessment included formulation data, a summary of research and development costs

for each of those formulas, the MIR value of each ingredient in a formula, and a product label for all reported products. More than 120 unique formulas were reported that were subject to the VOC limits.

An additional public workshop was held on January 17, 2018, to discuss the proposed amendment to allow flexibility in meeting the 10 percent by weight VOC limit for MPL products. Staff also discussed administrative changes proposed to Method 310.

To solicit additional information and comments, staff held individual meetings and teleconferences with stakeholders. At several of these meetings, industry representatives presented technical information related to the reformulation of products and technological challenges faced by manufacturers.

XII. REFERENCES

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21. United States Environmental Protection Agency. National Volatile Organic Compound Emission Standards for Aerosol Coatings (40 CFR Part 59, Subpart E, sections 59.500 et seq.) Federal Register: March 24, 2008. Volume 73, Number 57: 15604-15631 modeled on CARB's Aerosol Coating Products Regulation. (U.S. EPA, 2008)
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XIII. APPENDICES

Appendix A: Proposed Amendments to the Consumer Products Regulation

Appendix B: Proposed Amendments to Method 310: Determination of Volatile Organic Compounds (VOC) in Consumer Products and Reactive Organic Compounds (ROC) in Aerosol Coatings

Appendix C: 2016 Technical Assessment for Multi-purpose Lubricants

Appendix A

Proposed Amendments to the Consumer Products Regulation

Proposed Regulation Order

**State of California
Air Resources Board**

Release Date April 3, 2018

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Proposed Regulation Order
Proposed Amendments to the Consumer Products Regulation

Note: Amendments are shown in underline to indicate additions and ~~strikeout~~ to indicate deletions from the existing regulatory text. The symbol “*****” means that intervening text not proposed for amendment is not shown.

Subchapter 8.5. Consumer Products

Amend title 17, California Code of Regulations, sections 94509, 94513, and 94515 to read as follows:

Article 2. Consumer Products

§ 94509. Standards for Consumer Products.

- (a) Except as provided in sections 94510 (Exemptions), 94511 (Innovative Products), 94514 (Variances), and 94540 through 94555 (Alternative Control Plan), title 17, California Code of Regulations, no person shall sell, supply, offer for sale, or manufacture for sale in California any consumer product which, at the time of sale or manufacture, contains volatile organic compounds in excess of the limits specified in the following Table of Standards after the specified effective dates.

***Table of Standards
Percent Volatile Organic Compound by Weight***

<i>Product Category</i>	<i>Effective Date ¹</i>	<i>VOC Standard ²</i>
*****	*****	*****
Gear, Chain, or Wire Lubricant** aerosol	12/31/2013	25
----- nonaerosol	12/31/2013	3
----- Multi-purpose Lubricant (excluding solid or semisolid products)#**	1/1/2003 12/31/2013 12/31/2018 <u>7/1/2019</u>	50 25 10 ##
*****	*****	*****

[**See subsection 94509(n) for additional requirements that apply to Anti-Seize Lubricant; Cutting or Tapping Oil; Gear, Chain, or Wire Lubricant; Multi-purpose Lubricant; ~~or~~ and Rust Preventative or Rust Control Lubricant products.]

[##See subsections 94509(r)(1) through 94509(r)(5) for an alternate compliance option that applies to Multi-purpose Lubricant.]

**Table 94509(n)(1)
Product Categories in which Use of Any Chemical Compound that has a Global Warming Potential (GWP) Value of 150 or Greater is Prohibited**

Product Category	Effective Date	Sell-through Date
*****	*****	*****
Lubricant: ***** • Gear, Chain, or Wire Lubricant • <u>Multi-purpose Lubricant (excluding solid or semisolid products)</u> *****	***** 12/31/2013 <u>7/1/2019</u> *****	***** 12/31/2016 <u>7/1/2022</u> *****
*****	*****	*****

(r) Alternate compliance option for “Multi-purpose Lubricant” products.

(1) For the purpose of subsections 94509(r), 94513(h), and 94515(k), the following definitions apply:

(A) “Base Reactive Organic Gas Mixture (Base ROG Mixture)” means the mixture of reactive organic gases utilized in deriving the maximum incremental reactivity scale.

(B) “Chemical Compound” means a molecule of definite chemical formula and chemical structure.

(C) “Chemical Mixture” means a substance comprised of two or more chemical compounds.

(D) “Ingredient” means a chemical compound or a chemical mixture.

(E) “Maximum Incremental Reactivity (MIR)” means the maximum change in weight of ozone formed by adding a compound to the Base ROG Mixture per weight of compound added, expressed to hundredths of a gram (g O₃/g ROC).

(F) “Product Formulation” means the weight fraction of all ingredients.

(G) "Production Records" mean product formulation information disclosing the actual quantity of all ingredients used to manufacture a "Multi-purpose Lubricant" product on the date of manufacture. Such records shall include:

1. Batch production record with the date of manufacture;
2. Quality control records;
3. Raw materials invoices and physical property data;
4. Production equipment maintenance records;
5. Records of the weight fraction of all ingredients including the hydrocarbon solvent bin number, as listed in section 94701, manufacturer name, and trade name. For ingredients not listed in sections 94700, 94701, or 94509(r)(5), each chemical compound in the mixture must be reported separately; and
6. Any laboratory results of testing conducted at the time of manufacture to establish the VOC content and reactivity of the product.

(H) "Product-Weighted MIR (PWMIR)" means the sum of all weighted-MIR for all ingredients in a "Multi-purpose Lubricant" product. The PWMIR is the total product reactivity expressed to hundredths of a gram of ozone formed per gram of product (g O₃/g product), excluding container and packaging.

(I) "Reactive Organic Compound (ROC)" means any compound containing at least one atom of carbon and that has the potential, once emitted, to contribute to ozone formation in the troposphere.

(J) "Reactivity Limit" means the maximum ozone forming potential of ingredients (excluding container and packaging) allowed in a "Multi-purpose Lubricant" product, expressed as the PWMIR.

(2) "Multi-purpose Lubricant" products subject to the 10 percent by weight VOC standard in section 94509(a) may comply by meeting the provisions of this subsection. "Multi-purpose Lubricant" products subject to the most restrictive limit provisions in subsection 94512(a) are ineligible to comply using this subsection. "Multi-purpose Lubricant" products subject to an Alternative Control Plan are ineligible to comply using this subsection.

To qualify for this compliance option, a Responsible Party must meet the following criteria:

(A) The Responsible Party must identify the product(s) that will comply by meeting the Reactivity Limit specified in subsection 94509(r)(3);

- (B) The Responsible Party must declare the VOC content of the product(s) and the VOC content must not exceed 25 percent by weight; and
 - (C) The Responsible Party must provide the Executive Officer with the formulation of the product(s), as specified in subsection 94513(h).
 - (D) Until July 1, 2019, the Responsible Party must provide to the Executive Officer the information required in subsection 94509(r)(2)(A) through (2)(C) at least 90 calendar days before the effective date of the 10 percent by weight VOC standard.
 - (E) On or after July 1, 2019, the Responsible Party must provide to the Executive Officer the information required in subsection 94509(r)(2)(A) through (2)(C) at least 30 calendar days before a new product is made available on the market.
 - (F) If any criteria of subsection 94509(r)(2) are not met, a product will not qualify for the alternate compliance option and will be subject to the 10 percent by weight VOC standard specified in subsection 94509(a) for "Multi-purpose Lubricant" (excluding solid or semisolid products).
 - (G) A Responsible Party using the alternate compliance option for a future product must meet the criteria in subsection 94509(r)(2).
- (3) "Multi-purpose Lubricant" products complying under this subsection shall not exceed a Reactivity Limit of 0.45 g O₃/g product.

(4) The PWMIR shall be calculated according to the following equation:

$$\text{Product-Weighted MIR} = (\text{Wtd-MIR})_1 + (\text{Wtd-MIR})_2 + \dots + (\text{Wtd-MIR})_n$$

where:

MIR = ingredient MIR, as specified in subsection 94509(r)(5);

Wtd-MIR = MIR of each ingredient in a product multiplied by the weight fraction of that ingredient; and

1,2,3,...,n = each ingredient in the product up to the total n ingredients in the product.

To calculate the PWMIR of a "Multi-purpose Lubricant," the MIR values dated October 2, 2010, as set forth in Subchapter 8.6, Article 1, section 94700 or 94701, and the MIR values specified in subsection 94509(r)(5) must be used until at least July 1, 2021. All ingredients present in the formulation in an amount equal to or exceeding 0.1 percent by weight must be used to calculate the PWMIR.

(5) Assignment of Maximum Incremental Reactivity (MIR) Values.

