California Environmental Protection Agency

Air Resources Board

PUBLIC MEETING AGENDA

September 26, 2013

LOCATION:
Air Resources Board
Byron Sher Auditorium, Second Floor
1001 I Street
Sacramento, California 95814
http://www.calepa.ca.gov/EPAbldg/location.htm

This facility is accessible by public transit. For transit information, call (916) 321-BUSS, website: http://www.sacrt.com
(This facility is accessible to persons with disabilities.)

TO SUBMIT WRITTEN COMMENTS ON AN AGENDA ITEM IN ADVANCE OF THE MEETING GO TO: http://www.arb.ca.gov/lispub/comm/bclist.php

September 26, 2013
9:00 a.m.

CONSENT CALENDAR:

The following item on the consent calendar will be presented to the Board immediately after the start of the public meeting, unless removed from the consent calendar either upon a Board member's request or if someone in the audience wishes to speak on it.

Consent Item #

13-8-1: Public Meeting to Consider Appointment of a New Member to the Research Screening Committee

Staff will recommend the appointment of Dr. William Eisenstein to fill the vacancy left by the resignation of Dr. Charles Kolstad of the University of California, Santa Barbara. The Board's Research Screening Committee consists of scientists, engineers, and others who are knowledgeable, technically qualified, and experienced in air pollution research. Dr. Eisenstein is the Executive Director for the University of California, Berkeley's Center for Resource Efficient Communities.

DISCUSSION ITEMS:

Note: The following agenda items may be heard in a different order at the Board meeting.

Agenda Item #

13-8-2: Public Hearing to Consider Proposed Amendments to the Alternative Fuel Conversion Certification Procedures for On-Road Motor Vehicles and Engines

Staff will present to the Board proposed amendments to title 13, California Code of Regulations, Sections 2030 and 2031, the current alternative fuel certification procedures. Staff believes that the proposed changes are needed to update the existing alternative fuel conversion procedures and will meet industry requests to streamline alternative fuel certification requirements.

13-8-3: Public Hearing to Consider Proposed Amendments to the Antiperspirants and Deodorants Regulation; Consumer Products Regulation; Aerosol Coating Products Regulation; the Tables of Maximum Incremental Reactivity Values; Test Method 310, and Proposed Repeal of the Hairspray Credit Program

The primary purpose of the proposed amendments is to reduce the air quality impacts of emissions of volatile organic compounds (VOC) in consumer products and aerosol coatings. The proposed amendments also incorporate requirements for non-aerosol "multi-purpose solvents" and "paint thinners" sold in the South Coast Air Quality Management District (SCAQMD) needed to ensure that expected benefits from the SCAQMD rule are achieved. Repeal of the Hairspray Credit Program is also proposed because its usefulness has expired. Other amendments would clarify and streamline existing provisions, and incorporate additional testing procedures for multi-purpose solvents and paint thinners sold in the SCAQMD. The proposed amendments would reduce VOC emissions by 4 tons per day statewide.

13-8-5: Update to the Board on the Air Quality Improvement Program

Staff will update the Board on the funding status of the Air Quality Improvement Program (AQIP) and make recommendations for amendments to the approved Fiscal Year 2013-14 AQIP Funding Plan. The amendments include a proposal to transfer funding from demonstration projects and AQIP reserves to the AQIP truck loan program to better support consumer demand in that program.

CLOSED SESSION

The Board will hold a closed session, as authorized by Government Code section 11126(e), to confer with, and receive advice from, its legal counsel regarding the following pending or potential litigation, and as authorized by Government Code section 11126(a):

POET, LLC, et al. v. Goldstene, et al., Superior Court of California (Fresno County), Case No. 09CECG04850; plaintiffs' appeal, California Court of Appeal, Fifth District No. F064045.

Rocky Mountain Farmers Union, et al. v. Goldstene, U.S. District Court (E.D. Cal. Fresno), Case No. 1:09-CV-02234-LJO-DLB; interlocutory appeal, U.S. Court of Appeal, Ninth Circuit Nos. 09-CV-02234 and 10-CV-00163.

American Fuels and Petrochemical Manufacturing Associations, et al. v. Goldstene, et al., U.S. District Court (E.D. Cal. Fresno), Case No. 1:10-CV-00163-AWI-GSA; interlocutory appeal, U.S. Court of Appeal, Ninth Circuit, Case Nos. 09-CV-02234 and 10-CV-00163.

Association of Irritated Residents, et al. v. United States Environmental Protection Agency, 2011 WL 310357 (C.A.9), (Feb. 2, 2011).

California Dump Truck Owners Association v. California Air Resources Board, U.S. District Court (E.D. Cal. Sacramento), Case No. 2:11-CV-00384-MCE-GGH; plaintiffs' appeal, U.S. Court of Appeals, Ninth Circuit, Case No. 13-15175.

California Construction Trucking Association v. United States Environmental Protection Agency, U.S. Court of Appeals, Ninth Circuit, Case No. 13-70562.

Engine Manufacturers Association v. California Air Resources Board, Sacramento Superior Court, Case No. 34-2010-00082774.

Citizens Climate Lobby and Our Children's Earth Foundation v. California Air Resources Board, San Francisco Superior Court, Case No. CGC-12-519554, plaintiffs' appeal, California Court of Appeal, First District, No. A138830.

California Chamber of Commerce et al. v. California Air Resources Board, Sacramento Superior Court, Case 34-2012-80001313.

Morning Star Packing Company, et al. v. California Air Resources Board, et al., Sacramento Superior Court, Case No. 34-2013-800001464.

Delta Construction Company, et al. v. United States Environmental Protection Agency, U.S. Court of Appeals, District of Columbia Circuit, Case No. 11-1428.

City of Los Angeles through Department of Water and Power v. California Air Resources Board, et al., Los Angeles Superior Court, Case No. BS140620.

OPPORTUNITY FOR MEMBERS OF THE BOARD TO COMMENT ON MATTERS OF INTEREST

Board members may identify matters they would like to have noticed for consideration at future meetings and comment on topics of interest; no formal action on these topics will be taken without further notice.

OPEN SESSION TO PROVIDE AN OPPORTUNITY FOR MEMBERS OF THE PUBLIC TO ADDRESS THE BOARD ON SUBJECT MATTERS WITHIN THE JURISDICTION OF THE BOARD

Although no formal Board action may be taken, the Board is allowing an opportunity to interested members of the public to address the Board on items of interest that are within the Board's jurisdiction, but that do not specifically appear on the agenda. Each person will be allowed a maximum of three minutes to ensure that everyone has a chance to speak.

TO ELECTRONICALLY SUBMIT WRITTEN COMMENTS ON AN AGENDA ITEM IN ADVANCE OF THE MEETING GO TO:

http://www.arb.ca.gov/lispub/comm/bclist.php

(Note: not all agenda items are available for electronic submittals of written comments.)

ONLINE SIGN-UP:
You can sign up online in advance to speak at the Board meeting when you submit an electronic Board item comment. For more information go to:

http://www.arb.ca.gov/board/online-signup.htm

(Note: not all agenda items are available for online sign-up.)

IF YOU HAVE ANY QUESTIONS, PLEASE CONTACT THE CLERK OF THE BOARD:
1001 I Street, 23rd Floor, Sacramento, California 95814
(916) 322-5594
ARB Homepage: www.arb.ca.gov

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;
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- Una acomodación razonable relacionados con una incapacidad

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California Environmental Protection Agency

Air Resources Board

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TITLE 13. CALIFORNIA AIR RESOURCES BOARD

NOTICE OF PUBLIC HEARING TO CONSIDER PROPOSED AMENDMENTS TO THE ALTERNATIVE FUEL CONVERSION CERTIFICATION PROCEDURES FOR ON-ROAD MOTOR VEHICLES AND ENGINES

The Air Resources Board (ARB or Board) will conduct a public hearing at the time and place noted below to consider amendments to the Alternative Fuel Conversion Certification Procedures for On-Road Motor Vehicles and Engines.

DATE: September 26, 2013

TIME: 9:00 a.m.

PLACE: California Environmental Protection Agency
Air Resources Board
Byron Sher Auditorium
1001 I Street
Sacramento, California 95814

This item may be considered at a two-day meeting of the Board, which will commence at 9:00 a.m., September 26, 2013, and may continue at 8:30 a.m., on September 27, 2013. This item may not be considered until September 27, 2013. Please consult the agenda for the hearing, which will be available at least 10 days before September 26, 2013, to determine the day on which this item will be considered.

INFORMATIVE DIGEST OF PROPOSED ACTION AND POLICY STATEMENT OVERVIEW PURSUANT TO GOVERNMENT CODE 11346.5(a)(3)

Sections Affected: Proposed amendments to California Code of Regulations (CCR), title13, sections 2030 and 2031, including the incorporated by reference test procedure "California Certification and Installation Procedures for Alternative Fuel Retrofit Systems for Motor Vehicles Certified for 1994 and subsequent Model Years and for all Model Year Motor Vehicle Retrofit Systems Certified for Emission Reduction Credit" last amended November 21, 1995 and proposed new test procedure "California Certification and Installation Procedures for Alternative Fuel Retrofit Systems for On-Road Motor Vehicles and Engines," which would be incorporated by reference in CCR, title 13, sections 2030 and 2031.

Documents Incorporated by Reference:

The following documents are incorporated by reference in the proposed new test procedure "California Certification and Installation Procedures for Alternative Fuel Retrofit Systems for On-Road Motor Vehicles and Engines":

Code of Federal Regulations (40CFR), Part 86.1313-2007, dated July 01, 2011.

The American Society for Testing and Materials (ASTM) test method ASTM Test Method Number D1945-03(2010), referenced in 40 CFR, Part 86.1313-2007, dated July 01, 2011.

California Code of Regulations, Title 13 CCR § 2292.6, as amended December 08, 1999.

The following ASTM test methods incorporated by reference in Title 13, CCR, § 2292.6.

- ASTM Test Method Number D 2163-87, Standard Test Method for Analysis of Liquefied Petroleum (LP) Gases and Propene Concentrates by Gas Chromatography
- ASTM Test Method Number D 1267-89, Standard Test Method for Vapor Pressure of Liquefied Petroleum (LP) Gases (LP-Gas Method)
- ASTM Test Method Number D 2598-88, Standard Practice for Calculation of Certain Physical Properties of Liquefied Petroleum (LP) Gases from Compositional Analysis
- ASTM Test Method Number D1837-86, Standard Test Method for Volatility of Liquefied Petroleum (LP) Gases
- ASTM Test Method Number D 2158-89, Standard Test Method for Residues in Liquefied Petroleum (LP) Gases
- ASTM Test Method Number D1838-89, Standard Test Method for Copper Strip Corrosion by Liquefied Petroleum (LP) Gases
- ASTM Test Method Number D 2784-89, Standard Test Method for Sulfur in Liquefied Petroleum Gases (Oxy-Hydrogen Burner or Lamp)
- ASTM Test Method Number D 2713-86, Standard Test Method for Dryness of Propane (Valve Freeze Method)

U.S. Environmental Protection Agency (U.S.EPA) Advisory Circular 17F, dated November 16, 1982, updated January 21, 1988.

U.S. EPA National Vehicle and Fuel Emissions Laboratory guidance letter CD-12-07 (Revised) for Assigned Deterioration Factors, dated March 30, 2012.

ARB test procedure "California 2001 through 2014 Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2009 through 2016 Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles," as amended December 6, 2012.

ARB test procedure "California Non-Methane Organic Gas Test Procedures," as amended December 6, 2012.

ARB test procedure "California Exhaust Emission Standards and Test Procedures for 2005 through 2008 Model Zero-Emission Vehicles, and 2001 through 2008 Model Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes," as amended December 02, 2009, and incorporated by reference in title 13, CCR, § 1962.

ARB test procedure "California Exhaust Emission Standards and Test Procedures for 2009 through 2017 Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes," as amended December 6, 2012, and incorporated by reference in title 13, CCR, § 1962.1.

ARB test procedure "California Exhaust Emission Standards and Test Procedures for 2018 and Subsequent Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes," adopted March 22, 2012, as last amended December 6, 2012, and incorporated by reference in title 13, CCR, § 1962.2.

ARB test procedure "California 2001 through 2014 Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2009 through 2016 Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles," as amended December 6, 2012, and incorporated by reference in title 13, CCR, § 1961(d).

ARB test procedure "California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles," as amended December 6, 2012.

ARB test procedure "California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles" adopted August 5, 1999, as last amended March 22, 2012, and incorporated by reference in title 13, CCR, § 1976(c).

ARB test procedure "California Refueling Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles," adopted August 5, 1999, as amended March 22, 2012, and incorporated by reference in title 13, CCR, § 1978(b).

ARB test procedure "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel-Engines and Vehicles," as amended April 18, 2013.

ARB certification procedure "California Interim Certification Procedures for 2004 and Subsequent Model Hybrid-Electric Vehicles, in the Urban Bus and Heavy-Duty Vehicle Classes," adopted October 24, 2002.

The ARB test procedures for determining compliance with standards in title 13, CCR, § 1956.8(c)(1)(A) or (c)(1)(B) are set forth in the "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Otto-Cycle Engines," as amended April 18, 2013.

Background and Effect of the Proposed Rulemaking:

The increased market availability of low priced natural gas has resulted in more interest in converting light-, medium-, and heavy-duty vehicles and engines to operate on compressed natural gas and liquefied petroleum gas. The California Natural Gas

Vehicle Coalition and other alternative fuel advocates have requested that ARB update its current regulation governing alternative fuel conversion certification procedures for on-road motor vehicle retrofits, for both new and used vehicles and engines. Specific requests include: simplifying the application and approval process, providing additional time to sell conversions as "new" vehicles or engines, adding flexibility to the alternative fuel certification requirements, and streamlining the testing and demonstration requirements to allow small volume conversion manufacturers to demonstrate compliance in less time and at a lower cost.

Staff believes that providing the additional flexibility requested by industry is warranted, and is therefore proposing to amend the current alternative fuel conversion certification procedures. The proposed amendments would retain testing and demonstration requirements for the most important components of emission control systems and would waive many of the test requirements for small volume conversion manufacturers provided they can demonstrate that their alternate fuel conversion systems do not significantly alter vehicles or engines previously certified in California. The proposed amendments would also provide alternative fuel conversion manufacturers options to demonstrate compliance with requirements, and would expressly specify that approved alternative fuel conversions are effective indefinitely, provided the approved conversion system is not significantly modified from its approved configuration. Finally, the proposed amendments would allow a manufacturer to request and be issued an Executive Order prior to completing the on-board diagnostic (OBD) system demonstrations if the manufacturer is seeking to certify its conversion system to a more stringent vehicle or engine emissions standard. Staff believes that these proposed changes will meet industry requests while preserving emissions benefits.