The MIR values of product ingredients are assigned as follows:

- (A) Any ingredient which does not contain at least one atom of carbon is assigned an MIR value of 0.0;
- (B) Carbon dioxide is assigned an MIR value of 0.0;
- (C) Ingredients that are solid are assigned an MIR value of 0.0;
- (D) For aliphatic hydrocarbon solvent “Alkane Mixed – Minimally 90% C13 and higher carbon number,” the MIR value of 0.60 g O₃/g ROC must be used to calculate the PWMIR; and
- (E) For fragrance, as defined in section 94508(a)(54), present in a “Multi-purpose Lubricant” product, the MIR value for terpinolene, as listed in section 94700, must be used to calculate the PWMIR unless detailed fragrance ingredients information is available to determine the MIR value of the fragrance.
- (F) Any ingredient not covered under subsections 94509(r)(5)(A), (5)(B), (5)(C), (5)(D), or (5)(E) is assigned the MIR value for that ingredient as set forth in section 94700 or 94701.
- (G) If a ROC is not listed in section 94700 but an isomer(s) of the ROC is listed, then the MIR value for the isomer must be used. If more than one isomer is listed, the listed MIR value for the isomer with the highest MIR value must be used.
- (H) If a ROC or its isomer(s) is not listed in section 94700, the MIR value for Base ROG Mixture must be used to determine the weighted MIR of the ROC to calculate the PWMIR.
- (I) If a new ingredient is added to section 94700 or 94701, the MIR value for the new ingredient must be used instead of the value specified in subsection 94509(r)(5)(G) or (5)(H) to calculate the PWMIR after the effective date of the MIR value.

NOTE: Authority cited: Sections 38500, 38501, 38510, 38560, 38560.5, 38562, 38580, 39600, 39601, 39650, 39658, 39659, 39666 and 41712, Health and Safety Code. Reference: Sections 38505, 39002, 39600, 39650, 39655, 39656, 39658, 39659, 39666, 40000 and 41712, Health and Safety Code.

§ 94513. Reporting Requirements.

(c) All information submitted by any person pursuant to section 94513 shall: ~~be handled in accordance with the procedures specified in Title 17, California Code of Regulations, Section 91000-91022.~~

(1) Be accompanied by a signed statement declaring under penalty of perjury that the information submitted is accurate, true, and complete; and

(2) Be handled in accordance with the procedures specified in Title 17, California Code of Regulations, sections 91000-91022.

(h) *Special reporting requirements for “Multi-purpose Lubricant” products using the alternate compliance option specified in subsection 94509(r).*

(1) The Responsible Party must report annual sales to the Executive Officer no later than March 31. The annual reporting requirement shall sunset on April 1, 2023.

(2) Product formulation must be reported upon initial qualification to comply using 94509(r). Product formulation shall be reported in accordance with subsections 94513(h)(2)(A) through (2)(G).

(A) Any ingredient listed in section 94700 must be reported if it is present in an amount greater than or equal to 0.1 percent by weight of the final “Multi-purpose Lubricant” product formulation.

(B) Any hydrocarbon solvent listed in section 94701 shall be reported as an ingredient if it is present in an amount greater than or equal to 0.1 percent by weight of the final “Multi-purpose Lubricant” product formulation. The hydrocarbon solvent bin number, manufacturer name, and trade name must be specified.

(C) Any ingredient assigned an MIR value in section 94509(r)(5) shall be reported if it is present in an amount greater than or equal to 0.1 percent by weight of the final “Multi-purpose Lubricant” product formulation.

(D) For chemical mixtures not listed in sections 94700, 94701, or 94509(r)(5) each chemical compound in the mixture must be reported separately.

(E) Propellant mixtures must be reported as separate chemical compounds.

(F) If an MIR value other than terpinolene is used for fragrance, the Responsible Party must provide the fragrance ingredients.

(G) For the purpose of this subsection, a safety data sheet (SDS) does not constitute a product's formulation.

(3) The Responsible Party will retain a minimum of three years of production records, as specified in subsection 94509(r)(1)(G), and provide them to the Executive Officer upon request.

(4) The Responsible Party shall provide any other information necessary to determine the PWMIR of the "Multi-purpose Lubricant" product to be tested including the MIR value for each ingredient used to calculate the PWMIR.

(5) Upon written notification from the Executive Officer, the Responsible Party will have 25 working days from the date of mailing to provide to the Executive Officer production records to determine compliance for products complying using the alternate compliance option in subsection 94509(r).

(6) Treatment of Confidential Information.

Information submitted by the Responsible Party pursuant to subsection 94513(h) will be handled in accordance with the procedures specified in Title 17, California Code of Regulations, sections 91000-91022.

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

§ 94515. Test Methods.

3.6.2 LVP-VOC status of "compounds" or "mixtures." The Executive Officer will test a sample of the LVP-VOC used in the product formulation to determine the boiling point for a compound or for a mixture. If the boiling point exceeds 216°C, the compound or mixture is an LVP-VOC. If the boiling point is less than 216°C, then the weight percent of the mixture which boils above 216°C is an LVP-VOC. The Executive Officer will use the nearest 5₁ percent distillation cut that is greater than 216°C as determined under 3.6.1 to determine the percentage of the mixture qualifying as an LVP-VOC.

(k) Alternate compliance option verification for “Multi-purpose Lubricant” products.

(1) Testing of “Multi-purpose Lubricant” products subject to the provisions of subsection 94509(r) must be performed by the procedures set forth in “Air Resources Board Method 310, Determination of Volatile Organic Compounds (VOC) in Consumer Products and Reactive Organic Compounds (ROC) in Aerosol Coating Products,” (Method 310) adopted September 25, 1997, and as last amended on [INSERT DATE OF AMENDMENT] which is incorporated herein by reference. Only ingredients present in amount equal to or greater than 0.1 percent by weight will be reported.

NOTE: Authority cited: Sections 39600, 39601, 39607, 41511 and 41712, Health and Safety Code.
Reference: Sections 39002, 39600, 39607, 40000, 41511 and 41712, Health and Safety Code.

Appendix B

METHOD 310

Determination of Volatile Organic Compounds (VOC) in Consumer Products and Reactive Organic Compounds (ROC) in Aerosol Coating Products

(Including Appendix A)

Adopted: September 25, 1997

Amended: September 3, 1999

Amended: July 18, 2001

Amended: May 5, 2005

Amended: August 6, 2010

Amended: September 29, 2011

Amended: August 1, 2014

Amended: [INSERT DATE OF AMENDMENT]

[NOTE: Proposed are amendments shown in **bold/underline** and ~~strikeout~~ to indicate deletions from existing text.]

PROPOSED AMENDMENTS TO METHOD 310, DETERMINATION OF VOLATILE ORGANIC COMPOUNDS (VOC) IN CONSUMER PRODUCTS AND REACTIVE ORGANIC COMPOUNDS (ROC) IN AEROSOL COATING PRODUCTS

(Including Appendix A)

1 APPLICABILITY

- 1.1 This method (Method 310) applies to the determination of the percent by weight of:
- (1) volatile organic compounds (VOC) in consumer products, antiperspirant and deodorant products, as those terms are defined in Title 17, California Code of Regulations (CCR), Division 3, Chapter 1, Subchapter 8.5 (Consumer Products), commencing with sections 94500 and 94508, and
 - (2) low vapor pressure-volatile organic compounds (LVP-VOC) as that term is defined in section 94508(a), ~~and~~
- 1.2 ~~This method (Method 310)~~ applies to the determination of product weighted maximum incremental reactivity (PWMIR) of aerosol coating products, as that term is defined in Title 17, CCR, **Consumer Products** section 94521.
- 1.3 Method 310 determines the total volatile material in a product and the presence of any compounds prohibited by CARB regulations (“prohibited compounds”). Components of the product that do not meet the definition of a VOC or are exempted by CARB regulations for a specific product category (“exempt compounds”) are subtracted from the total volatile material to determine the final VOC content for the product. Method 310 is also used to determine the percent by weight of the **reactive organic compounds (ROC)** ~~contained in aerosol coating products, for the purpose of determining compliance with the Regulation for Reducing the Ozone Formed from Aerosol Coating Product Emissions, Title 17, CCR, sections 94520 to 94528 (the “Aerosol Coating Products Regulation”).~~
- 1.4 Method 310 does not apply to the determination of the composition or concentration of fragrance components in products.
- 1.5 The term “Executive Officer” as used in this document means the Executive Officer of the Air Resources Board or his or her authorized representative.

2 REFERENCE TEST METHODS

Method 310 incorporates by reference the following ASTM International, (ASTM), National Institute for Occupational Safety and Health (NIOSH), and United States Environmental Protection Agency (US EPA) analytical test methods:

- 2.1 ASTM D2369-01, Standard Test Method for Volatile Content of Coatings (January 10, 2001).
- 2.2 ASTM D1426-98, Standard Test Methods for Ammonia Nitrogen in Water (December 10, 1998).
- 2.3 ASTM D4017-96a, Standard Test Method for Water in Paints and Paint Materials by the Karl Fisher Titration Method (July 10, 1996).
- 2.4 ASTM D3792-99, Standard Test Method for Water Content of ~~Water-Reducible Paints~~ Coatings by Direct Injection Into a Gas Chromatograph (May 10, 1999).
- 2.5 ASTM D859-00, Standard Test Method for Silica in Water (~~determination of polymethylsiloxanes after digestion~~) (June 10, 2000).
- 2.6 ASTM D3074-94, Standard Test Methods for Pressure in Metal Aerosol Containers (November 15, 1994), with the modifications found in Appendix A to this Method 310.
- 2.7 ASTM D3063-94, Standard Test Methods for Pressure in Glass Aerosol Bottles (November 15, 1994), with the modifications found in Appendix A to this Method 310.
- 2.8 ASTM D3064-97, Standard Terminology Relating to Aerosol Products (September 10, 1997).
- 2.9 NIOSH: Method 1400, Alcohols I, (~~analysis of acetone and ethanol by gas chromatography~~). NIOSH Manual of Analytical Methods, Volume 1 Fourth Edition, (August 1994).
- 2.10 ~~Gas Chromatography/Mass Spectrometry for Volatile Organics (analysis of exempt and prohibited compounds in the product by headspace/gas chromatography/mass spectrometry).~~
- 2.10 US EPA Method 8240B, Revision 2, September 1994, ~~Revision 2, Final Update IIA to the Third Edition of the Test Methods for Evaluating Solid Waste, Physical/Chemical Methods~~, Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS), ~~Test Methods for Evaluating Solid Waste, Volume 1 B, Chapter 4, Section 4.3.2: Laboratory Manual Physical/Chemical Methods~~, EPA publication SW-846, September 1994.

- 2.11 US EPA Method 8260B, **Revision 2**, December 1996, ~~Revision 2, **Final Update III to the Third Edition of the Test Methods for Evaluating Solid Waste, Physical/Chemical Methods**~~, Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS), ~~Test Methods for Evaluating Solid Waste, Volume 1 B, Chapter 4, Section 4.3.2: Laboratory Manual Physical/Chemical Methods, **EPA publication** SW-846, December 1996.~~
- 2.12 US EPA Reference Method 24, Determination of Volatile Matter Content, Water Content, Density, Volume Solids, and Weight Solids of Surface Coatings; **Title** 40 Code of Federal Regulations (CFR) Part 60, Appendix A, ~~as it existed on September 11, 1995~~**(July 1, 1996)**.
- 2.13 US EPA Reference Method 24A, Determination of Volatile Matter Content and Density of Printing Inks and Related Coatings; **Title** 40 CFR Part 60, Appendix A, ~~as it existed on July 1, 1994~~**(July 1, 1994)**.
- 2.14 US EPA Reference Method 18, Measurement of Gaseous Organic Compound Emissions by Gas Chromatography; **Title** 40 CFR Part 60, Appendix A, ~~as it existed on September 25, 1996~~**(July 1, 1996)**.
- 2.15 US EPA Method 300.7, ~~March 1986~~.—Dissolved Sodium, Ammonium, Potassium, **Magnesium**, and Calcium in Wet Deposition by Chemically Suppressed Ion Chromatography, **EPA Report # 600/4-86-024, (March 1, 1986)**.
- 2.16 ASTM D86-01; Standard Test Methods for Distillation of Petroleum Products **at Atmospheric Pressure** (August 10, 2001).
- 2.17 ASTM D850-00; Standard Test Methods for Distillation of Industrial Aromatic Hydrocarbons and Related Materials (December 10, 2000).
- 2.18 ASTM D1078-01; Standard Test Methods for Distillation Range of Volatile **Organic** Liquids (June 10, 2001).
- 2.19 ASTM D2879-97; Standard Test Method for **Vapor Pressure-Temperature** ~~Vapor Pressure-Temperature Relationship and Initial Decomposition Temperature of Liquids by Isoteniscope~~ (April 10, 1997).
- 2.20 ASTM D2887-01; Standard Test Method for Boiling Range Distribution of Petroleum Fractions by Gas Chromatography (May 10, 2001).
- 2.21 ASTM E1719-97; Standard Test Method for Vapor Pressure of Liquids by Ebulliometry (March 10, 1997).
- 2.22 ASTM D3257-06; Standard Test Methods for Aromatics in Mineral Spirits by Gas Chromatography (April 1, 2006).

- 2.23 ASTM D3606-07~~:-~~, Standard Test Method for Determination of Benzene and Toluene in Finished Motor and Aviation Gasoline by Gas Chromatography (November 1, 2007).
- 2.24 ASTM D3710-95~~(2004) (Reapproved 2004):-~~, Standard Test Method for Boiling Range Distribution of Gasoline and Gasoline Fractions by Gas Chromatography (November 1, 2004).
- 2.25 ASTM D5443-04~~:-~~, Standard Test Method for Paraffin, Naphthene, and Aromatic Hydrocarbon Type Analysis in Petroleum Distillates Through ~~200°C~~200°C by Multi-Dimensional Gas Chromatography (November~~:-~~ 1, 2004).
- 2.26 ASTM D5580-02~~(2007) (Reapproved 2007):-~~, 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 (November 1, 2007).
- 2.27 ASTM E1782-08~~:-~~, Standard Test Method for Determining Vapor Pressure by Thermal Analysis (March 1, 2008).
- 2.28 US EPA Method 602~~:-~~, Purgeable Aromatics, Title 40 CFR 136 Appendix A, Method for Organic Chemical Analysis of Municipal and Industrial Wastewater (July 1, 2007)~~January 2008~~.
- 2.29 US EPA Method 625~~:-~~, Base/Neutrals and Acids, Title 40 CFR 136 Appendix A, Method for Organic Chemical Analysis of Municipal and Industrial Wastewater (July 1, 2007)~~January 2008~~.
- 2.30 US EPA SW-846-Method 8015B~~:-~~, Revision 2, December 1996, Final Update III to the Third Edition of the Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Non-Halogenated Organics Using GC/FID, EPA publication SW-846~~(Rev 2, December 1996)~~.
- 2.31 US EPA SW-846-Method 8020A~~:-~~, Revision 1, September 1994, Final Update II to the Third Edition of the Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Aromatic Volatile Organics by Gas Chromatography, EPA publication SW-846~~(Rev 1, September 1994)~~.
- 2.32 US EPA SW-846-Method 8270D~~:-~~, Revision 4, January 1998, Final Update IV to the Third Edition of the Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Semivolatile Organic Compounds by Gas Chromatography / Mass Spectroscopy (GC/MS), EPA publication SW-846~~(Rev. 4, January 1998)~~.
- 2.33 ASTM D5381-93~~(2009):-~~ Standard Guide for X-Ray Fluorescence (XRF) Spectroscopy of Pigments and Extenders (February 1, 2009)~~(Reapproved 2009)~~.

- 2.34 ASTM D523-08; Standard Test Method for Specular Gloss (June 1, 2008).
- 2.35 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).
- 2.36 **ASTM D6730-01(2016), Standard Test Method for Determination of Individual Components in Spark Ignition Engine Fuels by 100-Metre Capillary (with Precolumn) High-Resolution Gas Chromatography, (April 1, 2016).**
- 2.37 **ASTM D4057-12, Standard Practice for Manual Sampling of Petroleum and Petroleum Products, (December 1, 2012).**
- 2.38 **ASTM D4177-16e1, Standard Practice for Automatic Sampling of Petroleum and Petroleum Products, (October 1, 2016).**
- 2.39 **ASTM D4626-95(2015), Standard Practice for Calculation of Gas Chromatographic Response Factors, (April 1, 2015).**
- 2.40 **ASTM E203-01, Standard Test Method for Water Using Volumetric Karl Fisher Titration, (October 10, 2001).**

3 CONSUMER PRODUCTS TESTING TO DETERMINE VOC PROCEDURE

3.1 The testing begins when the Executive Officer selects a product for analysis by Method 310. The Executive Officer will maintain sample chain of custody throughout the selection and analytical process.

3.2 Initial Testing of Aerosol Products

If the sample is an aerosol product, the aerosol propellant is separated from the non-propellant portion of the product by using ASTM D3074-94 (as modified in Appendix A for metal aerosol container) or ASTM D3063-94 (as modified in Appendix A for glass aerosol container). The propellant portion is analyzed for exempt or prohibited compounds by using US EPA Reference Method 18. The remaining non-propellant portion of the product is then analyzed as specified in section 3.3.