Objectives and Benefits:

The current requirements for obtaining ARB certification of alternative fuel conversion systems for on-road motor vehicles and motor vehicle engines were last substantively amended in 1995, and consequently do not incorporate the more stringent low emission vehicle standards (LEV II and LEV III) standards adopted by the Board since 1995.

In addition, the United States Environmental Protection Agency (U.S. EPA) recently finalized regulations for certifying alternative fuel conversion systems in on-road motor vehicles that provide converters streamlined testing and administrative requirements, including providing small volume conversion manufacturers additional flexibility from certain testing requirements.

Staff believes that the proposed amendments to existing regulations will similarly establish streamlined requirements for manufacturers of alternative fuel conversion systems, and that such amendments are needed because current demonstration requirements for certification of alternative fuel conversions are relatively time consuming and costly, which could create barriers for small volume conversion manufacturers to bring their product to market. The aim of the modifications is to reduce costs and time required to bring the conversion systems to market while preserving emissions benefits. The proposed changes will also create a single process for

certifying an alternative fuel retrofit system, which would reduce the upfront demonstration requirements and allow systems to be sold sooner than under the current process.

Staff developed the proposed amendments through an extensive public process in less than a year. This included three public workshops and multiple workgroup meetings and teleconference calls with stakeholders. At all workshops and meetings, staff solicited comments from stakeholders and affected industry to develop staff's current proposals.

CONSISTENCY AND COMPATIBILITY WITH EXISTING STATE REGULATIONS

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

COMPARABLE FEDERAL REGULATIONS

The U.S. EPA recently adopted changes to their procedures used to approve vehicles and engines that have been converted to operate on alternative fuels such as natural gas or propane (Clean Alternative Fuel Vehicle and Engine Conversions, 2011).

California has more severe air quality problems than most other states and currently does not meet federal air quality standards. California also has lower emissions standards for light-duty vehicles and will need to ensure that conversions to alternative fuel still achieve the expected emissions reductions. The newly adopted federal regulations provide a mechanism by which an Alternative Fuel Converter can attain an EPA exemption from the tampering prohibition in the Clean Air Act 2010 (CAA § 203). ARB's proposed changes will provide an additional level of assurance that alternative fuel conversion vehicles will not increase emissions, commensurate with the greater assurance needed of our programs.

Primarily, the federal program does not require small volume manufacturers to: (1) demonstrate durability and (2) demonstrate that once the conversion is conducted the OBD system meets the emission thresholds or malfunction criteria specified in the OBD regulations. For example, the federal program allows the use of a modified new catalyst for OBD demonstration testing whereas ARB requires a laboratory aged catalyst, which is representative of how catalysts deteriorate and malfunction in use.

Additionally, the federal program has less stringent requirements for conversions of older vehicles. For emission compliance, an alternative conversion manufacturer needs to provide emissions test data for vehicles within their useful life and a technical description, supported by test data on request, for vehicles outside their useful life that shows that the base vehicle emissions will be maintained. For in-use vehicles, the federal program only requires the manufacturer to attest that the OBD system is fully functional and provide a report on the OBD scanning tool without demonstrating the system performs as stated.

Full citation of the federal regulation is "Clean Alternative Fuel Vehicle and Engine Conversions." 40 CFR parts 85 and 86 (2011).

Moreover, existing state law requires that ARB certify alternative fuel retrofit systems before they can be sold or installed in motor vehicles and motor vehicle engines.

STATE IMPLEMENTATION PLAN REVISION

If adopted by ARB, ARB plans to submit the proposed regulatory action to U.S. EPA for approval as a revision to the California State Implementation Plan (SIP) required by the federal Clean Air Act (CAA). The adopted regulatory action would be submitted as a SIP revision because it amends regulations intended to reduce emissions of air pollutants in order to attain and maintain the National Ambient Air Quality Standards promulgated by U.S. EPA pursuant to the CAA.

AVAILABILITY OF DOCUMENTS AND AGENCY CONTACT PERSONS

ARB 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: Proposed Amendments to Alternative Fuel Conversion Certification Procedures.

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 ARB'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, (916) 322-2990, on August 7, 2013.

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 ARB's website listed below.

Agency Contact Persons

Inquiries concerning the substance of the proposed regulation may be directed to the designated agency contact persons, Mr. Craig Duehring at (916) 323-2361or Ms. Sara Dastoum at (916) 323-1696.

The agency representative for nonsubstantive inquiries concerning the proposed administrative action is Ms. Trini Balcazar, Regulations Coordinator, (916) 445-9564. 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.

Internet Access

This notice, the ISOR and all subsequent regulatory documents, including the FSOR, when completed, are available on ARB's website for this rulemaking at http://www.arb.ca.gov/regact/2013/altfuel2013/altfuel2013.htm

ARB maintains a website pertaining to the Proposed Amendments to the Alternative Fuel Conversion Certification of New and In-Use Vehicles and Engines, where people can obtain information on activities and workshops, as well as copies of notices, presentations, and other written materials and electronic files. http://www.arb.ca.gov/msprog/onroad/altfuelconv/altfuelconv.htm

DISCLOSURES REGARDING THE PROPOSED REGULATION

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

Fiscal Impact / Local Mandate

Pursuant to Government Code sections 11346.5(a)(5) and 11346.5(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 pursuant to Government Code, title 2, division 4, part 7 (commencing with section 17500), or other nondiscretionary cost or savings to State or local agencies.

Significant Statewide Adverse Economic Impact Directly Affecting Business, Inluding Ability to Compete

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.

Cost Impacts on Representative Private Persons or Businesses

In developing this regulatory proposal, ARB staff evaluated the potential economic impacts on representative private persons or businesses. ARB is not aware of any cost impacts that a representative private person or business would necessarily incur in reasonable compliance with the proposed action.

Statement of the Results of the Economic Impact Assessment Prepared Pursuant to Government Code Section 11346.3(b)

Effect on Jobs/Businesses:

The Executive Officer has determined that the proposed regulatory action would 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. A detailed assessment of the economic impacts of the proposed regulatory action can be found in the ISOR.

Benefits of the Proposed Regulation:

The objective of the proposed amendments is to reduce the costs and time required to bring conversion systems to market while preserving emission benefits which may ultimately benefit California's air quality. A summary of these benefits is provided, please refer to "Objectives and Benefits", under the Informative Digest Proposed Action and Policy Statement Overview Pursuant to Government Code 11346.5(a)(3) discussion.

A detailed assessment of the economic impacts of the proposed regulatory action can be found in the Economic Impact Analysis in the ISOR.

Effect on Small Business

The Executive Officer has also determined, pursuant to California Code of Regulations, title 1, section 4, that the proposed regulatory action would affect small businesses. A detailed assessment of the economic impacts of the proposed regulatory action can be found in the ISOR.

Housing Costs

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

Business Reports

In accordance with Government Code sections 11346.3(c) and 11346.5(a)(11), the Executive Officer has found that the reporting requirements of the regulation which apply to businesses are necessary for the health, safety, and welfare of the people of the State of California.

Alternatives

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 (which includes during preliminary workshop activities), would be more effective in carrying out the purpose for which the action is proposed, or 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.

Environmental Analysis

In accordance with ARB's certified regulatory program, CCR, title 17, sections 60006 through 60007, and the California Environmental Quality Act, Public Resources Code section 21080.5, ARB has conducted an analysis of the potential for significant adverse and beneficial environmental impacts associated with the proposed regulatory action. The environmental analysis of the proposed regulatory action can be found in Chapter V of the ISOR.

WRITTEN COMMENT PERIOD AND SUBMITTAL OF COMMENTS

Interested members of the public may present comments orally or in writing at the meeting and may provide comments by postal mail or by electronic submittal before the meeting. The public comment period for this regulatory action will begin on August 12, 2013. To be considered by the Board, written comments not physically submitted at the meeting, must be submitted on or after August 12, 2013 and received no later than 12:00 noon on September 25, 2013, and must be addressed to the following:

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

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

You can sign up online in advance to speak at the Board meeting when you submit an electronic board item comment. For more information go to: http://www.arb.ca.gov/board/online-signup.htm.

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.

ARB requests that written and email statements on this item be filed at least 10 days prior to the hearing so that ARB staff and Board members have additional time to consider each comment. The Board 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.

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 Health and Safety Code, sections 39515, 39600, 39601, and 43006. This action is proposed to implement, interpret, and make specific sections 2030 and 2031 of the CCR.

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 adopt the regulatory language as originally proposed, or with non-substantial or grammatical modifications. The Board may also adopt 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; in such event, the full regulatory text, with the modifications clearly indicated, will be made available to the public, for written comment, at least 15-days before it is adopted.

The public may request a copy of the modified regulatory text from ARB's Public Information Office, Air Resources Board, 1001 I Street, Visitors and Environmental Services Center, First Floor, Sacramento, California, 95814, (916) 322-2990.

SPECIAL ACCOMMODATION REQUEST

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CALIFORNIA AIR RESOURCES BOARD

/s/
Richard W. Corey
Executive Officer

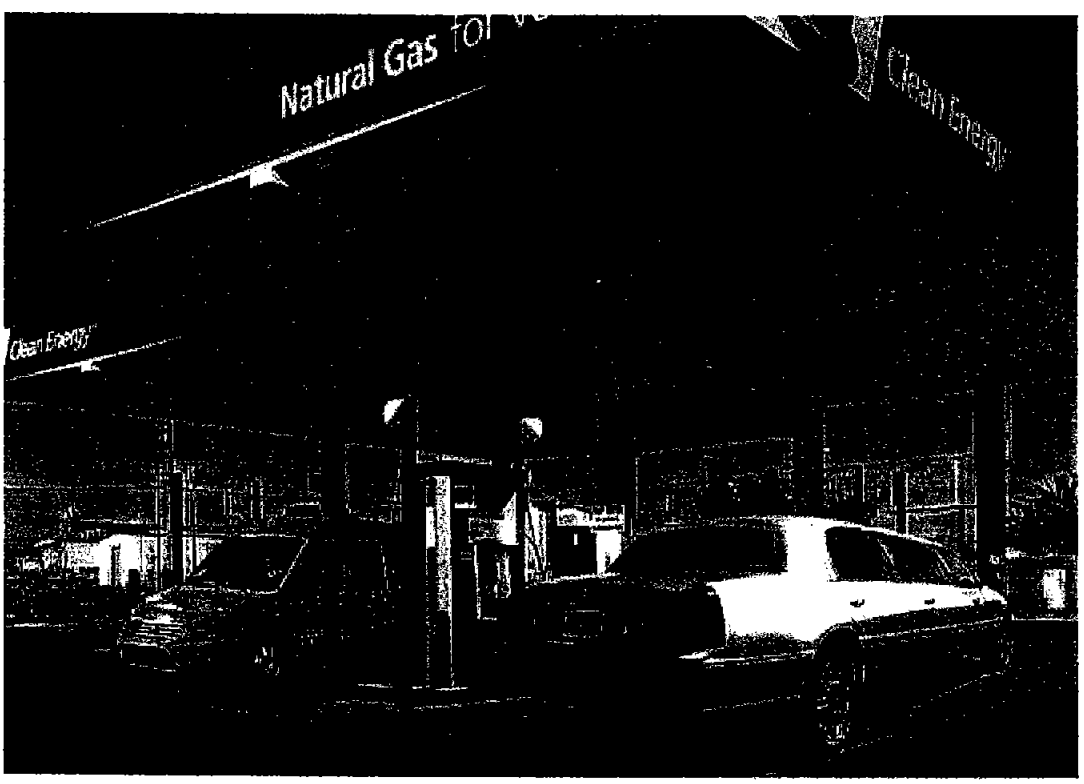
Date: July 30, 2013

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our website at www.arb.ca.gov.

State of California
AIR RESOURCES BOARD

STAFF REPORT: INITIAL STATEMENT OF REASONS FOR RULEMAKING

PROPOSED AMENDMENTS TO ALTERNATIVE FUEL CONVERSION CERTIFICATION PROCEDURES



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EXECUTIVE SUMMARY

Due to the increased availability of affordable natural gas, the California Natural Gas Vehicle Coalition and other alternative fuel advocates have requested that the California Air Resources Board (ARB) update its current regulation governing alternative fuel conversion certification procedures for on-road motor vehicles and engines. Industry is requesting that ARB provide small volume conversion manufacturers a more streamlined process for obtaining retrofit certification, and to incorporate changes to make the approval process more similar to that of the United States Environmental Protection Agency (U.S. EPA).

Staff held three public workshops (August 2012, January 2013, and May 2013) and worked cooperatively with industry through workgroup meetings. At all workshops and meetings, staff solicited comments from stakeholders and affected industry to develop staff's current proposals. Staff believes that providing the additional flexibility for a limited period of time can be accomplished without significantly risking the emission performance of the converted motor vehicle or engine.

ARB is, therefore, proposing to amend the current alternative fuel conversion certification procedures for motor vehicles and engines. Staff's proposed changes allow small volume conversion manufacturers to reduce the upfront demonstration requirements and allow systems to be sold sooner with lower certification costs than with the current process.

In summary, the proposed amendments would allow small volume conversion manufacturers:

- to request waivers for certain testing and demonstration
- to add options in making required demonstrations
- to request a conditional Executive Orders when streamlined demonstrations cannot be used
- to permit conversion systems that are approved with new vehicle testing to be sold for used vehicle conversions

Staff is proposing to sunset many of the changes for the 2018 model year because such changes may not be appropriate when lower emission standards take effect for new vehicles and engines.

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I. INTRODUCTION AND BACKGROUND

The increased market availability of low priced natural gas has resulted in more interest in converting light-, medium-, and heavy-duty vehicles and engines to operate on compressed natural gas (CNG) and liquefied petroleum gas (LPG). In addition, the U.S. Environmental Protection Agency (U.S. EPA) recently finalized regulations for certifying alternative fuel conversion systems for on-road motor vehicles and engines that provide conversion manufacturers streamlined certification process requirements and additionally provide small volume conversion manufacturers further testing flexibility[1]. For these reasons, the California Natural Gas Vehicle Coalition and other alternative fuel advocates have requested that the Air Resources Board (ARB or Board) update its current regulation governing alternative fuel conversion certification procedures for on- road motor vehicle retrofits for both new and used vehicles and engines.[2,3] Specific requests include: simplifying the application and approval process, providing additional time to sell conversions as "new"[4] vehicles or engines, adding flexibility to the alternative fuel certification requirements, and streamlining the testing and demonstration requirements to allow small volume alternative fuel conversion manufacturers to demonstrate compliance in less time and at a lower cost.