3.3 Initial Testing of Non-Aerosol Products and the Non-Propellant Portion of Aerosol Products

The non-aerosol product or non-propellant portion of an aerosol product is analyzed to determine the total volatile material present in the sample and to

determine the presence of any exempt or prohibited compounds. This analysis is conducted by performing the following tests:¹

- 3.3.1 Gravimetric analysis of samples to determine the weight percent of total volatile material, using US EPA ~~Reference Methods 24/24A~~, **US EPA Method 24A**, ASTM D2369-01.
- 3.3.2 Determination of sample water content. For determination of water content either ASTM D4017-96a (**including ASTM E203-01**), or ASTM D3792-99 may be used, or results from both procedures may be averaged and that value reported.
- 3.3.3 Determination of ammonium content using ASTM D1426-98 or US EPA Method 300.7.
- 3.3.4 Determination of ketones and alcohol content using NIOSH Method 1400.
- 3.3.5 Analysis of exempt and prohibited compounds, if present (US EPA ~~Reference Method 18~~, US EPA Method 8240B, US EPA Method 8260B, ASTM D859-00, NIOSH Method 1400). Effective January 1, 2015, for non-aerosol “Multi-purpose Solvent” and “Paint Thinner” products sold, supplied, offered for sale, or manufactured for sale in the South Coast Air Quality Management District, analysis of exempt and prohibited compounds shall include analysis for methyl esters with 17 or more carbon atoms, if present.
- 3.3.6 If LVP-VOC status is claimed or the analysis indicates the presence of an LVP-VOC component and the percent VOC is not in compliance, the Executive Officer will request formulation data as specified in Section 3.45.2.
- 3.3.7 For low level VOC content samples, direct determination using US EPA ~~Reference Method 18~~, US EPA Method 8240B, US EPA Method 8260B, ASTM D859-00, NIOSH Method 1400.
- 3.3.8 For aromatic **hydrocarbon** compound content determination, US EPA Method 602, US EPA SW-846 Method 8020A, US EPA Modified Method 8015, US EPA Method 625, US EPA Method SW-846 Method 8270D, ASTM D5443-04, ASTM D3257-06, ASTM D3710-95, ASTM D3606-07, ASTM D5580-02, **ASTM D6730-01(2016), ASTM D4057-12, ASTM D4177-16e1, ASTM D4626-95(2015)**.

¹ Alternate test methods may be used, as provided in section 7.0.

3.4 Prohibited Compounds

~~If the sample is found to contain compounds prohibited by ARB regulations (i.e., ozone-depleting compounds) at concentrations equal to or exceeding 0.1 percent by weight, the Executive Officer will reanalyze the sample for confirmation.~~

3.4 Initial Determination of VOC Content

The Executive Officer will determine the VOC content pursuant to sections 3.2 and 3.3. Only those components with concentrations equal to or greater than 0.1 percent by weight will be reported.

- 3.4.1 Using the appropriate formula specified in section 4.0, the Executive Officer will make an initial determination of whether the product meets the applicable VOC standards specified in CARB regulations. If initial results show that the product does not meet the applicable VOC standards, the Executive Officer may perform additional testing to confirm the initial results.
- 3.4.2 If the results obtained under section ~~3.5~~4.1 show that the product does not meet the applicable VOC standards, the Executive Officer will request the ~~product manufacturer or~~ responsible party to supply product formulation data. The ~~manufacturer or~~ responsible party shall supply the requested information. Information submitted to the CARB Executive Officer may be claimed as confidential; such information will be handled in accordance with the confidentiality procedures specified in Title 17, **CCR, Division 3, Chapter 1, Subchapter 4 (Disclosure of Public Records)**~~California Code of Regulations, sections 91000 to 91022.~~
- 3.4.3 If the information supplied by the ~~manufacturer or~~ responsible party shows that the product does not meet the applicable VOC standards, then the Executive Officer will take appropriate enforcement action.
- 3.4.4 If the ~~manufacturer or~~ responsible party fails to provide formulation data as specified in section ~~3.4~~5.2, the initial determination of VOC content under this section ~~3.4~~5 shall determine if the product is in compliance with the applicable VOC standards. This determination may be used to establish a violation of CARB regulations.
- 3.5 Determination of the LVP-VOC status of compounds and mixtures. This section does not apply to antiperspirants and deodorants or aerosol coatings products. Effective January 1, 2015, this section also does not apply to non-aerosol "Multi-purpose Solvent" and "Paint Thinner" products sold, supplied, offered for sale, or manufactured for sale in the South Coast Air Quality Management District. There is no LVP-VOC exemption for these products.
- 3.5.1 Formulation data. If the vapor pressure is unknown, the following ASTM methods may be used to determine the LVP-VOC status of compounds and

mixtures: ASTM D86-01 (August 10, 2001), ASTM D850-00 (December 10, 2000), ASTM D1078-01 (June 10, 2001), ASTM D2879-97 (April 10, 1997), ASTM D2887-01 (May 10, 2001), and ASTM E1719-97 (March 10, 1997).

3.5.2 LVP-VOC status of “compounds” or “mixtures.” The Executive Officer will test a sample of the LVP-VOC used in the product formulation to determine the boiling point for a compound or for a mixture. If the boiling point exceeds 216°C, the compound or mixture is an LVP-VOC. If the boiling point is less than 216°C, then the weight percent of the mixture which boils above 216°C is an LVP-VOC. The Executive Officer will use the nearest 1 percent distillation cut that is greater than 216°C as determined under 3.56.1 to determine the percentage of the mixture qualifying as an LVP-VOC.

3.6 Final Determination of VOC Content

If a product’s compliance status is not satisfactorily resolved under sections 3.45 and 3.56, the Executive Officer will conduct further analyses and testing as necessary to verify the formulation data.

3.6.1 If the accuracy of the supplied formulation data is verified and the product sample is determined to meet the applicable VOC standards, then no enforcement action for violation of the VOC standards will be taken.

3.6.2 If the Executive Officer is unable to verify the accuracy of the supplied formulation data, then the Executive Officer will request the ~~product manufacturer~~ or responsible party to supply information to explain the discrepancy.

3.6.3 If there exists a discrepancy that cannot be resolved between the results of Method 310 and the supplied formulation data, then the results of Method 310 shall take precedence over the supplied formulation data. The results of Method 310 shall then determine if the product is in compliance with the applicable VOC standards, and may be used to establish a violation of CARB regulations.

4 CALCULATION OF VOC CONTENT

This section specifies the procedure for determining the final VOC content of a product, which is reported as percent by weight of VOC. Effective January 1, 2015, for non-aerosol “Multi-purpose Solvent” and “Paint Thinner” products sold, supplied, offered for sale, or manufactured for sale in the South Coast Air Quality Management District (SCAQMD) the final VOC content is reported as grams of VOC per liter of material (g/L) as set forth in section 4.2.4.

4.1 Aerosol Products

4.1.1 For aerosol products, except those containing LVP-VOC, the percent VOC content shall be calculated using the following equation:

$$\% \text{ VOC} = \frac{\text{WL} (\text{TV} - \text{A} - \text{H} - \text{EL}) + \text{WP} - \text{EP}}{\text{WL} + \text{WP}} \times 100$$

Where²:

WL = weight **in grams** (g), of **a non-aerosol sample or the non-propellant portion of an aerosol sample**, excluding container and packaging.

TV = weight fraction of ~~non-propellant~~ total volatile material **in a non-aerosol sample or in the non-propellant portion of an aerosol sample**.

A = weight fraction of ammonia (as NH₄) in **a non-aerosol sample or in the non-propellant portion of an aerosol sample**.

H = weight fraction of water in **a non-aerosol sample or in the non-propellant portion of an aerosol sample**.

EL = weight fraction of exempt compound(s) in **a non-aerosol sample or in the non-propellant portion of an aerosol sample**.

WP = weight (g) of propellant.

EP = weight (g) of exempt compounds in propellant.

4.1.2 For aerosol products containing LVP-VOC, the percent VOC shall be calculated using the following equation:

$$\% \text{ VOC} = \frac{\text{WL} [(1 - \text{H}) \times (1 - \text{LVP}) - \text{EL}] + (\text{WP} - \text{EP})}{\text{WL} + \text{WP}} \times 100$$

Where:

LVP = weight fraction of LVP-VOC compounds and/or mixtures in the non-propellant, non-aqueous portion.

² Alternate test methods, as provided in section 7.0, ~~or appropriate approved methods from section 2.0 may be used.~~

1 – H = weight fraction of the non-propellant portion that does not contain water.

1 – LVP = weight fraction of the non-propellant, non-aqueous portion that is volatile.

4.2 Non-Aerosol Products

4.2.1 For non-aerosol products, except those containing LVP-VOC, the percent VOC content shall be calculated using the following equation:

$$\% \text{ VOC} = (\text{TV} - \text{A} - \text{H} - \text{EL}) \times 100$$

4.2.2 For non-aerosol products containing LVP-VOC, the percent VOC shall be calculated using the following equation:

$$\% \text{ VOC} = [(1 - \text{H}) \times (1 - \text{LVP}) - \text{EL}] \times 100$$

4.2.3 For Fabric Softener – Single Use Dryer Product, the grams of VOC per sheet shall be calculated as follows:

$$\text{Total Grams VOC per Sheet} = (\text{TV} - \text{A} - \text{H} - \text{EL}) \times \text{WS}$$

$$\text{Total Grams VOC per Sheet with LVP} = [(1 - \text{H}) \times (1 - \text{LVP}) - \text{EL}] \times \text{WS}$$

Where:

WS = weight (**g**) of single dryer sheet, ~~in grams~~

4.2.4 Effective January 1, 2015, for non-aerosol “Multi-purpose Solvent” and “Paint Thinner” products sold, supplied, offered for sale, or manufactured for sale for use in the SCAQMD, grams of VOC per liter of material (g/L) shall be calculated using the following equation:

$$\text{g/L VOC} = \frac{\text{WM} \times (\text{TV} - \text{H} - \text{EL})}{\text{VM}}$$

Where:

WM = weight of the material in grams.