Staff believes that providing the additional flexibility requested by small volume alternative fuel conversion manufacturers can be accomplished without significantly risking the emission performance of the converted vehicles and engines, and is therefore proposing to amend the current alternative fuel conversion certification procedures. Staff is proposing changes to sections 2030 and 2031, title 13, of the California Code of Regulations (CCR), that apply to motor vehicle conversions to use fuels other than the original certification fuels and incorporating a new test procedure titled "California Certification and Installation Procedures for Alternative Fuel Retrofit Systems for On-Road Motor Vehicles and Engines" for 2004 and newer vehicles and engines. Staff believes that the original manufacturers of vehicles and engines have designed and demonstrated robust emissions control systems and adequately demonstrated compliance with applicable emissions standards and other certification requirements for the useful life of the vehicles and engines. The proposed amendments will allow the alternative fuel conversion manufacturers to "piggyback" on the original manufacturers' efforts and focus on only the emissions impacts of their retrofit systems. The proposed amendments would retain the OBD testing and demonstration of the

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[1] Clean Alternative Fuel Vehicle and Engine Conversions; Final Rule; 40CFR Parts 85 and 86; 76 Fed. Reg. 19830-19874 (April 8, 2011).

[2] Natural Gas Coalition Letter to ARB; March 8, 2013; Re: CARB's Alternative Fuel Vehicle Conversion Certification Program.

[3] Alternative Fuels Advocates, LLC Letter to ARB; August 2, 2012; Re: Streamlining of Certain Natural Gas / Propane Vehicle and Engine Certification Procedures.

[4] The proposed amendments are only applicable to alternative fuel conversion systems designed for and installed in in-use on-road motor vehicles and engines. This Staff Report utilizes the term "relatively new" to refer to motor vehicles and engines that are converted shortly after their legal or equitable title has already transferred to an ultimate purchaser, but staff wishes to expressly clarify that the term "relatively new" is not and should not be construed as equivalent to the terms "new motor vehicle" or "new motor vehicle engine" as defined in Health and Safety Code sections 39042 or 39042.5.

catalyst system, the fuel system at the rich and lean limits, and the exhaust gas sensors of the emissions control system. The proposed amendments would also waive many test requirements if no significant changes are made to the original vehicle and provide more flexibility in how the required demonstrations are made. Staff is proposing to sunset many of the changes for the 2018 model year because such changes may not be appropriate when lower emission standards take effect for new vehicles and engines.

Staff is also proposing an expedited approval provision so that an alternative fuel conversion manufacturer that obtains a new vehicle or engine certification from ARB may request certification of an alternative fuel retrofit system for in-use vehicles that is identical in configuration to the fuel system in the newly certified vehicle or engine.

Staff believes that these proposed changes will meet industry requests while also adequately ensuring that the emissions from converted vehicles and engines will not exceed the emissions standards applicable to the original vehicles and engines.

A. Background and Legal Authority

California law requires new motor vehicles and engines, as well as aftermarket parts and aftermarket alternate fuel conversion systems, to be certified by ARB for emission compliance before they are legal for sale, use, or registration in California. New vehicle and engine certification is granted annually for vehicle families and individual engine families and is valid for one model year. In contrast, aftermarket parts certification is valid indefinitely unless modifications are made to such part. California Health and Safety (H&S) Code section 39038 defines "model year" consistent with the federal Clean Air Act as "the manufacturer's annual production period which includes January 1 of a calendar year or, if the manufacturer has no annual production period, the calendar year."

New Motor Vehicle Certification Requirements

New motor vehicles may not be imported, delivered, purchased, rented, leased, acquired, received, offered for sale, sold, or registered for use in California unless they have first been certified by ARB. Certification is a finding by ARB that a motor vehicle has satisfied criteria adopted by ARB for the control of specified air contaminants from vehicular sources, and such criteria are set forth in regulations and associated test procedures that ARB has promulgated pursuant to the statutory authority of H&S Code sections 43100 *et seq.*

The requirements associated with obtaining a new vehicle certification require a manufacturer to demonstrate that its new motor vehicle complies with applicable exhaust and evaporative emissions standards over its useful life, and to also comply with other requirements, such as labeling and emissions warranty requirements. Only after a manufacturer obtains a new vehicle certification from ARB can it legally place new vehicles that are covered by that certification into commerce in California.

California law distinguishes a new motor vehicle from a used motor vehicle based on whether the equitable or legal title to that vehicle has been transferred to an "ultimate purchaser" (H&S Code section 39042). An "ultimate purchaser" is the first person who in good faith purchases a new motor vehicle or new motor vehicle engine for purposes other than resale (H&S Code section 39055.5).

The statutory scheme described above requires that new motor vehicles and engines that are modified to operate on alternative fuels before their titles are transferred to ultimate purchasers must be certified by the modifying entity under California's new motor vehicle certification regulations.

New vehicle and engine certification requirements include, but are not limited to, the following:

- Submit an application for certification
- Demonstrate the new vehicle/engines complies with applicable emission standards when tested in conformance with specified test procedures
- Demonstrate durability for the useful life
- Meet the applicable labeling requirements
- Provide emissions warranty to the ultimate purchaser
- Demonstrate compliance with on-board diagnostics (OBD) system requirements

When an applicant requests certification of a new vehicle/engine that has been converted to operate on an alternative fuel, an Executive Order is issued, upon approval, by ARB for the entire vehicle or engine and authorizes the sale of the converted engine or vehicle as new vehicle for the model year. The converter is treated the same as if they are the original manufacturer of the vehicle or engine.

The applicable standards and test procedures from the CCR for new vehicle and engine certification can be found in Table I-1.

Table I-1: Standards and Test Procedures for New Vehicle and Engine Certification

Code	Title
13 CCR § 1956.8	Exhaust Emission Standards and Test Procedures – 1985 and Subsequent Model Heavy-Duty Engines and Vehicles
13 CCR § 1961	Exhaust Emission Standards and Test Procedures – 2004 through 2019 Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles
13 CCR § 1961.1	Greenhouse Gas Exhaust Emission Standards and Test Procedures – 2009 through 2016 Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles
13 CCR § 1961.2	Exhaust Emission Standards and Test Procedures – 2015 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles
13 CCR § 1961.3	Greenhouse Gas Exhaust Emission Standards and Test Procedures – 2017 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles.
13 CCR § 1965	Emission Control and Smog Index Labels – 1979 and Subsequent Model-Year Motor Vehicles.
13 CCR § 1976	Standards and Test Procedures for Motor Vehicle Fuel Evaporative Emissions
13 CCR § 1968.2	Malfunction and Diagnostic System Requirements – 2004 and Subsequent Model-Year Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles and Engines
13 CCR § 1971	Engine Manufacturer Diagnostic System Requirements – 2007 and Subsequent Model-Year Heavy-Duty Engines
13 CCR § 1971.1	On-Board Diagnostic System Requirements – 2010 and Subsequent Model-Year Heavy-Duty Engines
13 CCR § 2035 through 2042	Motor Vehicle and Motor Vehicle Engine Emission Control System Warranty.
13 CCR § 2062	Assembly-Line Test Procedures – 1998 and Subsequent Model Years.
13 CCR § 2235	Specifications for Fill Pipes and Openings of Motor Vehicle Fuel Tanks.

Alternative Fuel Conversions of In-Use Vehicles

Once the equitable or legal title to a certified on-road motor vehicle has been transferred to an ultimate purchaser, the vehicle may only be operated if its certified emission control system is correctly installed and operating, and no one may install, sell, offer for sale, or advertise any device, apparatus, or mechanism that alters or modifies the original design or performance of that emission control system unless that device, apparatus or mechanism has been exempted by ARB. The conversion of motor vehicles/engines to operate on fuels other than the fuels for which the vehicles were originally certified constitutes modifications to required emission control systems. ARB is authorized to only exempt modifications to a certified configuration if it finds the modifications will not reduce the effectiveness of required motor vehicle pollution control devices or cause the emissions from the modified or altered vehicle to exceed applicable emissions standards for the model-year of the vehicle being modified or converted. As discussed in more detail below, ARB is specifically authorized to certify alternative fuel conversion systems, and has promulgated regulations applicable to such conversion systems in Title 13, CCR sections 2030 and 2031. However, these regulations were last substantively amended in 1995.

Alternative fuel conversions of in-use vehicles/engines are subject to the following requirements:

- Demonstrate compliance with applicable vehicle or engine certification emission standards or more stringent standards
- Certification based on engine family or test group and model year
- Demonstrate compliance with durability requirements
- Supplemental emission control information label
- Manufacturer's and installer's warranty
- Evaluation of impact on auxiliary emission control devices
- Demonstrate compliance with OBD system requirements
- Installation inspection
- In-use enforcement testing

When ARB approves a manufacturer's alternative fuel conversion system certification application, ARB issues an Executive Order that details the emissions standards the alternative fuel retrofit system was certified to, and the models that obtained certification within the test group or engine family. The Executive Order allows the approved alternate fuel conversion system to be legally sold and installed in vehicles within California.

The certification and installation procedures for alternative fuel retrofit systems for in-use vehicles and engines are set forth in Table I-2.

Table I-2: Certification and Installation Procedures for Alternative Fuel Retrofit Systems for In-Use Vehicles and Engines

Code/Procedure	Title
13 CCR § 2030	Liquefied Petroleum Gas or Natural Gas Retrofit Systems
13 CCR § 2031	Alcohol or Alcohol/Gasoline Fuels Retrofit Systems
Associated Test Procedures	California Certification and Installation Procedures for Alternative Fuel Retrofit Systems for Motor Vehicles Certified for 1994 and Subsequent Model Years and for All Model Year Motor Vehicle Retrofit Systems Certified for Emission Reduction Credit
	California Exhaust Emission Standards and Test Procedures for Systems Designed to Convert Motor Vehicles Certified for 1993 and Earlier Model Years to Use Liquefied Petroleum Gas or Natural Gas Fuels
	California Exhaust Emission Standards and Test Procedures for Systems Designed to Convert Motor Vehicles Certified for 1993 and Earlier Model Years to Use Alcohol or Alcohol/Gasoline Fuels

Statutory Authority

California law authorizes ARB to certify alternative fuel conversion systems for motor vehicles. H&S Code section 43018(a) directs the Board to endeavor to achieve the maximum degree of emission reduction possible from vehicular and other mobile sources in order to accomplish the attainment of state air quality standards at the earliest practicable date. H&S Code section 43018(c) provides that in carrying out section 43018(a), the Board is to adopt standards and regulations that will result in the most cost-effective combination of controls to achieve reductions in motor vehicle exhaust and evaporative emissions.

In addition to the general directive to adopt emission standards for motor vehicles as specified in H&S Code section 43018(c), the Board is further directed to consider methods for reducing emissions specifically from heavy-duty diesel motor vehicles. H&S Code sections 43701(b) and (c) provide that ARB shall adopt emission standards and procedures for the qualification of equipment used to reduce emissions from existing heavy-duty diesel motor vehicles.

Vehicle Code section 27156 contains provisions to ensure that modifications to certified vehicles do not increase emissions, and provides that no device, apparatus, or mechanism that alters or modifies the original design or performance of a required motor vehicle emission control system can be advertised, sold, or installed unless that device, apparatus or mechanism has been exempted by ARB. ARB is authorized to only exempt modifications to a certified configuration if it finds the modifications will

either not reduce the effectiveness of any required motor vehicle pollution control device or device or will not cause emissions from the converted vehicle to exceed applicable standards.

H&S Code section 43004 provides that the exhaust emission standards applicable to gasoline-powered motor vehicles shall also apply to gasoline- or diesel-powered vehicles to use fuels other than the fuel for which the vehicle was originally certified. H&S Code section 43006 authorizes the Board to adopt test procedures for certifying alternative fuel conversion systems.

II. STATEMENT OF REASONS

A. Description of Problem the Proposal Is Intended To Address

The increased market availability of low priced natural gas has resulted in more interest in converting light-, medium-, and heavy-duty vehicles and engines to operate on CNG and LPG. In addition, the U.S. EPA recently finalized regulations for certifying alternative fuel conversion systems for on-road motor vehicles and engines that establish streamlined certification procedures and provide small volume conversion manufacturers additional testing flexibility. The current requirements for obtaining ARB certification of alternative fuel conversion systems for on-road motor vehicles and motor vehicle engines were last substantively amended in 1995, and consequently do not incorporate the more stringent low emission vehicle standards (LEV II and LEV III) adopted by the Board since 1995. Moreover, the California Natural Gas Vehicle Coalition and other alternative fuel advocates have requested that ARB modify the existing certification procedures for alternative fuel retrofit systems for on road motor vehicle vehicles to simplify and streamline the requirements needed to obtain approval for such systems, extend the life of the approval, and lower costs.

As previously discussed in Section I of this report, the current process for certifying a new vehicle or engine is distinct from the process for certifying an alternative fuel conversion system and currently requires additional testing and a second certification to sell the conversion system as a kit for in-use vehicles.

Either certification process can be time consuming and costly, especially for small volume conversion manufacturers with limited engineering resources and limited access to vehicle programming by original equipment manufacturers. The existing regulations require manufacturers to provide test data and demonstrate that emission levels will not exceed applicable certification standards over the useful life of the vehicle. This requires accelerated aging of the vehicle/engine and its emission control components. In addition, manufacturers must demonstrate that all OBD monitors have been properly recalibrated to function correctly with the alternative fuel. Demonstration of OBD compliance and durability of emission control requirements for certification of alternative fuel conversions can be costly, complex, and time consuming. Staff estimates that this process can take up to 6 months and cost up to $170,000 for a new vehicle certification (see table VII-1).

Additionally, the test fuel required under the current regulatory process must meet stringent standards in purity. The cost of obtaining certified test fuel can exceed $100 per gasoline gallon equivalent.

For many alternative fuel conversion manufacturers that seek certification for a new vehicle or engine, their design and development effort begins upon introduction of a new subject vehicle into the market place. Certain alternative conversion manufacturers have established relations with the original vehicle manufacturers allowing them access to critical engine and emission control information prior to vehicle or engine introduction.

These conversion manufacturers may have timing and cost advantages. When an applicant requests certification of a new vehicle/engine that has been converted to operate on an alternative fuel, an Executive Order is issued, upon approval, by ARB for that new vehicle or engine and authorizes the conversions of the new vehicles for no longer than one model year. This current process is constrained to the time available to complete the conversions for that given model year. These factors may present barriers to small volume conversion manufacturers who may consequently choose not to sell their products in California (U.S. EPA's less stringent procedures and more streamlined process applies outside of California which minimizes factors discussed here) because of the narrow window of opportunity (i.e., the model year) to acquire a new vehicle, engineer it for compliance on the alternative fuel and complete certification.

In addition, an alternative fuel conversion manufacturer that obtains a new vehicle or engine certification must reapply for an in-use vehicle or engine certification to obtain approval to sell the identical conversion system as an aftermarket retrofit kit. Therefore, upon receiving a new vehicle or engine alternative fuel conversion certification, in-use or aftermarket certification for the identical conversion system requires a separate application and may also include additional requirements. These separate processes exist because of different authority over new certification versus in-use certification.

B. Proposed Solutions to the Problem

Staff is proposing to update the current requirements for obtaining ARB certification of alternative fuel conversion systems for on-road motor vehicles and motor vehicle engines. Staff is proposing changes to title 13, CCR, sections 2030 and 2031 (see Appendix A) that apply to converting motor vehicles to use fuels other than the original certification and incorporating a new test procedure for 2004 and newer vehicles and engines. Staff chose the 2004 model year because this is the first applicable model year for the most recent OBD regulation found in title 13, CCR section1968.2. The proposed amendments would modify the existing test procedure to apply to 1994 through 2003 model year motor vehicles and engines (see Appendix B) and add a new test procedure to apply to 2004 and subsequent model year motor vehicles and engines (see Appendix C). The proposed amendments will allow alternative fuel conversion system manufacturers to obtain certifications for "relatively new" and used vehicles and engines by using the proposed new test procedures titled "California Certification and Installation Procedures for Alternative Fuel Retrofit Systems for On-Road Motor Vehicles and Engines." (Appendix C) This report utilizes the term "relatively new" to refer to motor vehicles and engines that are converted shortly after their legal or equitable title has already transferred to an ultimate purchaser, but staff wishes to expressly clarify that the term "relatively new" is not and should not be construed as equivalent to the terms "new motor vehicle" or "new motor vehicle engine" as defined in Health and Safety Code sections 39042 or 39042.5.

The proposed amendments would change the current approval process to allow an alternative fuel retrofit manufacturer to offer for sale an alternate fuel retrofit system that is designed to be installed on a "relatively new" vehicle once its title is transferred to an

ultimate purchaser. Therefore, a consumer who purchases a new vehicle could potentially also purchase an alternative fuel conversion system for that vehicle on the same purchase order or contract. This would enable retrofit system manufacturers to market their systems at local new vehicle dealerships and would allow the consumer to order a new vehicle or engine that is converted to operate on an alternative fuel, before taking possession of the vehicle, provided the vehicle's legal or equitable title has transferred to the consumer. The consumer would also be able to purchase the new vehicle or engine and then purchase the retrofit conversion system at a later date from another supplier. Additionally, the alternative fuel retrofit conversion system would not have an expiration date, so the alternative fuel retrofit manufacturer can continue to market the conversion system for in-use vehicle/engines.

Staff is proposing changes to streamline the emissions testing requirements and the OBD testing and demonstration requirements. Some of these changes will affect all conversion manufacturers but most will affect small volume conversion manufacturers.

The proposed changes to the emissions testing requirements would allow alternative fuel conversion manufacturers of retrofit systems with sealed fuel systems to obtain a waiver from the evaporative testing requirements. In response to industry's request, staff is proposing to adopt U.S. EPA's multiplier of 1.5 times the measured NMHC emissions to determine compliance with NMOG, instead of the current test requirements, for both CNG and LPG. The changes will also allow conversion manufacturers of a dual fuel system to apply for a test waiver to eliminate repeating the emissions testing on the original fuel if the original emissions control system is not compromised. Staff is also proposing to allow the small volume conversion manufacturers to use assigned deterioration factors (DF) provided by ARB or U.S. EPA to determine compliance with useful life emissions testing instead requiring high mileage emission tests.

For heavy-duty engines and vehicles that were originally certified under an engine-dynamometer test procedure, staff is proposing to allow applicants to request alternative test methods that do not require dynamometer testing for demonstrating the conversion system does not increase emissions compared to the original engine.

For OBD requirements, the proposed amendments would retain the OBD testing and demonstration of the catalyst system, the fuel system at the rich and lean limits, and the exhaust gas sensors of the emissions control system. The proposed amendments would allow small volume conversion manufacturers to waive test requirements if no significant changes are made to the original vehicle and would provide more flexibility in how the required demonstrations are made. For example, the proposed changes would allow small volume conversion manufacturers to align the emission testing requirements with the new vehicle certification by allowing use of assigned deterioration factors without the demonstration of full useful life testing – which would be a less costly process due to reduced testing requirements, to reduce OBD compliance demonstrations to only those that are needed to show that these systems will continue to function as designed by the original vehicle manufacturer, and to allow for an easier

certification process while retaining confidence that the performance of the OBD system will not be compromised in the converted vehicles.

Staff is proposing to allow small volume conversion manufacturers to use the less expensive commercial CNG fuel that meets the federal standards for testing in lieu of ARB CNG certification test fuel. Staff is also proposing to allow small volume conversion manufacturers to use LPG that meets ARB's motor vehicle fuel requirements, since there is no federally certified LPG, in lieu of ARB LPG certification test fuel because these fuels not only are less expensive, but they are also readily available.

Staff believes that some of the proposed test procedures will need to be updated to reflect the changes in emission control and OBD systems for the 2018 model year. By 2018, the declining LEV III exhaust emission fleet average will be driving a significant portion of the light duty vehicles to lower exhaust emission levels reducing the margin available to conversion manufacturers when adjusting monitors to work on a different fuel or emission standard than originally calibrated. In addition, the heavy duty OBD standards will also be in full effect for conventional and alternative fueled engines for the 2018 model year. Therefore, staff is proposing to add a sunset provision for many of the proposed amendments. The sunset provision would also serve as a safety net for limiting potential emission impacts should unforeseen issues arise as a result of the proposal. Prior to the sunset, staff will monitor impacts to emissions and changes to engine technology and will provide recommendations to the Board whether or not the sunset provisions needs to be extended.

The proposed changes will also create a new subsection (c) in sections 2030 and 2031, title 13, CCR, to provide an expedited approval provision allowing applicants to seek an in-use, aftermarket certification once a new vehicle/engine certification is issued for an identical conversion system. The proposed changes will allow a manufacturer to request approval to carry-over or carry-across data used to obtain California certification of a new vehicle or new engine to demonstrate compliance with the emission testing requirements specified under the in-use procedures for identical conversion systems. This process would substantially reduce the time and costs associated with re-certifying an identical alternative fuel conversion system for qualifying manufacturers by providing them the option to not conduct similar emissions testing for seeking certification of an aftermarket alternative fuel retrofit system.

C. Rationale Supporting the Proposed Solutions

Staff's proposed changes would simplify the application and approval process, update the in-use alternative fuel certification requirements to better align with recent changes adopted by the U.S. EPA, and would streamline new and in-use alternative fuel vehicle and engine certification requirements while preserving emission benefits. The aim of the modifications is to reduce costs and time required to bring the conversion systems to market and provide conversion manufacturers with a non-expiring Executive Order. Staff's proposal would also streamline the application process for manufacturers that

have obtained a new vehicle or new engine certification. Staff's proposed changes also allow small volume conversion manufacturers to reduce the upfront demonstration requirements and allow systems to be sold sooner with lower certification costs than with the current process. Staff believes this streamlined approach will remove many of the current market barriers for small volume conversion manufacturers and is unlikely to create excess emissions.

III. SUMMARY OF PROPOSED ACTION

Staff is proposing to amend sections 2030 and 2031 of title 13, CCR to modify the existing test procedure to apply to 1994 through 2003 model year vehicles (see Appendix B) and incorporate new certification procedures for alternative fuel retrofit systems in 2004 and subsequent model year on-road motor vehicles and motor vehicle engines. The new test procedure is titled "California Certification and Installation Procedures for Alternative Fuel Retrofit Systems for On-Road Motor Vehicles and Engines" and is found in Appendix C. Staff is also proposing to add subsection (c) to sections 2030 and 2031 of title 13, CCR to provide an expedited approval process that will allow manufacturers that obtain California certification of new, alternate-fueled motor vehicles and engines to utilize emissions data to also seek certification of an alternative fuel retrofit system. The proposed amendments to sections 2030 and 2031 of title 13, CCR can be found in Appendix A of this staff report and are indicated by strike-out (deletion) and underline (addition). A detailed discussion of each amendment follows.

New Test Procedures

To mitigate some of the testing related costs for small volume conversion manufacturers and to streamline the procedures associated with certifying fuel conversions, staff is proposing new certification and installation procedures for alternative fuel retrofit systems applicable to 2004 and subsequent in-use motor vehicles and engines. Staff choose the 2004 model year because this is the first applicable model year for the most recent OBD regulation found in title 13, CCR section1968.2. The new procedures include:

- Allowing the waiver of evaporative testing for sealed alternative fuel systems
- Defining a small volume conversion manufacturer
- Modifying test fuel requirements
- Allowing the use of assigned deterioration factors
- Adopting U.S. EPA's NMHC/NMOG correction factor
- Allowing the use of alternative test methods
- Streamlining OBD system monitoring system demonstration requirements
- Allowing for the use of dual fuel testing waivers
- Introducing a sunset provision
- Reducing time to market for certifying to a more stringent emissions standard
- Retaining the vehicle's emissions warranty

Staff is proposing to apply most of these changes to small volume conversion manufactures to reduce the testing and demonstration burden. Staff also is proposing to sunset many of the changes because they may not be appropriate when lower emission standards take effect for new vehicles and engines in 2018.

Table III-1 summarizes the proposed changes to emissions test procedures for all converters and for small volume conversion manufacturers and identifies which changes are affected by the sunset provision.

Table III-1: Summary of Proposed Changes to Emissions Test Procedures

Available to all Conversion Manufacturers	Available to all Conversion Manufacturers until Sunset	Available to Small Volume Conversion Manufacturers until Sunset
• Manufacturers may use multiplier of 1.5x NMHC for NMOG compliance • Manufacturers may submit engineering evaluation and data for exemption from evaporative emission testing for sealed fuel systems. All submitted material subject to review and approval by the Executive Officer	• Dual-fuel waivers for repeating required testing on original fuel	• For exhaust and evaporative emissions testing, may use NG test fuel that meets U.S. EPA specifications. May use commercially available NG fuel without analysis • For exhaust and evaporative emissions testing, may use LPG test fuel that meets ARB motor-vehicle LPG fuel specifications. May use commercially available LPG fuel without analysis. • Assigned Deterioration Factors (DF) may be used to determine compliance with applicable emission standards • May propose an alternate test procedure for testing of heavy-duty engines and vehicles originally certified under an engine-dynamometer test procedure

Table III-2 summarizes the proposed changes to OBD requirements for all small volume conversion manufacturers and identifies which changes are affected by the sunset provision.

Table III-2: Summary of Proposed Changes for OBD Requirements for Small Volume Conversion Manufacturers

Available to all Small Volume Conversion Manufacturers	Available to Small Volume Conversion Manufacturers until Sunset	Available to Small Volume Conversion Manufacturers after Sunset
• Manufacturers may request to waive pinpointing of air-fuel ratio cylinder imbalance malfunctions. • For conversions of gasoline vehicles to a more stringent standard, manufacturers are still required to perform all certification demonstration tests. However, conditional approval can be requested after performing only the catalyst, exhaust gas sensor, and fuel system tests and final approval received after submitting the remaining test results • Certification documentation is limited to modifications, deletions, and additions to the OBD system on the base vehicle/engine due to the addition of the conversion system..	• For conversions being certified to the same emission standard as the original vehicle, manufacturers have additional options for what they can use for the certification demonstration vehicle including using a lower mileage vehicle or a standardized rapid aging cycle. • For conversions of gasoline vehicles being certified to the same emission standard as the original vehicle, manufacturers could request waivers from all but three categories (catalyst, exhaust gas sensor, and fuel system) of the certification demonstration emission tests if there are no modifications that would affect other monitors that require demonstration.. • For conversions of diesel or heavy-duty engines, manufacturers may submit a plan subject to Executive Officer approval for specific certification demonstration emission test exemptions.	• For conversions of gasoline vehicles to the same standard, manufacturers are required to perform all certification demonstration tests after sunset. However, conditional approval can be requested after performing only the catalyst, exhaust gas sensor, and fuel system tests and final approval received after submitting the remaining test results.

As shown in tables III-1 and III-2, the majority of the proposed changes affect only small volume conversion manufacturers. These changes allow small volume conversion manufacturers the ability to use a commercially available test fuel, substitute deterioration factors for full useful life emissions testing, and waive many of the OBD demonstration requirements which transfer some of the risk for long term emissions increases to ARB. Based on staff's technical understanding and judgment, the proposed changes warrant a sunset provision after the 2017 model year. Staff believes that some of the test procedures will need to be updated to reflect the changes in emission control and OBD systems for the 2018 model year. By 2018 LEV III will be in full effect for light duty vehicles and the heavy duty OBD standards will also be in full

effect for conventional and alternative fueled engines. The sunset will also serve as a safety net for containing potential emission impacts should unforeseen issues arise as a result of the proposal. ARB will also increase their in use compliance and enforcement efforts in this area to both minimize the risk and investigate the actual impacts of introducing the flexibilities for this industry.

Staff believes that the proposed changes to the current procedures for certification of alternative fuel conversions would:

- Allow conversion manufacturers to market their products to relatively new vehicles and engines by allowing the installation to happen at time of new vehicle/engine sale
- Streamline ARB's alternative fuel vehicle and engine certification procedures
- Update and simplify the application and approval process
- Reduce market barriers for small volume conversion manufacturers without significantly risking emission performance

Addition of Section 2030(c) and 2031(c)

Staff is proposing to create a new subsection (c) in sections 2030 and 2031 to provide manufacturers that certify new vehicles and engines fueled by alternative fuels an expedited process to certify an alternative fuel conversion system. The proposed changes will allow a manufacturer to request approval to carry-over or carry-across data used to obtain California certification of a new vehicle or new engine to demonstrate compliance with the emission testing requirements specified under the in-use procedures for identical conversion systems. Applicants for carry-over and carry-across will be evaluated according to the criteria specified in U.S. EPA Advisory Circular 17F, dated November 16, 1982, updated on January 21, 1988, which is incorporated by reference in section 11.(b)(3) of the proposed new test procedures (Appendix C). This process would substantially reduce the time and costs associated with certifying alternative fuel conversion systems for qualifying manufacturers by providing them the option to not repeat emissions testing for certifying an identical aftermarket alternative fuel conversion system.

IV. AIR QUALITY

Alternative fuel conversion manufacturers must attest that no additional emissions are produced due to the conversion process. In addition, some of the small volume conversion manufacturers will opt to certify to a lower emission standard than the originally certified vehicles which would provide some emission benefits as their volumes increase in the inventory. The proposed changes allow small volume conversion manufacturers the ability to waive many of the OBD demonstration requirements which transfer some of the risk for long term emissions increases to ARB. Although the proposed flexibility provisions for small volume conversion manufacturers is unlikely to create excess emissions from converted vehicle and engines, staff believes that the proposed in-use enforcement testing and confirmatory in-use testing provisions will help ensure that such increased emissions will not occur. As a further safeguard, staff is proposing to sunset the flexibility provisions for small volume conversion manufacturers after the 2017 model year. This sunset provision will provide small volume conversion manufacturers enhanced flexibility over a four model year window to develop and to market mature alternative fuel retrofit systems while also providing a safety net to ensure increased emissions do not result because of the proposed small volume conversion manufacturers' flexibility provisions. Further air quality analysis is discussed in Chapter V.