VM = volume of the material in liters.

~~TV = weight fraction of total volatile material.~~

~~H = weight fraction of water.~~

EL = weight fraction of exempt compounds including the weight fraction of methyl esters with 17 or more carbon atoms in the total volatile material.

4.3 Consumer products subject to low VOC limits (below 5.0%) may have their VOC content characterized by a low level direct determination.

4.3.1 For aerosol products the percent VOC content may be calculated using the following equation:

$$\% \text{ VOC} = \frac{\text{WL} \left[\sum V_n \right] + \text{WP} - \text{EP}}{\text{WL} + \text{WP}} \times 100$$

Where:

V = weight fraction of non-exempted VOCs in the non-propellant portion.

n = number of non-exempted VOCs in the non-propellant portion.

~~WL = weight (g) of the non-propellant portion, excluding container and packaging.~~

~~WP = weight (g) of propellant.~~

~~EP = weight (g) of exempt compounds in propellant.~~

4.3.2 For non-aerosol products the percent VOC content shall be calculated using the following equation:

$$\% \text{ VOC} = \left[\sum V_n \right] \times 100$$

5 TESTING TO DETERMINE REACTIVE ORGANIC COMPOUNDS (ROC) IN AEROSOL COATING PRODUCTS

~~This section specifies the procedure for determining the percent by weight of the reactive organic compounds (ROC) contained in aerosol coating products, for the purpose of determining compliance with the Aerosol Coating Products Regulation.~~

5.1 ~~The testing begins when the Executive Officer selects a product for analysis. The Executive Officer will maintain sample chain of custody throughout the~~

selection and analytical process. When a product is selected for testing, the Executive Officer will request the ~~product manufacturer or~~ responsible party to supply the product formulation data specified in Title 17, CCR, **Consumer Products** section 94526(b)(1). The ~~manufacturer or~~ responsible party shall supply the requested information within 25 working days. Information submitted to the Executive Officer may be claimed as confidential; such information will be handled in accordance with the confidentiality procedures specified in ~~sections 91000 to 91022,~~ Title 17, CCR, **Disclosure of Public Records sections 91000 to 91022.**

5.2 Initial Testing of the ~~Propellant Portion of~~ Aerosol Coating Products

~~If the sample is an aerosol product,~~ the aerosol propellant is separated from the non-propellant portion of the product by using ASTM ~~D3074-94~~ **D3074-94** (as modified in Appendix A for metal aerosol container) or ASTM ~~D3063-94~~ **D3063-94** (as modified in Appendix A for glass aerosol container). The propellant portion is analyzed for ROCs and other compounds by using US EPA Reference Method 18. The remaining non-propellant portion of the product is then analyzed as specified in section 5.3.

5.3 Initial Testing of **Non-Aerosol Products or** the Non-Propellant Portion of Aerosol Coating Products

The **non-aerosol product or** non-propellant portion of the **aerosol** product ~~sample~~ is analyzed to determine the ROCs in the sample, including the presence of any prohibited compounds. This analysis is conducted by performing the following tests:³

- 5.3.1 Gravimetric analysis of samples to determine the weight percent of total volatile material, using US EPA Reference Methods ~~24/24A,~~ **US EPA Method 24A**, ASTM ~~D2369-01~~ **D2369-01**.
- 5.3.2 Determination of sample water content. For determination of water content either ASTM ~~D4017-96a~~ **D4017-96a** (**including ASTM E203-01**), or ASTM ~~D3792-99~~ **D3792-99** may be used, or results from both procedures may be averaged and that value reported.
- 5.3.3 Determination of ammonium content using ASTM ~~D1426-98~~ **D1426-98** or US EPA Method 300.7.
- 5.3.4 Determination of ketones and alcohol content using NIOSH Method 1400.

³ Alternate test methods may be used, as provided in section 7.0.

- 5.3.5 Direct determination of ROCs and, if present, prohibited compounds (US EPA Reference-Method 18, US EPA Method 8240B, US EPA Method 8260B, ASTM D859-00, NIOSH Method 1400, and modified ASTM D5443-04).
- 5.3.6 Determination of metal content using ASTM D5381-93 (2009).
- 5.3.7 Determination of specular gloss using ASTM D523-08 (2008).
- 5.3.8 Determination of acid content using ASTM D1613-06 (2006).
- 5.3.9 For hydrocarbon compound content determination using ASTM D6730-01(2016), ASTM D4057-12, ASTM D4177-16e1, ASTM D4626-95(2015).**

5.4 Prohibited Compounds

~~If the sample is found to contain compounds prohibited by the Aerosol Coating Products Regulation (e.g., ozone-depleting compounds) at concentrations equal to or exceeding 0.1 percent by weight, the Executive Officer will reanalyze the sample for confirmation.~~

5.4 Initial Determination and Verification of ROC Content

The Executive Officer will determine the ROC content by verifying formulation data pursuant to sections 5.2 and 5.3. Only those components with concentrations equal to or greater than 0.1 percent by weight will be reported.

- 5.4.1 Based on ~~manufacturer's~~ formulation data and the analysis conducted under section 5, the Executive Officer will make an initial determination of whether the product meets the applicable requirements specified in CARB **regulations**~~the Aerosol Coating Products Regulation~~. If initial results show that the product does not meet the applicable requirements, the Executive Officer may perform additional testing to confirm the initial results.

5.5 Final Determination of ROC Content

If a product's status is not satisfactorily resolved under section 5.1 - ~~5.4~~**5**, the Executive Officer may conduct additional analyses and testing as necessary to verify the formulation data.

- 5.5.1 If the Executive Officer is unable to verify the accuracy of the supplied formulation data, then the Executive Officer will request the ~~product manufacturer or~~ responsible party to supply additional information to explain the discrepancy.
- 5.5.2 If the additional information supplied by the ~~manufacturer or~~ responsible party shows that the product does not meet the applicable requirements, then the Executive Officer will take appropriate enforcement action.

- 5.5.3 If the ~~manufacturer or~~ responsible party fails to provide additional information as specified in section 5.56.1, the initial determination of ROC content under section 5.1 – 5.45 shall determine if the product is in compliance with the applicable reactivity limits. This determination may be used to establish a violation of CARB regulations~~the Aerosol Coating Products Regulation~~.
- 5.5.4 If there exists a discrepancy that cannot be resolved between the results of Method 310 and the formulation data or additional information supplied by the ~~manufacturer or~~ responsible party, then the results of Method 310 shall take precedence over the supplied formulation data or additional information. The results of Method 310 shall then determine if the product is in compliance with the applicable requirements, and may be used to establish a violation of CARB regulations~~the Aerosol Coating Products Regulation~~.

6 METHOD PRECISION AND ACCURACY

- 6.1 The precision of Method 310 for determining VOC content was evaluated using seven representative products with known ~~volatile organic compound (VOC)~~ contents ranging from 6.2 to 81.2 percent VOC by weight. Each sample was divided into six portions, and each portion was separately analyzed to determine the VOC content. Based on the results of this analysis, the 95 percent confidence interval for Method 310 is 3.0 percent by weight ~~(Wt/Wt%)~~.
- 6.2 For determining the percent by weight of the individual ingredients in aerosol coating products, the precision and accuracy of the determination for each ingredient is governed by the precision and accuracy of the test method used to ascertain the percent by weight of each ingredient.

7 ALTERNATE TEST METHODS

Alternative test methods which are shown to accurately determine the concentration of VOCs or ~~constituent~~ components in antiperspirant/deodorants, consumer products, or aerosol coating products (or their emissions) may be used upon written approval of the Executive Officer.

Method 310 - Appendix A

PROPELLANT COLLECTION PROCEDURES

1 APPLICATION

The procedure applies to modify ASTM D3074-94 and D3063-94 to allow collection of the propellant for analysis and density measurement for metal aerosol containers and glass aerosol containers, respectively. These modified procedures also retain the aerosol standard terminology listed in ASTM D3064-97.

2 LIMITATIONS

Nitrogen analysis: Nitrogen may be used as a component of the propellant system. Ambient air is 78 percent nitrogen and may be present as a contaminant in the system prior to sample collection. This is eliminated by sweeping out any connecting lines to the ~~Tedlar~~**propellant collection** bag with product before starting sample collection. This procedure will eliminate or reduce nitrogen contamination to less than 0.1 percent% by weight of the sample and the analysis of the propellant gas will be unaffected.