V. ENVIRONMENTAL IMPACTS ANALYSIS

A. Introduction

This chapter provides an environmental analysis for the proposed regulation. Based on ARB's review, staff has determined that implementing the proposed amendments to the Alternative Fuel Conversion Certification Procedures 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 regulatory amendments.

B. Environmental Review Process

ARB is the lead agency for the proposed 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 60005-60007). 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). ARB 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 ARB'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 prepared for the regulation. The final decision-maker will approve the written responses to comments prior to taking final action on the proposed regulation (17 CCR 60007(a)). If the regulation is adopted, a Notice of Decision will be posted on ARB's website and filed with the Secretary of the Natural Resources Agency for public inspection (17 CCR 60007(b)).

C. Prior Environmental Analysis

The current regulation was originally adopted by ARB on April 16, 1975 and was subsequently amended on April 18, 1981, September 14, 1984, March 11, 1993, April 26, 1995, and September 25, 1997. This regulation and its subsequent revisions ensure that continued air emission reduction benefits are realized by requiring manufacturers and installers of alternative fuel retrofit systems to demonstrate that such systems do not cause retrofitted vehicles and engines to exceed the emission standards applicable to the original, unmodified vehicles or engines. The environmental analyses performed for the regulation and its amendments did not identify any significant adverse impacts to the environment.

D. Proposed Regulation

California regulations currently specify separate certification requirements of alternative fuel conversion systems intended for in-use vehicles/engines and for new motor vehicles and new motor vehicle engines. The proposed amendments only address the requirements applicable to in-use vehicles/engines.

Staff recognizes that alternative fuel conversions may be performed on both "relatively new" motor vehicles and engines (i.e., vehicles and engines whose legal or equitable title have only recently transferred to an ultimate purchaser) and older motor vehicles and engines (i.e., vehicles and engines whose titles have transferred to ultimate purchasers for a longer period of time), but in both cases, alternative fuel conversions involve reconfiguring a previously certified gasoline- or diesel-fueled vehicle or engine to operate on natural gas, propane, alcohols, or a blend of conventional and alternative fuels. The conversion may include the addition of a fuel system, removal of emission controls, and recalibration of the vehicle's computer.

As described in Chapter VIII of this Staff Report, the proposed regulation would:

- Streamline ARB's alternative fuel vehicle/engine certification procedures that will, in part, better align with U.S. EPA's program
- Update and simplify the application and approval process
- Reduce certification burden for small volume conversion manufacturers by changing:
    - Requirements for demonstrating emission compliance to useful life
    - Test fuel specifications
    - Requirements for demonstrating OBD system compliance

The proposed amendments develop a process that would allow manufacturers that certify a new motor vehicle or new motor vehicle engine to request a certification for an alternative fuel conversion system under an expedited process as compared to the current process.

The proposed amendments would update the existing certification procedures by incorporating the emission standards and associated test procedures for 2004 and subsequent model year vehicles and engines, and would also streamline the existing certification procedures, including providing small volume conversion manufacturers the flexibility to waive many of the OBD demonstration requirements.

E. Environmental Impacts

While all certification procedures are designed to ensure that vehicles and engines sold in California meet California's air emissions standards, the certification procedures for alternative fuel conversion systems are established to ensure that converted vehicles or engines continue to meet the same emission standards as the original vehicle, or meet a lower emission standard.

The proposed amendments consist primarily of administrative and procedural changes to better align with existing federal requirements and to assist small volume conversion manufacturers in their future retrofit certification efforts. These changes would modify the stringency of the certification process by streamlining the existing process while continuing to ensure that expected emissions benefits are realized. The proposed amendments modify language and simplify procedural requirements in part to better align ARB's certification procedures with U.S. EPA's program, and would not involve or result in any additional requirements than what is already being required by existing federal and state requirements.

The changes associated with the initial emissions tests would not result in increased emissions; however, for conversions that are certified to the same emissions standard as the original vehicle, the flexibility for demonstration OBD compliance would be less rigorous than currently required. The OBD compliance requirements remain the same and staff expects most OBD systems to comply fully; however, there is a possibility that some systems that are not fully compliant could be approved. Any emissions impact would be mitigated through recalls and penalties for non-compliance. The sunset period will also limit the potential for excess emissions. For conversions to a lower emission standard than that of the original vehicle, the OBD test requirements would remain the same, but the amendments would allow the conversion kit to be sold several months sooner and staff anticipates that sales of these kits would increase. Staff believes that conversions to a lower standard would also result in additional emissions benefits if more vehicles are sold. Ultimately the impact on emissions will depend on sales of vehicle conversions of cleaner versus the same emission standards.

The concurrent implementation of the proposed in-use enforcement testing and confirmatory in-use testing provisions will help to ensure that any increase in emissions does not occur. Moreover, as a further safeguard, staff is proposing to sunset the flexibility provisions for small volume conversion manufacturers after the 2017 model year as they are not likely to be applicable for LEV III nor for heavy duty vehicle certification of 2018 or newer engines. This sunset provision also provides a safety net to ensure increased emissions do not result because of the proposed small volume conversion manufacturer flexibility provisions.

Staff has also determined that the proposed amendments will result in no impact to the following resource areas: aesthetics, agricultural and forestry resources, biological resources, cultural resources, geology and soils, greenhouse gases, hazardous material, hydrology and water quality, land use planning, mineral resources, noise, population and housing, public services, recreation, or traffic and transportation, and utilities and service systems. These areas would not be impacted because compliance with the proposed amendments would not require any action by regulated parties that could adversely affect these resources, either directly or indirectly. Based on staff's analysis, we have determined that implementing the proposed amendments would not result in a significant adverse impact on the environment.

No discussion of alternatives or mitigation measures is necessary because no significant adverse environmental impacts were identified.

VI. ENVIRONMENTAL JUSTICE

The objectives of ARB's statewide regulatory programs are better air quality and reduced health risk for all residents throughout California. The Board has a policy that community health and environmental justice (EJ) concerns be addressed in all of ARB's regulatory programs. State law defines EJ 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. The Board has established a framework for incorporating EJ into ARB's programs consistent with the directives of State law.

The proposed modifications to the alternate fuel conversion procedures provide a streamlined process for small volume conversion manufacturers to reduce costs, promote competition, and drive technological innovation for smaller companies while assuring emissions from converted vehicles remain unchanged or in some cases are reduced. Although the proposed modifications are emission neutral, the increase in use of alternate fueled vehicles would reduce the use of traditional fueled vehicles, such as diesel fueled vehicles, proportionally resulting in the reduction of toxic air contaminants. This is consistent with ARB's EJ policy of reducing exposure to air pollutants and reducing the adverse impacts from toxic air contaminants in all communities, including low-income and minority communities.

While staff's proposed changes do not directly affect low-income and minority communities, they do provide a mechanism for smaller manufacturers of alternative fuel conversion systems that may be located in or near these communities to certify and install these systems locally.

VII. ECONOMIC IMPACTS

A. Proposed Amendments

ARB's proposed changes would significantly lower the time and cost for small volume conversion manufacturers to generate the data required for alternative fuel conversion system certification. These proposed amendments waive certain test requirements if no significant changes are made to the original vehicle, and provide more flexibility in how the required demonstrations are made. ARB will also provide options to the converter industry to show compliance without performing some of the certification tests. The following is a summary of the cost savings small volume conversion manufacturers may realize if the proposed changes are adopted.

Table VII-1 summarizes typical costs that are affected by staff's proposal for the following scenarios: the current ARB certification procedures for new and in-use vehicles, the proposed ARB certification procedures for retrofit systems to be installed on near new vehicles certified to the same standard as the original vehicle, and the recently revised procedures adopted by the U.S. EPA to be installed on near new vehicles. The costs are divided into subgroups of emission certification costs, OBD certification costs, and other certification costs. As discussed below, some of these costs are incurred per test group certified while others are incurred per model year. As shown in table VII-1, costs for exhaust emission tests will stay the same.

Similar to the recent regulation adopted by the U.S. EPA, these proposed changes would allow small volume conversion manufacturers to request the evaporative emissions tests be waived for sealed fuel systems. Therefore this cost model assumes the evaporative emissions test will be zero.

The cost for aging a vehicle to its full useful life to demonstrate durability of the emission control system is typically about $10,000 and represents the testing costs of a two year old aged vehicle for durability demonstration. The cost would be higher if the manufacturer was unable to use bench aging or actual mileage accumulation. This cost would not necessarily have to be duplicated under OBD test vehicle aging because the manufacturers can use certification emission durability vehicles as their OBD test vehicles.

Staff's proposal would allow small volume conversion manufacturers to use catalysts and exhaust gas sensors that are rapid aged per a specified aging procedure on the test vehicle as compared to a vehicle aged to full useful life for the OBD demonstration vehicle. Additionally the proposal has provisions for the converter to waive some of the OBD demonstration tests. Therefore costs for the OBD emissions test and demonstration parts will be reduced significantly. A more detailed cost analysis of the estimated OBD demonstration costs can be found in Appendix D.

Table VII-1: Typical Costs of One Alternative Fuel Certification for Small Volume Conversion Manufacturers

	ARB Current New Vehicle Certification	ARB Current In-Use Vehicle Certification[5]	ARB Proposed Retrofit System Certification	U.S. EPA Current Retrofit System Certification
Exhaust Emission Tests	$6,300	$6,300	$6,300	$6,300
Evaporative Emission Tests	$6,400	$6,400	$0	$0
Emission Durability Demonstration	$0[6]	$10,000[7]	$0	$0
OBD Test Vehicle Aging	$50,000	$50,000	$20,000	$0
OBD Emission Tests	$39,900	$39,900	$8,400	$9,500
OBD Demonstration Parts	$49,200	$49,200	$42,000	$13,000
Travel, Vehicle Shipments, and Application Preparation	$16,900	$16,900	$16,900	$16,900
Certification Fees	$1,300	$0	$0	$4,000
Totals	**$170,000**	**$178,700**	**$93,600**	**$49,700**

There will be no change in the travel, vehicle shipments, and application preparation so these costs will remain the same but certification fees will be reduced because the small volume conversion manufacturer is simply certifying the retrofit system and not a vehicle or engine.

While the costs shown in the table for ARB's proposal are higher than U.S.EPA, ARB costs for OBD demonstration are incurred once per model year while the U.S. EPA costs are per test group, which will yield further reductions relative to U.S. EPA when more than one test group is certified per model year.

As shown in Table VII-1, the proposed changes would provide a cost savings for a single certification for small volume conversion manufacturers. Small volume conversion manufacturers would expect to save $76,400 for a new vehicle conversion and $85,100 for an in-use conversion. The conversion manufacturer could also use ARB demonstration data for certification with U.S. EPA and avoid the OBD related costs with U.S. EPA certification. These cost reductions translate to larger savings across the industry. For example in 2012, ARB approved 12 new light duty alternative fuel vehicle

[5] There would be no costs for any test where manufacturers re-use emissions data generated for prior new vehicle certifications, such as carry-over or carry-across data.
[6] Although most alternative fuel converters use assigned deterioration factors thereby saving the cost of a durability demonstration, they have the option of running the demonstration to reflect the true deterioration of their system and the cost would be higher in this case.
[7] This estimate represents the testing costs of a two year old aged vehicle for durability demonstration. The cost estimate would be significantly higher if the manufacturer was unable to use bench aging or actual mileage accumulation.

and engine families to small volume conversion manufacturers. Therefore, the cost savings to the California small volume conversion manufacturers might be as much as $1,021,200 (($85,100)*12) per year. As with the increased numbers of certifications U.S. EPA experienced after streamlining their procedures, staff expects the number of annual certifications will substantially increase in the early years of the streamlined program and then continue to increase as the market for these retrofit systems matures. Consequently, staff anticipates that the certification workload for new and in-use vehicles and engines certifications will increase justifying the need to hire one additional staff to keep up with market demands. Staff estimates the cost for one certification engineer to be $175,000 annually.

B. Major Regulations

The proposed amendments to the alternative fuel conversion procedures are not a major regulation because the impact to the California business enterprises and individuals is less than $50,000,000.

C. Reasonable Alternatives Considered

This chapter discusses alternatives to the proposed amendments to the Alternative Fuel Conversion Procedures. Staff considered a number of alternatives instead of the proposed amendments. These included making no changes to the regulation, considering U.S. EPA new standards, or allowing self-certification by the small volume conversion manufacturers. Each of these alternatives was rejected in favor of staff's proposed amendments. No alternative considered by the agency would be more effective in carrying out the purpose for which the regulation is proposed or would be as effective or less burdensome to affected private persons than the proposed regulation.

No Changes to the Current Procedures

Over the last several decades, ARB has implemented stringent procedures for the alternative fuel conversions to ensure the emission standards of the original vehicle are maintained. As vehicle emission standards have become increasingly more stringent, OBD systems have become more important to ensure the emissions control systems are functioning properly and emission levels do not increase throughout the vehicle's useful life. Currently, companies interested in converting a new vehicle must follow the same stringent certification procedures as the original manufacturer of the vehicle. The new vehicle certification procedures are identified in section I-A. of this report. Staff estimated cost for new vehicle certification is shown in Table VII -1. Due to industry request to reduce the alternative fuel conversion process burden for small volume conversion manufacturers, and ARB concurring that the proposed changes would accomplish that without significantly risking emission impacts, staff rejected keeping the status quo.

Adopt U.S. EPA Procedures

The U.S. EPA recently adopted changes to their procedures used to approve vehicles and engines that have been converted to operate on alternative fuels such as natural gas or propane. The U.S. EPA changes provide a mechanism by which alternate fuel conversion manufacturers can obtain an EPA exemption from the tampering prohibition in the federal Clean Air Act section 203; however, the proposed amendments will provide California an additional level of assurance that the emissions from converted vehicles and engines will not exceed the emissions of the original vehicles.

For example, the U.S. EPA's streamlined requirements for demonstrating compliance with OBD system requirements provides no assurance that the OBD system after the conversion is properly adjusted to account for the modifications and change in fuel. In practice, the U.S. EPA process does not require any changes to the original control system to account for the changes that are made, which means that emission-related component failures are unlikely to be detected until emissions are far in excess of the required standards, if they are detected at all. When emissions control systems fail, the emissions can be 5 to 10 times higher than a properly functioning vehicle and a robust OBD system is needed to assure that emissions of the converted vehicle aren't substantially higher than on the original fuel. Overall, the changes adopted by U.S. EPA are significantly less protective of emissions and public health.

California has more severe air quality problems than most other states and currently does not meet federal air quality standards. California also has lower emissions standards for light-duty vehicles and will need to ensure that conversions to alternative fuel still achieve the expected emissions reductions. The newly adopted federal regulations provide a mechanism by which an alternative fuel converter can obtain an EPA exemption from the tampering prohibition in the federal Clean Air Act section 203. The proposed amendments will provide California an additional level of assurance that that the emissions from converted vehicles and engines will not exceed the emissions of the original vehicles, commensurate with the greater assurance needed by California's motor vehicle emissions control programs.

Primarily, the federal program does not require small volume manufacturers to demonstrate durability or to demonstrate that once the conversion is conducted the OBD system meets the emission thresholds or malfunction criteria specified in the OBD regulations. For example, the federal program allows the use of a modified new catalyst for OBD demonstration testing whereas ARB requires a laboratory aged catalyst, which is representative of how catalysts deteriorate and malfunction in use.

Additionally, the federal program has less stringent requirements for conversions of older vehicles. For emissions compliance, an alternative conversion manufacturer needs to provide emissions test data for vehicles within their useful life and a technical description, supported by test data upon request, for vehicles outside their useful lives, that shows that the base vehicle emissions will be maintained. For in-use vehicles, the federal program only requires the manufacturer to attest that the onboard diagnostic system is fully functional and provide a report on the on-board diagnostics scanning tool

without demonstrating the system performs as stated. Accordingly, staff did not consider this option.

Costs for certifying a retrofit system for a near new vehicle are found in the "Clean Alternative Fuel Vehicle and Engine Conversions; Final Rule" 40CFR Parts 85 and 86, and shown in table VII-1.

Self-Certification

ARB also considered a suggestion to allow conversion manufacturers to self-certify that they comply with OBD requirements without submitting documentation. ARB would then verify compliance after two years. The proposal saves time upfront without any significant cost savings for the conversion manufacturers that perform adequate testing to verify their systems design and functionality to take their product to the market. However, staff rejected it due to risk option because the risk that poorly designed systems and errors in design would not be discovered for several years. And retroactive actions such as recalls or penalties would be more disruptive to the market than upfront review. Costs for this alternative were not analyzed nor shown in table VII-1.

D. Impact on Small Business

Staff has identified that adopting U.S. EPA's standard would provide more cost savings to the small volume conversion manufacturers as compared to staff's proposed changes, however, the changes adopted by U.S. EPA are less protective of emissions and public health. Table VII-2 outlines staff's estimated cost savings for small volume conversion manufacturers based on the various alternatives considered.

Table VII-2: Cost Savings for Each Alternative Considered

Alternatives	Cost Saving/Certification
No Change	No Saving
US EPA Procedures	$129,000
Proposed Amendments	$85,100

E. Significant Adverse Economic Impact Directly Affecting Business

There is no economic adverse effect to the businesses in California.

F. Justification for Adoption of Regulations Different from Federal Regulations Contained in the Code of Federal Regulations

ARB's program is more robust than the US EPA certification procedures and verifies that a converted vehicle still meets the base emissions of the original vehicle. ARB has been working cooperatively with industry to increase flexibility for alternative fuel conversion manufacturers while ensuring that converted vehicles do not have higher

emissions. Staff has held numerous public workshops and workgroup meetings to address industry concerns and has drafted a proposal that significantly reduces certification costs without sacrificing any significant emissions benefits. These changes were developed through the public process and better align ARB's certification procedures with U.S. EPA's program. Furthermore, the current ARB proposal largely reflects the recommendations proposed by conversion industry representatives, and strikes a balance in streamlining the approval process with assurances that converted vehicles will not become gross polluters that go undetected in use. Industry stakeholders are also concerned that it would be counterproductive for the alternative fueled vehicle conversions market to sell cars and trucks that are more polluting than the original vehicle.

G. Economic Impact Assessment

The following economic impact assessment has been prepared for this rulemaking action in accordance with the provisions of Government Code section 11346.3(b)(1)(A)-(D).

The proposed amendments would significantly reduce the time and costs for small volume conversion manufacturers to generate data required to certify alternative fuel conversions, which would likely result in the expansion of associated businesses. Staff anticipates that the proposed amendments would result in the increase in sales and installations of the conversion systems in California which may result in the expansion of existing California businesses and the creation of some new businesses and jobs within the State. Additionally, as more vehicles and engines are converted to operate on alternative fuels, staff anticipates an expansion of the fueling infrastructure which would also result in the expansion of existing California businesses and the creation of some new businesses and jobs within the State

To the extent that a small volume conversion manufacturer is located in California, that manufacturer would likely experience increased product sales which in turn would result in the expansion of manufacturing businesses and the creation of manufacturing jobs.

The proposed amendments will preserve the emissions benefits associated with California's motor vehicle emissions control program by ensuring that emissions from converted vehicles do not exceed those from the originally certified vehicles. The proposed amendments may also result in air emissions benefits to the extent that manufacturers elect to certify conversion systems to convert vehicles and engines to more stringent certification standards than the originally certified vehicles and engines and to the extent that such conversion systems are purchased and installed. As a result, there would be no adverse effect on the environment.

VIII. SUMMARY AND RATIONALE FOR EACH REGULATORY PROVISION

H&S Code section 43004 provides that the exhaust emission standards applicable to gasoline-powered motor vehicles shall also apply to gasoline- or diesel-powered vehicles to use fuels other than the fuel for which the vehicle was originally certified. H&S Code section 43006 authorizes the Board to adopt test procedures for certifying alternative fuel conversion systems.

Vehicle Code section 27156 contains provisions to ensure that modifications to certified vehicles do not increase emissions, and provides that no device, apparatus, or mechanism that alters or modifies the original design or performance of a required motor vehicle emission control system can be advertised, sold, or installed unless that device, apparatus or mechanism has been exempted by ARB. ARB is authorized to only exempt modifications to a certified configuration if it finds the modifications will either not reduce the effectiveness of any required motor vehicle pollution control device or device or will not cause emissions from the converted vehicle to exceed applicable standards.

To ensure that the emissions from vehicles that are retrofitted to operate on alternative fuels do not exceed the emissions from the original, or unmodified vehicles, ARB developed certification procedures that require conversion manufacturers to demonstrate a converted vehicle will not reduce the effectiveness of any required motor vehicle pollution control device or will not cause emissions from the converted vehicle to exceed applicable standards. These test procedures are found in the following sections of CCR Title 13, Division 3, Chapter 1, Article 5, "Approval of Systems Designed to Convert Motor Vehicles to Use Fuels Other Than the Original Certification Fuel or to Convert Motor Vehicles for Emission Reduction Credit or to Convert Hybrid Electric Vehicles to Off-Vehicle Charge Capable Hybrid Electric Vehicles:"

Section 2030 – Liquefied Petroleum Gas or Natural Gas Retrofit Systems
Section 2031 – Alcohol or Alcohol/Gasoline Fuels Retrofit Systems
Section 2032 – Off-Vehicle Charge Capable Hybrid Electric Vehicle Conversion Systems

Staff is only proposing changes to sections 2030 and 2031 that apply to conversions to a gaseous or alcohol based fuel. The proposed amendments to sections 2030 and 2031 can be found in Appendix A of this report and are indicated by strike-out (deletion) and underline (addition). Currently, each section points to a set of procedures for conversion by vehicle or engine model year.

ARB's current procedures specify requirements applicable to conversion systems designed for installation in 1993 and earlier model year motor vehicles, and 1994 and subsequent model year motor vehicles. Staff is proposing to change the title and make other minor changes to the current test procedures that affect 1994 and subsequent model year motor vehicles and motor vehicle engines. The modified test procedure can

be found in Appendix B of this report. The proposed amendments would limit the applicability of the current 1994 procedures to 1994 through 2003 model year motor vehicles. Staff is also proposing to incorporate a new test procedure, applicable to 2004 and subsequent model-year motor vehicles, titled "California Certification and Installation Procedures for Alternative Fuel Retrofit Systems for On-Road Motor Vehicles and Engines." The proposed new test procedure can be found in Appendix C of this report. This new test procedure contains several documents that would be incorporated by reference. The following is a list of those documents:

Code of Federal Regulations (40CFR), Part 86.1313-2007, dated July 01, 2011.

The following American Society for Testing and Materials (ASTM) test method listed in 40CFR, Part 86.1313-2007, dated July 01, 2011.

- ASTM Test Method Number D1945-03(2010)

California Code of Regulations, Title 13 CCR § 2292.6, as amended December 08, 1999.

The following ASTM test methods listed in Title 13, CCR, section 2292.6. as amended December 08, 1999.

- ASTM Test Method Number D2163-87
- ASTM Test Method Number D1267-89
- ASTM Test Method Number D2598-88
- ASTM Test Method Number D1837-86
- ASTM Test Method Number D2158-89
- ASTM Test Method Number D1838-89
- ASTM Test Method Number D2784-89
- ASTM Test Method Number D2713-86

U.S. Environmental Protection Agency (U.S.EPA) Advisory Circular 17F, dated November 16, 1982, updated January 21, 1988.

U.S. EPA National Vehicle and Fuel Emissions Laboratory guidance letter CD-12-07 (Revised) for Assigned Deterioration Factors, dated March 30, 2012.

ARB test procedure "California 2001 through 2014 Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2009 through 2016 Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles," as amended December 6, 2012.

ARB test procedure "California Non-Methane Organic Gas Test Procedures," as amended December 6, 2012.

ARB test procedure "California Exhaust Emission Standards and Test Procedures for 2005 through 2008 Model Zero-Emission Vehicles, and 2001

through 2008 Model Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes," as amended December 2, 2009 and is incorporated by reference in title 13, CCR section 1962.

ARB test procedure "California Exhaust Emission Standards and Test Procedures for 2009 through 2017 Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes," as amended December 6, 2012 and is incorporated by reference in title 13, CCR section 1962.1.

ARB test procedure "California Exhaust Emission Standards and Test Procedures for 2018 and Subsequent Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes," as amended December 6, 2012 and is incorporated by reference in title 13, CCR section 1962.2.

ARB test procedure "California 2001 through 2014 Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2009 through 2016 Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles," as amended December 6, 2012 and is incorporated by reference in title 13, CCR section 1961(d).

ARB test procedure "California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles," as amended December 6, 2012.

ARB test procedure "California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles" as amended March 22, 2012 and is incorporated by reference in title 13, CCR section 1976(c).

ARB test procedure "California Refueling Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles," as amended March 22, 2012, and is incorporated herein by reference in title 13, CCR section 1978(b).

ARB test procedure "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel-Engines and Vehicles," adopted December 12, 2002, as amended April 18, 2013.

ARB certification procedure "California Interim Certification Procedures for 2004 and Subsequent Model Hybrid-Electric Vehicles, in the Urban Bus and Heavy-Duty Vehicle Classes," adopted October 24, 2002.

ARB test procedure "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Otto-Cycle Engines," as amended April 18, 2013.

The proposed amendments would allow conversion manufacturers to demonstrate that retrofitted motor vehicles or engines do not exceed the applicable emission standards of the original motor vehicle or engine or alternatively, do not exceed the emission standards of a more stringent emissions standard. The following is a summary of proposed changes that apply to the alternative fuel conversion test procedures found in sections 2030 and 2031.

A. Alternative Fuel Retrofit Systems with Sealed Fuel Systems

Section 4.(d)(1) of the proposed new test procedures would allow manufacturers of alternative fuel retrofit systems with sealed fuel systems to demonstrate compliance with the evaporative emission standards without performing evaporative emissions testing. Demonstrations may be based on an engineering evaluation of the alternative fuel retrofit system to show that it has no evaporative-related emissions under typical vehicle operation. All such demonstrations must be approved in advance by the Executive Officer. ARB may perform evaporative emissions testing using prescribed test procedures for confirmatory and other testing.

B. Small Volume Conversion Manufacturer Provisions

To sell an alternative fuel conversion system in California, a manufacturer must apply for certification and provide test results to demonstrate that the system meets applicable emission requirements. The application process requires retrofit system manufacturers to expend time and resources for designing, testing, and building emission compliant systems. Large manufacturers should be able to recoup such costs by the sheer volume of sales. For small volume conversion manufacturers, it is just the opposite and high certification costs and lengthy testing requirements may burden a converter's ability to certify and market conversion systems in a timely manner. To reduce costs and time for certifying alternative fuel conversions, staff is proposing amendments to reduce the testing requirements for small volume conversion manufacturers. Staff defines small volume conversion manufacturers as manufacturers with California annual sales of less than 1,500 alternative fuel retrofit systems in any given calendar year. The 1,500 sales threshold was selected because similar figures were used by other regulations. U.S. EPA's alternative fuel retrofit regulations include a small volume definition of 15,000 sales of converter systems nationally for all vehicle and engine classes. Staff's proposed definition is in line with the federal definition since California historically has represented about 10 percent of the national vehicle market. Furthermore, historic records show that the majority of manufacturers sold less than 1,500 conversion systems per year. The amendments clarify California sales include all retrofit systems produced by the manufacturer and delivered for sale in California. If a manufacturer has an arrangement allowing another entity to market its retrofit systems (e.g., a retailer or distributor), California sales includes retrofit systems produced by the

manufacturer and marketed by those authorized entities. The definition of a small volume conversion manufacturer can be found in section 2.(a)(18) of the proposed new test procedures (Appendix C).

C. Test Fuel

Staff is proposing to allow small volume conversion manufacturers to use the less expensive commercial CNG that meets the federal standards for testing in lieu of ARB CNG certification test fuel. The federal standard for CNG is found in the Code of Federal Regulations (40CFR), Part 86.1313-2007, July 01, 2011 edition and is incorporated by reference in section 5.(c)(3)(A) of the proposed new test procedures (Appendix C). This federal standard for CNG requires retrofit system manufacturers to provide a fuel analysis with their final emission results using American Society for Testing and Materials (ASTM) test method D1945-03(2010) which is incorporated by reference therein.

Staff is also proposing to allow small volume conversion manufacturers to use LPG that meets ARB's motor vehicle fuel requirements, since there is no federally certified LPG, in lieu of ARB LPG certification test fuel. ARBs motor fuel standard for LPG is found in title 133, CCR, section 2292.6 and is incorporated by reference in section 5.(c)(3)(B) of the proposed new test procedures (Appendix C). This California regulation requires retrofit system manufacturers to provide a fuel analysis with their final emission results using the following ASTM test methods which are incorporated by reference therein:

- D2163-87
- D1267-89
- D2598-88
- D1837-86
- D2163-87
- D2158-89
- D1838-89
- D2784-89
- D2713-86

The test results from using the proposed fuel standards may be slightly different than the results from tests conducted with certification test fuels due to less controlled fuel specifications. However, since the applicant is required to include an analysis of their certification test fuel with their test results for approval, this proposed change would have positive economic benefit with little impact expected on the certification process. Staff is not proposing any changes to the use of alcohol test fuel and the continued use of commercial fuels for any service accumulation testing (durability).