3 APPARATUS AND MATERIALS

- 3.1 Propellant Collection System: See Figure 1 (metal containers) and Figure 3 (glass containers).
- 3.2 ~~Tedlar~~**Propellant Collection** Bags equipped with slip valve and septum.
- 3.3 Density Measurement
 - 3.3.1 250 mL gas dilution bulb, or
 - 3.3.2 Density/Specific gravity meter meeting the following minimum specifications:
 - 3.3.2.1 Measurement Range: 0 – 3 +/- 0.00001 g/cm³
 - 3.3.2.2 Measurement Temperature Range: 4°C ~ 70°C.
- 3.4 Balance, capable of accurately weighing to 0.1 mg
- 3.5 Sample Venting Platform. See Figure 2 (metal containers)¹ and Figure 4 (glass containers)².

¹-See SOP SAS05, Figures 3 and 4.

²-See SOP SAS05, Figure 7.

3.6 Platform Shaker, equivalent to Thermolyne M49125

3.7 Cork Rings, 80 x 32 mm

4 PROCEDURE

4.1 Propellant Collection for Metal Aerosol Containers

4.1.1 Close valves on Propellant Collection System (see Figure 1).

4.1.2 Remove the actuator from valve on the aerosol can and weigh can to the nearest **0.01 g**—0.01 g.

4.1.3 Place the can in an inverted position onto the Sample Venting Platform, stabilized by cork rings.

4.1.4 Slowly raise the hydraulic jack until the can is pierced.—~~Note the pressure of the can.~~

4.1.5 Vent the can until propellant is seen flowing from output 1. Collect the propellant in the ~~Tedlar~~ **propellant collection** bag from output 1. Density is determined from this same ~~Tedlar~~ **propellant collection** bag, as necessary.

4.1.6 After the propellant is collected, close and remove the ~~Tedlar~~ **propellant collection** bag and vent the remainder of the propellant.

4.1.7 After the flow ceases from the can, it is removed from the assembly and allowed to vent overnight on a platform shaker, to vent the remainder of the propellant.

4.1.8 Reweigh the can to the nearest 0.01 g and record weight loss (total grams propellant). The can may now be opened for analysis of the non-propellant portion of the sample.

4.2 Propellant Collection for Glass Aerosol Containers

4.2.1 Remove the actuator from valve of the aerosol glass container and weigh container to the nearest 0.01 g.

4.2.2 With container in an inverted position place the valve onto the tapered adaptor.

4.2.3 Pressurize the air cylinder to actuate the sample container valve onto the tapered adaptor.—~~Note the pressure of the sample container.~~

- 4.2.4 Open the sample valve and collect propellant sample into the Tedlar propellant collection bag. Density is determined from this same Tedlar propellant collection bag, as necessary.
- 4.2.5 After the propellant is collected, close and remove the Tedlar propellant collection bag and vent the remainder of the propellant.
- 4.2.6 Continue to vent the container on the platform assembly until no pressure registers on the sample gauge and there is no visible propellant flowing from the sampling tube.
- 4.2.7 Remove the container from the platform.
- 4.2.8 Punch a small hole into the container valve assembly.
- 4.2.9 Place the container on a platform shaker to vent the remainder of the propellant.
- 4.2.10 Reweigh the container and valve assembly to the nearest 0.01 g and record weight loss (total grams propellant). The non-propellant portion of the sample is ready to be analyzed.