Staff is proposing the use of commercial fuel for the official certification testing through 2017 model year only as an interim cost savings for the industry. The concern with the use of such fuel is its quality and variability of properties, and the impacts on emissions. Data comparing emissions from vehicles and engines operated on both commercial and official certification fuels need to be generated to show no significant differences. Staff

is proposing to continue the use of commercial fuels past the sunset date if the industry provides test data showing no significant emissions differences. Industry may pool their resources over the next four years to generate the data.

D. Assigned Deterioration Factors

Staff is proposing to allow the small volume conversion manufacturers to use an assigned deterioration factors (DF) to determine compliance with useful life emission standards and remove the requirements for high mileage emission tests. A deterioration factor is a numeric factor applied to low mileage mass emissions to account for the potential increase in emissions due to deterioration of engines, emission control components, and retrofit systems as they age. It is defined as the estimate of the ratio of the true mean response at high mileage to the true mean response at low mileage. The results from using assigned DF would not be as accurate as the results from actual testing, but it is a good approximation and is sufficient for determining compliance. Assigned DFs tend to be higher, more severe, than the average DF for a similar class of vehicle or engine. This method is also approved by U.S. EPA. The assigned DF would be provided by ARB. If no ARB assigned DFs are available, manufacturers may use the assigned DF's, as published by the U.S. EPA National Vehicle and Fuel Emissions Laboratory guidance letter CD-12-07 (Revised) dated March 30, 2012 which is incorporated by reference in section 5.(c)(3)(C) of the proposed new test procedures (Appendix C). Providing this flexibility to small volume conversion manufacturers would save them time and costs. To further reduce costs if DFs are not available from U.S. EPA, staff also proposes to allow small volume conversion manufacturers to submit DFs for Executive Officer approval as long as the manufacturers would validate the factor.

E. NMOG Multiplier

In response to industry's request, staff is proposing to adopt U.S. EPA's multiplier of 1.5 times the measured NMHC emissions to determine compliance with NMOG instead of the current, more expensive test requirements for both NG and LPG. This would result in reduced testing costs as applicants would not be required to use chromatography to determine emission rates of aldehydes and alcohols and would move ARB's requirements closer towards harmonizing with federal standards. The specific language for using the 1.5 multiplier can be found in section 5.(c)(1) of the proposed new test procedures (Appendix C).

F. Alternative Test Methods

In an effort to update the in-use alternative fuel conversion certification procedures, staff is proposing the use of alternative test methods and procedures. Specifically, small volume retrofit system manufacturers certifying systems for heavy-duty engines and vehicles that were originally certified under an engine-dynamometer test procedure may propose an alternative test method. The use of alternative test methods could greatly accelerate the certification process and would provide flexibility for manufacturers,

provided that the manufacturers demonstrate that the alternative test method correlates with the emission tests and cycles used by the original vehicle or engine for certification. Manufacturers have requested the use of portable emission measurement systems (PEMS). Manufacturers may propose PEMS testing procedures by submitting their plan and data to support its correlation for review and approval by the Executive Officer. The specific language for using the alternative test method can be found in section 4.(a)(4) of the proposed new test procedures (Appendix C).

G. OBD Monitoring System Requirements

Industry has expressed concerns regarding the high relative costs and time associated with demonstrating OBD compliance. Staff is proposing to streamline OBD demonstration requirements and certification documentation requirements and add flexibility for the small volume conversion manufacturers while still affording a reasonable level of protection from high in-use emissions without proper fault detection. With the exception of provisions for certification to the same standard for reduced durability requirements on the OBD test vehicle and exceptions to demonstration requirements for monitors and/or emission controls that were not changed with the conversion, these provisions would continue to apply after the sunset date. And, to ensure applicants do not mistakenly interpret any reductions in testing or data required at the time of certification as an exemption from the underlying OBD system requirement to detect faults, all applicants will be required to submit a statement of compliance that they indeed meet the OBD requirements. The specific language for OBD testing requirements for retrofit certification can be found in section 6. of the proposed new test procedures (Appendix C).

With regards to conversions of light- and medium-duty gasoline original vehicles/engines that are seeking certification to the same emission standards as the original vehicle/engine, the proposed changes would revise certification requirements, reduce the number of demonstration tests required if no changes to monitoring strategies or original control strategies are made with the conversion, and allow the use of less expensive rapid aged parts or an in-use vehicle for demonstration testing. For conversion systems that are seeking certification to more stringent emission standards than that of the original vehicle/engine, the proposed changes would revise certification requirements and delay submission of demonstration test data for some monitors. These provisions are discussed in further detail below.

For small volume conversion manufacturers of light- and medium-duty diesel vehicles/engines or heavy-duty diesel or gasoline vehicles/engines, there have either never been applications for such conversions or the original engines have not yet been subject to full OBD requirements. As such, ARB staff has not had enough experience determining the appropriate streamlined requirements and flexibilities that would ensure that the OBD systems on these vehicles are not compromised by the conversion. Thus, for these conversion systems, manufacturers would be required to propose a plan analogous to the provisions mentioned above, where ARB approval would be based on

the appropriate application of these provisions to the respective requirements in the OBD regulations.

The objective of the certification is to ensure that emissions after the alternative fuel conversion would be no worse than before the conversion, and the OBD system would continue to be able to detect a system fault at the required emission levels. If the vehicle to be retrofitted was certified with an OBD system, the proper functionality of the OBD system must not be impaired as a result of the installation and operation of the alternative fuel retrofit system. Therefore, in developing the proposal, staff considered allowing the waiver of additional OBD demonstration tests if the OBD monitors and their underlying original emission controls have not been changed to maintain emission and OBD compliance.

For OBD demonstration testing, staff is proposing changes to the test vehicle requirements for small volume conversion manufacturers of gasoline original vehicles/engines. When conducting OBD demonstration testing per the current requirements, the manufacturer is required to use a certification emission durability test vehicle, a representative high mileage vehicle, or a vehicle aged to the end of the full useful life using an ARB approved alternative durability procedure. This is required to ensure that the calibration of the OBD system accounts for the aging effects of the emission control system and will properly detect malfunctions on high mileage vehicles and will continue to be required for conversion systems certifying to a more stringent standard. To lower the costs and reduce time involved for conversion systems certified to the same emission standard, the proposal would allow, until the sunset, the use of predefined aged components or limited vehicle aging to "create" a test vehicle in an appropriate condition of aging as long as the requirements specified in the proposed procedures are met. This proposed change would allow small volume conversion manufacturers to use a test vehicle with the original equipment manufacturer (OEM) catalysts and oxygen sensors aged per the bench aging cycle specified in in section 6.(b)(1)(B)1. of the proposed new test procedures (Appendix C). This aging cycle has been copied into the proposed new test procedures from the "California Evaluation Procedures for New Aftermarket Catalytic Converters." Catalysts and oxygen sensors would be required to be aged for 100 hours using the bench aging cycle.

Staff is also proposing changes to the monitors that are required to be demonstrated for small volume conversion manufacturers of gasoline original vehicles/engines. Generally, the existing regulation requires a demonstration test to be conducted for each monitor that is calibrated to an emission threshold and includes demonstrations for the following gasoline monitors: exhaust gas sensors (e.g., oxygen sensors), exhaust gas recirculation (EGR), variable valve timing, fuel system, misfire, secondary air injection, and catalyst. For certification of the conversion system to the same standard as the gasoline original vehicle, staff is proposing until the sunset to require limited demonstration testing only for the exhaust gas sensor monitor, fuel system monitor, catalyst system monitor, and any other monitor where the monitor itself (e.g., the EGR low flow monitor) or the original emission control software (e.g., EGR valve duty cycle) or hardware was changed. For conversion systems certified to a more stringent

standard than the original vehicle, staff is proposing to continue to require demonstration testing for all monitors specified in the existing applicable regulation. However under the proposal, the manufacturer may request to be conditionally certified based on submission of the limited demonstration test data for the exhaust gas sensors, fuel system, and catalyst system monitors. The data for the remaining monitors would be required to be submitted within an appropriate time after conditional certification is granted and the conditional status would be removed upon review and approval of the subsequent data by ARB staff. After the sunset, these provisions for certification to a more stringent standard would also apply to certification to the same standard.

The staff is proposing further changes to the catalyst monitor demonstration requirements. If a catalyst monitor demonstration test illuminates the malfunction indicator light (MIL) after emissions exceed the applicable emission threshold, the regulation currently requires the manufacturer to retest the vehicle with a less deteriorated catalyst and to show that either the MIL illuminates with emissions below the threshold or the MIL illuminates within acceptable upper and lower limits of 25 percent of the applicable standard. Staff is proposing to expand the upper and lower limits by an additional 25 percent, with the limits now based on 50 percent of the applicable standard, to allow more margin for under and over shooting when developing threshold catalysts for the catalyst demonstration test. For example, for a catalyst monitor threshold of 1.75 times the standard, the manufacturer has to demonstrate the catalyst malfunction is detected between 1.5 and 2.0 times the standard under the existing regulation. Under the proposal for a catalyst monitor threshold of 1.75 times the standard, the manufacturer would have to demonstrate the catalyst malfunction is detected between 1.25 and 2.25 times the standard. This proposal would apply to conversion systems certified to either the same emission standard as, or a more stringent emission standard, than that of the original vehicle/engine.

Lastly, staff is also proposing changes to the certification documentation requirements that would apply to all converters (i.e., would not be limited to only small volume conversion manufacturers). Specifically, as an alternative to providing all the certification documentation information required by the OBD regulation, staff is proposing to allow manufacturers to provide only information about the modifications, additions, and deletions made to the OBD system on the original vehicle/engine. As mentioned above, these certification documentation changes would not be subject to the sunset date deadline.

While the staff is proposing changes to the required demonstration tests and certification documentation requirements, it is important to note that the OBD system performance and enforcement requirements remain unchanged. The proposed changes are intended to reduce the time and cost of preparing certification documentation and conducting testing to support OBD certification for small volume conversion manufacturers while maintaining the required performance of the OBD system and its ability to detect malfunctions on in-use vehicles.

H. Dual Fuel Waivers

Manufacturers seeking to convert a vehicle to use an alternative fuel or the conventional fuel the vehicle or engine was originally certified with must comply with the exhaust and evaporative emission standards for both fuels. Dual fuel refers to a retrofit system which utilizes both an alternative fuel and a conventional fuel, engineered and designed to be capable of operating on either fuel. The dual fuel system has separate fuel tanks for each fuel on-board the vehicle, but only one fuel is used at a time during operation. However, manufacturers applying for alternative fuel certification may provide an engineering justification for a test waiver to eliminate repeating the emissions testing of the vehicle on the original fuel.

The manufacturer would have to include an explanation of how the changes associated with the retrofit system do not affect the emissions and engine operation of the vehicle using its original fuel. This proposed waiver from repeating the required evaporative and exhaust and emission testing on the original fuel would provide economic benefit for the manufacturers due to reduction in the number of tests. Since the manufacturer still has to demonstrate compliance, based on engineering evaluation of the system and data submitted, and be approved by the Executive Officer before the waiver can be issued, staff believes there is minimal to no little risk of increasing emission or to the integrity of the certification process. The specific language for requesting a waiver for dual fuel systems can be found in section 5.(c)(2) of the proposed new test procedures (Appendix C).

I. Certifying to a More Stringent Emission Standard

Industry has requested a more streamlined process to certify a vehicle or engine to a more stringent emission standard than the original vehicle or engine's original certification standard. Applicants often wish to reduce certifications one level (e.g., converting an ultra low emission vehicle (ULEV) gasoline vehicle to a super ultra low emission vehicle (SULEV) or natural gas vehicle). Market drivers for such requests include funding opportunities and high occupancy vehicle lane access.

Section 6.(b)(2) of the proposed new test procedures would allow small volume conversion manufacturers to request certification to a more stringent standard after completing testing for only the exhaust gas sensor monitor, fuel system monitor, catalyst system monitor, and any other monitor where the monitor itself (e.g., the EGR low flow monitor) or the original emission control software (e.g., EGR valve duty cycle) or hardware was changed. The data for the remaining monitors would be required to be submitted within an appropriate time after conditional certification is granted and the conditional status would be removed upon review and approval of the subsequent data by ARB staff. If approved, the applicant will receive an Executive Order that allows it to sell the conversion systems. However, the EO will be expressly conditioned upon submission of the remaining OBD demonstration requirements within a specified length of time to complete the certification.

J. Warranty Requirements

ARB requires new vehicle and engine manufacturers to provide an emissions warranty to consumers for the emission control components for a period of time and mileage. Emissions warranty helps ensure manufacturers build components that are durable and function as designed and as certified. The current aftermarket conversion procedures include emissions warranty provisions similar to the new vehicle and engine requirements. The staff proposal is to continue the current aftermarket warranty provisions with minor changes. Manufacturers shall provide warranty for three years or 50,000 miles or the warranty period remaining from the original vehicle or engine. New vehicle warranties for advance control vehicles may reach 15 years or 150,000 miles. These Procedures will maintain that level of coverage. Similar requirements are proposed for high cost parts where warranty is extended to 7 years or 70,000 miles.

Manufacturers will also have to retain and review warranty claims for each conversion system on a production year basis for three years. The reports of the claims must be available to ARB upon request. If warranty claims are excessive, perhaps exceeding 25 claims or 1 percent for a specific part, ARB may use the information to initiate in-use enforcement testing or confirmatory testing. The specific language all warranty requirements can be found in section 9. of the proposed new test procedures (Appendix C).

K. Sunset Provision

Staff believes that some of the test procedures will need to be updated to reflect the changes in emission control and OBD systems for the 2018 model year. By 2018, the declining LEV III exhaust emission fleet average will be driving a significant portion of the light duty vehicles to lower exhaust emission levels. In addition, the heavy duty OBD standards will also be in full effect for conventional and alternative fueled engines for the 2018 model year.

Currently, staff believes that certifying compliance to the lower LEV III standards can only be accomplished through actual testing and demonstration of the emission control and OBD systems. Waiving these tests through an engineering evaluation is not possible because technologies that will be used to comply with the new LEV III standards will need to be more sophisticated and durable. Additionally, the proposed deterioration factors used for complying with today's standards are unlikely to be representative of the deterioration factors for the lower LEV III standards. Likewise, heavy duty diesel engines currently use Selective Catalytic Reduction (SCR) exhaust aftertreatment technology to reduce emissions. Conversions of heavy duty diesel engine to gaseous fuels may also result in the use of a different aftertreatment technology (e.g., a three way catalyst).. This type of significant change is essentially a new engine and will need to complete full certification. Therefore most of the proposed flexibility will likely not be appropriate at that time. Further, full OBD will be required on new alternative fueled heavy duty engines beginning in the 2018 model year. It is

appropriate to require full OBD demonstrations to ensure compliance at this new level of capability on both new and converted engines.