FIGURE 1
PROPELLANT COLLECTION SYSTEM
METAL AEROSOL CONTAINER

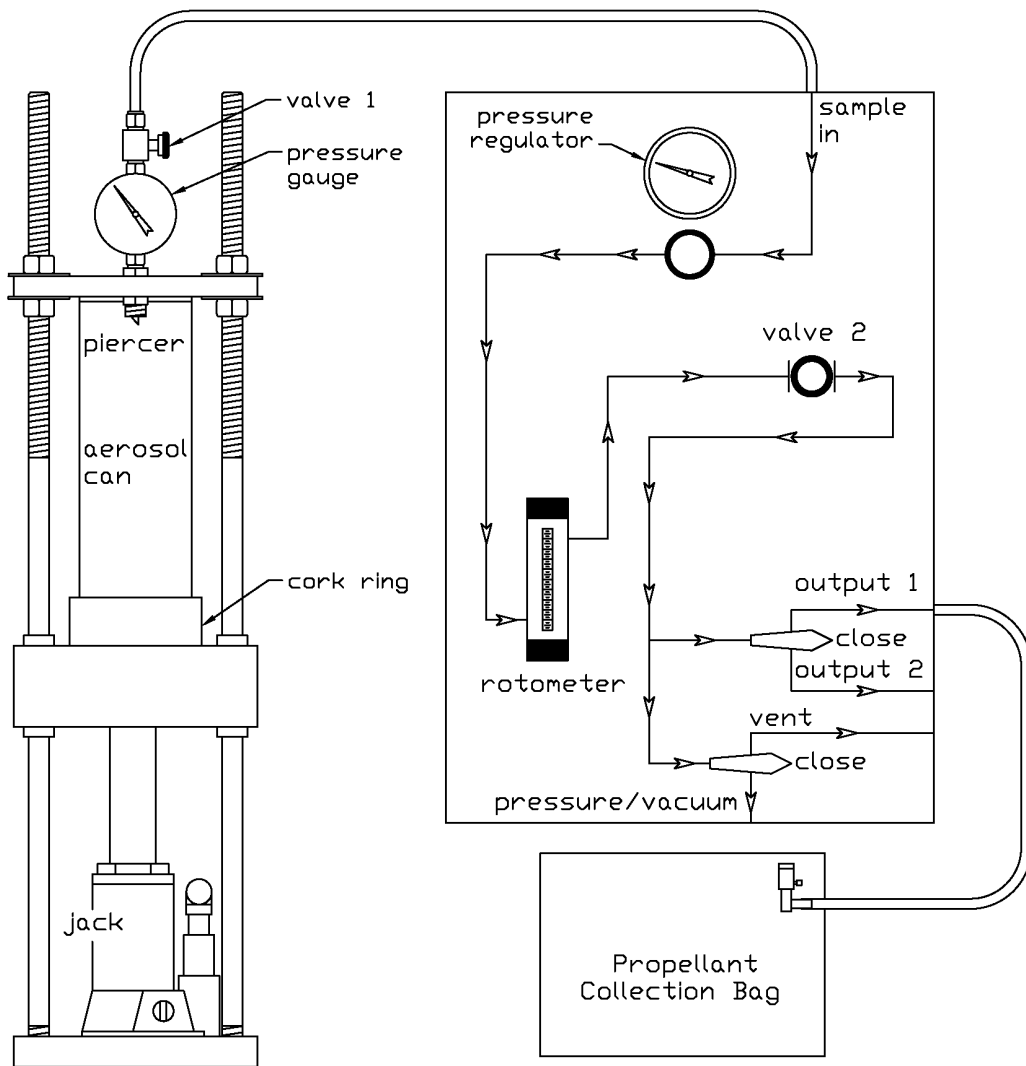


FIGURE 2

SAMPLE VENTING PLATFORM

METAL AEROSOL CONTAINER

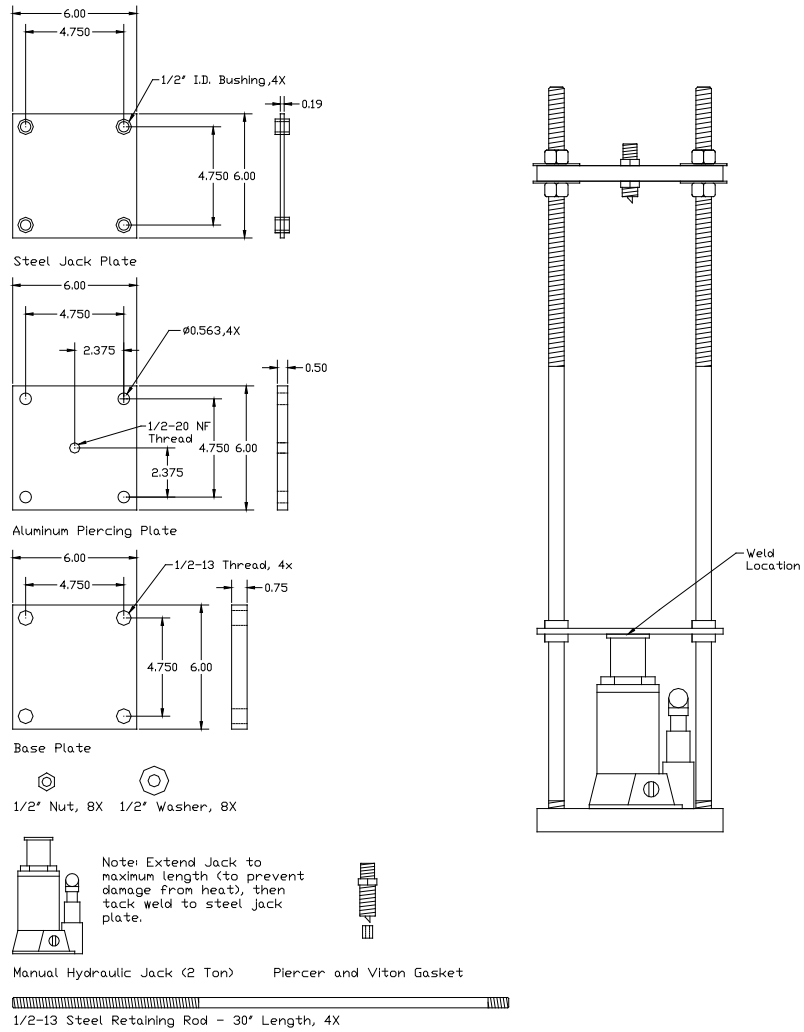


FIGURE 3
PROPELLANT COLLECTION SYSTEM
GLASS AEROSOL CONTAINER

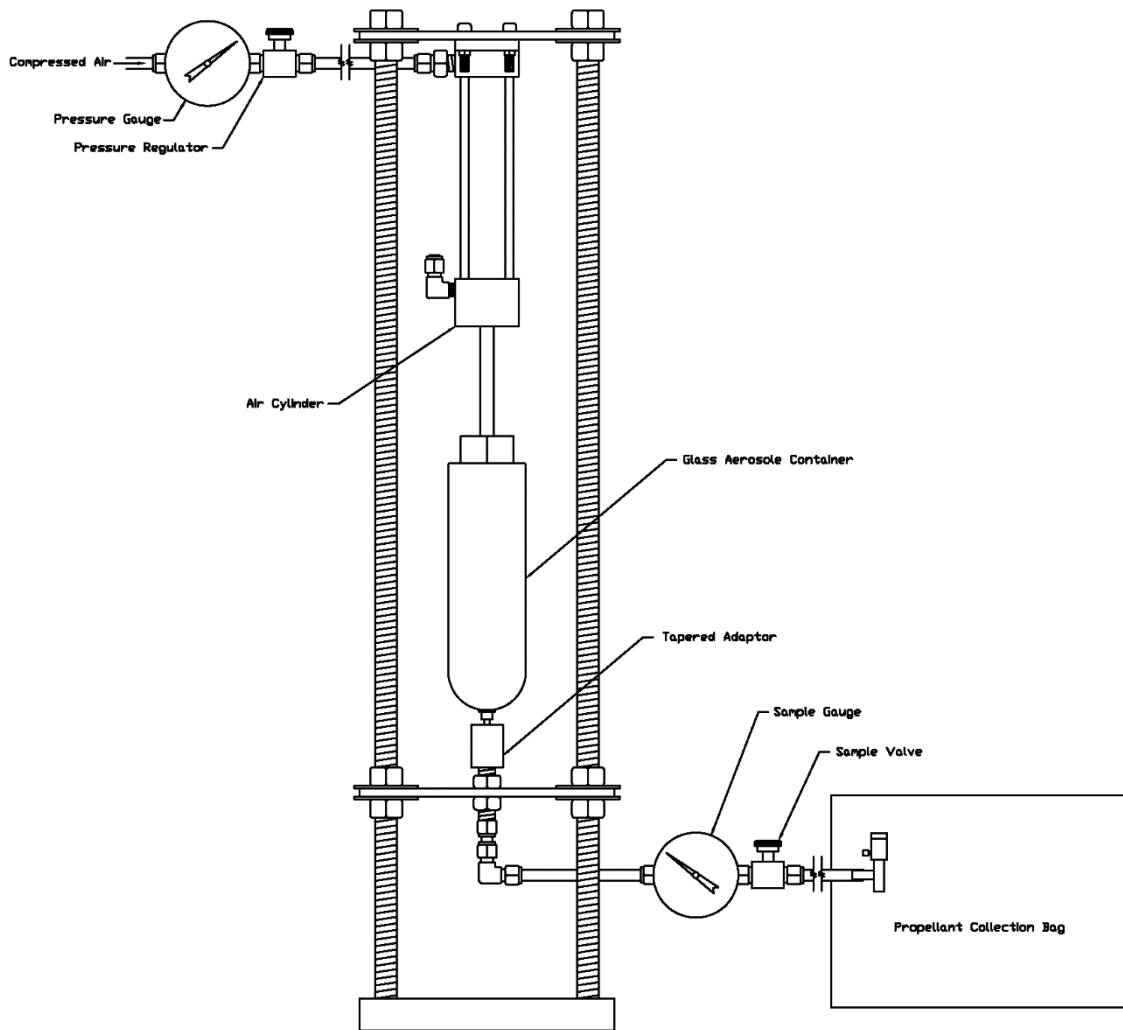
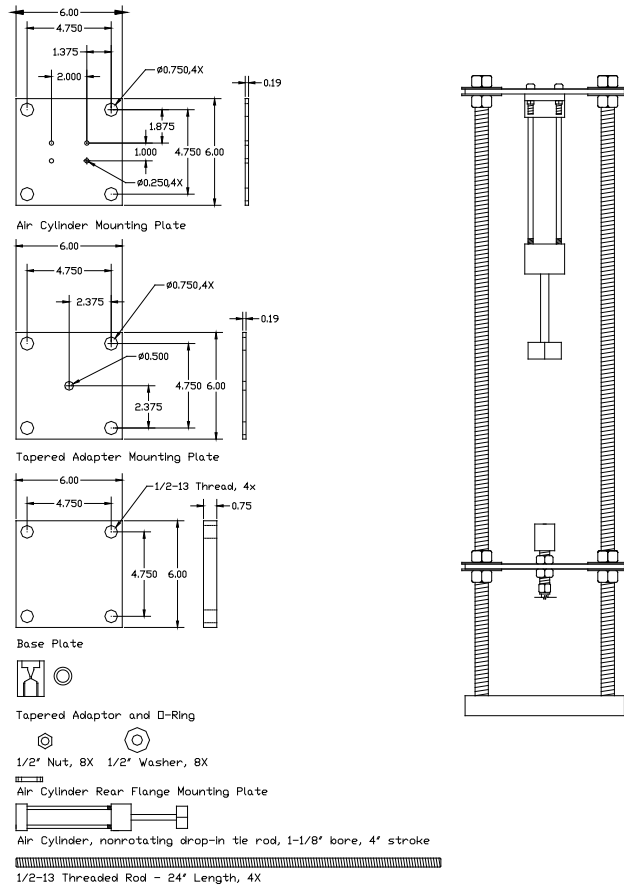


FIGURE 4

**SAMPLE VENTING PLATFORM
GLASS AEROSOL CONTAINER**



Appendix C

2016 Multi-Purpose Lubricant Product Technical Assessment

Background

Multi-purpose Lubricant (MPL) products are defined as lubricants designed or labeled for general purpose lubrication, or lubricants labeled for use in a wide variety of applications.

In 2008, the California Air Resources Board (CARB or Board) approved amendments to the Consumer Products Regulation reducing the volatile organic compound (VOC) limit for MPL products from 50 percent VOC and establishing two technology forcing limits: a 25 percent by weight VOC limit effective December 31, 2013, and a 10 percent by weight VOC limit effective December 31, 2015. Because the limits were technology forcing, the regulation included a provision requiring staff to conduct a Technical Assessment to determine feasibility of the VOC limits prior to their implementation. Solid or semisolid products (primarily greases) were not considered a significant source of VOC emissions, and were excluded from the proposed VOC standard.

In 2011, staff conducted a Technical Assessment for the 25 percent VOC limit. Staff determined that while meeting the 25 percent VOC limit was feasible, it had proven challenging and the reformulation required more time than expected. As a result, in a 2013 rulemaking, the Board approved a three-year extension for the 10 percent VOC limit for MPL products to December 31, 2018, to allow manufacturers additional time to reformulate products once again to meet the 10 percent VOC limit.

Staff has now conducted the Technical Assessment for the 10 percent by weight VOC limit. Below are staff's findings.

Technical Assessment

Requirements

Companies that sell MPL products in California were required to provide data to ARB as part of the Technical Assessment evaluation by March 31, 2017. Data reporting was mandatory for all responsible parties that sold MPL products subject to the VOC limit in California during calendar year 2016.

Industry was required to report company information, including contact information. If a third party formulator was used, third party formulator and formulator contact information was required. Companies were required to report information about current MPL products sold in California during calendar year 2016 and product data on products proposed to meet the future 10 percent VOC limit. A proposed product was defined as a product or formulation that was evaluated to meet the upcoming 10 percent by weight VOC limit.

Reporting companies were required to indicate if the product was in the research and development (R&D) process. If the product was not in R&D, an explanation was required (such as “already compliant,” “discontinued,” etc...). Formula information including ingredients that comprise at least 0.1 weight percent of the product, and the maximum incremental reactivity (MIR) value for each ingredient listed was required. Companies were also required to provide product attribute information and a summary of R&D costs for each product formula in the R&D process. Labels for each reported product were also required.

Results

Fifty-six companies reported MPL data (see Table I) representing a total of about four million pounds of product sold during calendar year 2016. The ten companies with the most sales collectively account for over 95 percent of the MPL market. Staff identified over 120 unique MPL formulas subject to the VOC limit that were reported as part of the Technical Assessment evaluation.

Staff analyzed the MPL data to determine the VOC content and reactivity of the products. Staff also determined the compliant market share and evaluated the readiness of the remaining market share to meet the 10 percent VOC limit. As part of the assessment, staff considered various options to provide manufacturers more flexibility to comply with the VOC requirements.

Broad product types in the MPL category include oils, aerosol greases, food-grade lubricants, and lubricants intended for multiple uses. Oils comprise less than two percent of the MPLs market; these lubricants have not been impacted by progressive implementation of VOC limits (see Table II).

It appears that some manufacturers reformulated their MPL products to comply with 10 percent VOC limit as part of their reformulation to meet the current 25 percent VOC limit. While the data show a number of formulations below the 10 percent VOC limit, these formulas command a relatively small fraction of the MPL market. Products meeting the 10 percent VOC limit currently make up about eight percent of MPL sales (including products reported as oils).

**Table I
List of Responding Companies**

Company	Company
3M Company	NCH Corporation
Aervoe Industries, Inc	Oatey
Albatross USA	Permatex
AMSOIL	Petro-Canada Lubricants Inc.
Atco International	PJH BRANDS
BG Products, Inc.	QuestSpecialty Corporation
Chase Products Co.	Radiator Specialty Company
CNH Industrial America LLC	Rainbow Technology Corporation
CPC Aeroscience, Inc.	Rust-Oleum Corporation
CRC Industries Inc.	Share Corporation
Cyclo Industries, Inc.	Sherwin-Williams
Ecolab, Inc.	Slide Products, Inc.
Finish Line Technologies, Inc.	Sprayway, Inc
Fiske Brothers Refining Company	Starbrite Inc
Ford Motor Company	State Industrial Products
General Motors Customer Care and Aftersales	STIHL Incorporated
Golden State Supply, LLC	Synco Chemical Corporation
Husqvarna	The Blaster Corporation
International Lubricants, Inc.	The Chemours Company
ITW Pro Brands	THE PENRAY COMPANIES, INC.
John Deere Merchandise, A Div. of John Deere Shared Services, Inc.	The Valspar Corporation
Justice Brothers	Thetford Corporation
Kimball Midwest	Toyota Motor Sales, USA
Lawson Products, Inc.	Warren Distribution, Inc.
LHB Industries	WD-40 Company
Lucas Oil Products Inc.	Wurth USA Inc.
Maxima Racing Oils	Yamaha Motor Corporation USA
MOC Products Company, Inc.	ZEP INC

Staff analyzed company R&D efforts undertaken to achieve the technology forcing 10 percent VOC limit and demonstrate their progress toward meeting this limit. The company updates included the results of the testing and the testing protocols in some cases; information about the raw materials used (using a much more expensive material in some cases); evaluations of the performance of the raw materials; MIR values for VOC or LVP-VOC ingredients evaluated or used; as well as the cost of reformulation efforts. A significant number of manufacturers indicated that despite their best efforts, the 10 percent VOC limit remains the most challenging and costly to comply with. Seventeen new proposed formulas were reported. However, they are still being tested, so the results are uncertain. Several companies expressed their concerns as to

the feasibility of achieving the 10 percent VOC limit and anticipate discontinuing product sales in California.

Staff evaluated the reactivity of MPL products using the formulation information reported by manufacturers. Reactivity refers to the quantification of how different types of compounds contribute to the formation of tropospheric ozone. Some compounds are considered very “reactive” while others are non-reactive or have negligible reactivity to form ozone. The impacts on ozone formation are quantified using the Maximum Incremental Reactivity (MIR) scale. This numeric scale was developed by Dr. William Carter at the University of California at Riverside and is based on modeling analyses and other data derived from smog chamber studies (Carter, 2010).

The Board has already adopted regulations of consumer products based on calculations of their relative ground-level ozone impacts. The Aerosol Coating Products Regulation limits the ozone formation potential (or reactivity) of all aerosol coating product emissions (title 17, CCR, sections 94520-94528). Tables of MIR Values have also been adopted to implement this Regulation.¹

In general, companies are meeting the 10 percent VOC limit by increasing the low vapor pressure VOC (LVP-VOC) content of these products. These compounds typically displace VOCs. In general, commonly used LVP-VOCs are slightly less reactive than commonly used VOCs in these products.

Analysis of the MPL data indicates that a significant number of formulations from several manufacturers already meet the 10 percent VOC limit. The analysis also shows that these formulations constitute a small percentage of the market. Staff’s review of the manufacturers’ efforts to reformulate MPL products to comply indicates that significant challenges remain in reformulating over 90 percent of the Multi-purpose Lubricant market.

Therefore, staff has concluded that providing a reactivity-based alternate compliance option to meet a reactivity limit would allow manufacturers additional flexibility to formulate products while preserving the air quality benefit already achieved by the mass-based VOC limit.

¹ Tables of MIR Values, title 17, CCR, Division 3, Chapter 1, Subchapter 8.6, Article 1, sections 94700-94701

Table II
Market Share of Multi-purpose Lubricant Product

Multi-purpose Lubricant Type	Sales Weighted Average VOC Weight Percent	Sales Weighted Product Weighted MIR	Number of Reported MPL Formulas	Number of Companies Reporting MPLs	Percent of Reported MPL Market Represented	Group Mass (lbs/yr)
MPL#	23.2	0.44	97	35	98.1	4,084,590
Oil	0.0	0.00	32	9	1.9	79,428
All	22.7	0.43	129	41	100.0	4,164,018

excludes oils

Staff calculated the product weighted maximum incremental reactivity (PWMIR) of the MPL products based on formulation information reported by companies as part of the Technical Assessment. This analysis of the ozone air quality impacts of the emissions from MPL products indicated that as a whole the category has a relatively low reactivity. As shown in Table II, products, which are oils, comprise two percent of the MPL market and have not needed to reformulate to meet progressively stringent VOC limits. Removing the oils, which are zero VOC zero MIR lubricant products provides a more complete view of the reformulation effort results. Once oils are excluded, the sales-weighted average PWMIR of current MPL products compliant with the 10 percent VOC limit is 0.49 grams of ozone per gram of product (see Table III). If that group is extended to include the MPL products compliant with the current 25 percent VOC limit, the sales-weighted average PWMIR of those products is 0.44 grams of ozone per gram of product. The proposed alternate compliance option would create a path to cap the reactivity of products at a level lower than that of the sales-weighted average reactivity of products currently compliant with the 10 percent VOC limit. Based on these results, staff developed the alternate compliance option such that that reformulating product to comply under the option would ensure that the ozone air quality benefits are maintained.

Table III
Product-Weighted Reactivity of
Multi-purpose Lubricant Product (Excluding Oils)

Multi-purpose Lubricant VOC Range	Sales Weighted Average VOC Weight Percent	Sales Weighted Product Weighted MIR	Number of Reported MPL Formulas	Number of Companies Reporting MPLs	Percent of Reported MPL Market Represented	Group Mass (lbs/yr)
0-10	0.6	0.49	37	10	6.3%	257,958
0-25	22.5	0.44	91	31	97.4	3,976,849
0-50	23.2	0.44	97	35	100.0	4,084,590

Summary

When the Board approved the technology forcing VOC limits for MPLs, it was understood that reformulation of products to meet the VOC limits, particularly the 10 percent VOC limit, would be a challenging undertaking. This expectation has been borne out. Nine years into implementation of these limits, nearly all MPLs now meet the 25 percent VOC limit; however, only about eight percent of product meets the 10 percent limit. In fact, many manufacturers have yet to develop formulations that comply with the 10 percent VOC limit while maintaining product functionality. Based on staff's review of the data, it is uncertain whether a significant portion of the market share could meet the 10 percent limit by the December 31, 2018 compliance deadline.

Staff's review of product reactivity reveals that, on a sales-weighted basis, the reactivity of MPL products meeting the 10 percent VOC limit is matched by that of product meeting the 25 percent limit. In view of reactivity considerations, one could say that the ozone air quality benefits of this regulation are being achieved ahead of schedule. In order to lock in these benefits while providing additional compliance flexibility to manufacturers, staff is considering amendments to the Consumer Products Regulation to include an alternate compliance option. This option will be based on a reactivity limit that would ensure air quality benefits equivalent to or better than those achieved by the products meeting the 10 percent VOC limit. Staff is also considering adding a restriction to prevent the use of high GWP compounds in multi-purpose lubricants.

Reference

Carter, W. P. L. "Development of the SAPRC-07 Chemical Mechanism and Updated Ozone Reactivity Scales." Report to the California Air Resources Board, Contracts No. 03-318, 06-408, and 07-730, Revised January 27, 2010 (Carter, 2010)