For these reasons, staff is proposing to sunset provisions that are not appropriate after the 2017 model year when the new lower emissions standards take effect. Staff will monitor impacts to emissions and changes to engine technology and will provide future recommendations to the Board whether the sunset provision needs to be extended.

The proposed changes also allow small volume conversion manufacturers the ability to waive many of the OBD demonstration requirements which transfer some of the risk for long term emissions increases to ARB. Based on staff's technical understanding and judgment, the sunset provision would also serve as a safety net for containing potential emission impacts should unforeseen issues arise as a result of the proposal.

Staff developed this proposal through the public process. A number of the participating stakeholders have experience certifying conversion systems to existing ARB requirements. Their input based on their experience was taken into consideration when making changes to the demonstration requirements. The requirements change the least for systems certified to more stringent standards so there is reduced risk with respect to such systems. Likewise if the volumes grow for systems certified to more stringent standards, the cumulative potential emission impact is minimized. However, with respect to the systems certified to the same standard, there may be more growth in this market because the time and cost to certify is greatly reduced. The sunset provision will create a firm opportunity to revisit the requirements and conservatively puts the sunset in place in the event the benefits of these producers do not manifest themselves as expected or in the event there are problems that need to be addressed. Further, the additional volumes will support the time and cost of doing a more rigorous certification. The definition of sunset can be found in section 2.(a)(19) of the proposed new test procedures (Appendix C).

L. Expedited Approval Process

Staff is proposing to create a new subsection (c) in sections 2030 and 2031 of title 13, CCR to provide manufacturers that certify new vehicles and engines fueled by alternative fuels an expedited process to certify an identical alternative fuel conversion system. The proposed changes will allow a manufacturer to request approval to carry-over or carry-across data used to obtain California certification of a new vehicle or new engine to demonstrate compliance with the emission testing requirements specified under the in-use procedures for identical conversion systems. Applicants for carry-over and carry-across will be evaluated according to the criteria specified in U.S. EPA Advisory Circular 17F, dated November 16, 1982, updated on January 21, 1988, which is incorporated by reference in section 11.(b)(3) of the proposed new test procedures (Appendix C). This would substantially reduce the time and costs for certifying alternative fuel conversion systems for qualifying manufacturers.

IX. PUBLIC PROCESS FOR DEVELOPMENT OF PROPOSED ACTION

Air Resources Board staff developed the proposed amendments through an extensive public process in less than a year. This included public workshops, workgroup meetings, and teleconference calls with stakeholders. At all workshops and meetings, staff solicited comments from stakeholders and affected industry to develop staff's current proposals. Appendix F lists organizations, companies, and agencies that were represented at these meetings.

A. Public Workshops

On August 14, 2012, ARB staff held an informational workshop in El Monte, California, to discuss ARB's current alternative fuel conversion requirements for new and used vehicles and engines. Based on comments received at the workshop and recent changes adopted by the U.S. EPA to their procedures for certifying alternative fuel conversions, staff began investigating the need for updates to ARB's procedures. See Appendix F for a list of participants, workshop notice, and staff's presentation.

On January 22, 2013, staff held a second public workshop in El Monte, California to discuss the proposed amendments to the alternative fuel conversion certification procedures for new and in-use vehicles and engines. The workshop was also available via teleconference to attendees who could not travel. Attendees at the January 22, 2013 workshop included representatives of natural gas and propane alternative fuel conversion system manufacturers, alternative fuel suppliers, and hybrid-electric retrofit system manufacturers. See Appendix F for a list of participants, workshop notice, and staff's presentation. At the workshop, staff discussed proposals to amend the current procedures. These included changes designed to streamline the application process for in-use certifications, changes to the certification test requirements, changes to the OBD test procedures, and changes to the in-use testing and installation inspection requirements. Staff also discussed the viability of alternative test methods and a request from stakeholder input regarding current market demand for new and in-use hybrid conversions. Attendees commented on expanding the use of alternative fuels (mainly natural gas and propane) in the transportation sector. They also stated that ARB's current certification requirements are overly prescriptive and create market barriers in California, especially for small businesses. Much of the discussion centered on recently adopted changes by U.S. EPA to their alternative fuel conversion certification procedures. Attendees also stated the cost disparity between a U.S. EPA certification versus an ARB certification and that much of the costs concerns are associated with the OBD requirements. The attendees also expressed concern that ARB's alternative fuel certification procedures currently do not allow the use of waivers. U.S. EPA allows alternative fuel manufacturers to request waivers from repeating specific tests already performed during a vehicle or engine's original certification testing.

ARB staff held a third public workshop on May 1, 2013 in El Monte, California. The workshop was also available to attendees to participate via teleconference. Approximately 70 individuals participated in the workshop both in-person and via

teleconference. See Appendix F for list of participants, workshop notice, and staff's presentation. At the workshop, staff's proposals included creating a single process for new and in-use conversions by focusing on certifying retrofit systems rather than vehicles/engines, providing additional flexibilities for small volume conversion manufacturers, and streamlining the application and approval process. Staff also proposed reducing emission testing and OBD demonstration requirements, expanding applicable test fuels and deterioration factors, incorporating waiver language, changes to in-use testing and installation control changes, and a four year window for added flexibilities.

B. Workgroup Meetings and Other Outreach Efforts

ARB staff also held four workgroup meetings to discussed proposed amendments with industry representatives. Workgroup participants included representatives from companies that develop technology to modify conventional fueled vehicles to alternative fueled vehicles. Representatives at the workgroup meetings also included representatives from the alternative fuel industry. These meetings were held on January 15, March 1, April 8, and May 30, 2013. The meetings were designed to work with industry representatives on more detailed and technical issues in developing the proposed amendments including costs, alternative fuel conversions, and streamlining certification application process. ARB also held numerous teleconference calls with individual stakeholders and representatives of the natural gas industry to discuss technical information further on the proposed amendments.

X. REFERENCES

1. Clean Alternative Fuel Vehicle and Engine Conversions; Final Rule; 40CFR Parts 85 and 86. (April 8, 2011) http://www.gpo.gov/fdsys/pkg/FR-2011-04-08/pdf/2011-7910.pdf

2. Natural Gas Coalition Letter to ARB; March 8, 2013; Re: CARB's Alternative Fuel Vehicle Conversion Certification Program. (Available in the Appendix E)

3. Alternative Fuels Advocates, LLC Letter to ARB; August 2, 2012; Re: Streamlining of certain Natural Gas / Propane vehicle and engine certification procedures. (Available in the Appendix E)

APPENDIX A

A. Proposed Amendments to Regulation

AMENDMENTS
TO ARTICLE 5, CHAPTER 1, DIVISION 3, TITLE 13
OF THE CALIFORNIA CODE OF REGULATIONS AND
TO SECTIONS 2030 AND 2031 OF ARTICLE 5

Note: Amendments are shown in underline to indicate additions and ~~strikeout~~ to indicate deletions from the existing regulatory text.

Article 5. Approval of Systems Designed To Convert Motor Vehicles to Use Fuels Other Than the Original Certification Fuel or to Convert Motor Vehicles for Emission Reduction Credit or to Convert Hybrid Electric Vehicles to Off-Vehicle Charge Capable Hybrid Electric Vehicles

Amend title 13, California Code of Regulations, sections 2030 and 2031 to read as follows:

§ 2030. Liquefied Petroleum Gas or Natural Gas Retrofit Systems.

(a) Applicable Standards and Test Procedures.
The standards and test procedures for approval of systems designed to convert 1993 and earlier model year motor vehicles to use liquefied petroleum gas or natural gas fuels are contained in "California Exhaust Emission Standards and Test Procedures for Systems Designed to Convert Motor Vehicles Certified for 1993 and Earlier Model Years to Use Liquefied Petroleum Gas or Natural Gas Fuels" adopted by the State Board on April 16, 1975, as amended November 21, 1995. The standards and test procedures for approval of systems designed to convert 1994 ~~and subsequent~~ through 2003 model year motor vehicles to use liquefied petroleum gas or natural gas fuels are contained in "California Certification and Installation Procedures for Alternative Fuel Retrofit Systems for Motor Vehicles Certified for 1994 through 2003 Model Years ~~and Subsequent Model Years~~ and for 1994 through 2003 ~~all~~ Model Year Motor Vehicle Retrofit Systems Certified for Emission Reduction Credit," adopted by the State Board March 11, 1993, as last amended ~~September 25, 1997~~ [DATE OF AMENDMENT]. At the option of the retrofit system manufacturer, the standards and test procedures for approval of systems designed to convert 1994 through 2003 ~~and subsequent~~ model year vehicles to use liquefied petroleum gas or natural gas fuels may be used for approval of systems designed to convert 1993 and earlier model year motor vehicles to use liquefied petroleum gas or natural gas fuels in lieu of the "California Exhaust Emission Standards and Test Procedures for Systems Designed to Convert Motor Vehicles Certified for 1993 and Earlier Model Years to Use Liquefied Petroleum Gas or Natural Gas Fuels." The standards and test procedures for approval of systems designed to convert 2004 and subsequent model year motor vehicles to use liquefied petroleum gas or natural gas fuels are contained in the "California Certification and Installation Procedures for Alternative Fuel Retrofit Systems for On-Road Motor Vehicles and Engines," adopted by the State board on [*DATE OF ADOPTION*], which are incorporated herein by reference.

(b) Implementation Phase-In Schedule.
Notwithstanding sub section (a), a retrofit system manufacturer may apply "California Exhaust Emission Standards and Test Procedures for Systems Designed to Convert Motor Vehicles Certified for 1993 and Earlier Model Years to Use Liquefied Petroleum Gas or Natural Gas Fuels" to certify retrofit systems for 1994 and 1995 model-year vehicles in accordance with the following implementation phase-in schedule. Each manufacturer may certify a maximum of 85 percent of its total 1994 model-year engine

family retrofit systems, 45 percent of its total 1995 model-year systems, and 45 percent of its total 1996 model-year systems, according to the requirements of these test procedures and "California Exhaust Emission Standards and Test Procedures for Systems Designed to Convert Motor Vehicles Certified for 1993 and Earlier Model Years to Use Alcohol or Alcohol/Gasoline Fuels", adopted by the State Board on April 28, 1983, as amended November 21, 1995. The remaining percentage of each manufacturer's certified 1994, 1995, and 1996 model-year engine family retrofit systems and all ~~of~~ 1997 ~~and subsequent~~ through 2003 model-year engine family retrofit systems shall be certified according to "California Certification and Installation Procedures for Alternative Fuel Retrofit Systems For Motor Vehicles Certified For 1994 ~~and Subsequent~~ through 2003 Model Years and for 1994 through 2003 ~~all~~ Model Year Motor Vehicle Retrofit Systems Certified for Emission Reduction Credit." The percentages shall be determined from the total number of retrofit systems certified and shall be met prior to the end of the next respective calendar year. "California Exhaust Emission Standards and Test Procedures for Systems Designed to Convert Motor Vehicles Certified for 1993 and Earlier Model Years to Use Liquefied Petroleum Gas or Natural Gas Fuels" shall not be applied to certify a retrofit system for installation on a transitional low-emission vehicle (TLEV), low-emission vehicle (LEV), or ultra-low-emission vehicle (ULEV) or to certify a retrofit system designed to convert a vehicle to TLEV, LEV, or ULEV emission standards (as defined in Section 1960.1, Title 13, California Code of Regulations), or to certify a retrofit system for emission reduction credits.

(c) Expedited Approval Provisions.
A manufacturer of new 2004 or subsequent model year passenger cars, light-duty trucks, medium-duty vehicles or heavy-duty engines or vehicles that are fueled by alternative fuels, as defined in title 13, California Code of Regulations, Chapter 5, Standards for Motor Vehicle Fuels, sections 2290– 2293.5 that obtains a new vehicle or engine certification from ARB may request certification of an alternative fuel retrofit system that is identical in configuration to the fuel system in the California certified vehicle or engine under the "California Certification and Installation Procedures for Alternative Fuel Retrofit Systems for On-Road Motor Vehicles and Engines," adopted by the State board on [*DATE OF ADOPTION*], which are incorporated herein by reference. The manufacturer may request approval to carry-over or carry-across data used to obtain California certification of a new vehicle or new engine to demonstrate compliance with the emission testing requirements specified under the "California Certification and Installation Procedures for Alternative Fuel Retrofit Systems for On-Road Motor Vehicles and Engines," adopted by the State board on [*DATE OF ADOPTION*], which are incorporated herein by reference. For purposes of this provision, the term "identical" means that all engine parts on the alternative fuel retrofit system that affect emissions must be of the same design, specifications, tolerances as those of the fueling system as disclosed in the manufacturer's certification application for the new vehicle or new vehicle engine.

NOTE: Authority cited: Sections 39515, 39600, 39601 and 43006, Health and Safety Code. Reference: Sections 43000, 43004, 43006, 43008.6, 43013 and 43108, Health and Safety Code; and Sections 27156, 38391 and 38395, Vehicle Code.

§ 2031. Alcohol or Alcohol/Gasoline Fuels Retrofit Systems.

(a) Applicable Standards and Test Procedures.
The standards and test procedures for approval of systems designed to convert 1993 and earlier model year motor vehicles to use alcohol or alcohol/gasoline fuels in lieu of the original certification fuel system are contained in "California Exhaust Emission Standards and Test Procedures for Systems Designed to Convert Motor Vehicles Certified for 1993 and Earlier Model Years to Use Alcohol or Alcohol/Gasoline Fuels," adopted by the State Board April 28, 1983, as amended November 21, 1995. The standards and test procedures for approval of systems designed to convert 1994 ~~and subsequent~~ through 2003 model year motor vehicles to use alcohol or alcohol/gasoline fuels are contained in "California Certification and Installation Procedures for Alternative Fuel Retrofit Systems for Motor Vehicles Certified for 1994 through 2003 ~~and Subsequent~~ Model Years and for 1994 through 2003 ~~all~~ Model Year Motor Vehicle Retrofit Systems Certified for Emission Reduction Credit," adopted by the State Board March 11, 1993, as last amended ~~September 25, 1997~~ [DATE OF AMENDMENT]. At the option of the retrofit system manufacturer, the standards and test procedures for approval of systems designed to convert 1994 ~~and subsequent~~ through 2003 model year motor vehicles to use alcohol or alcohol/gasoline fuels may be used for approval of systems designed to convert 1993 and earlier model year motor vehicles to use alcohol or alcohol/gasoline fuels in lieu of the "California Exhaust Emission Standards and Test Procedures for Systems Designed to Convert Motor Vehicles Certified for 1993 and Earlier Model Years to Use Alcohol or Alcohol/Gasoline Fuels." The standards and test procedures for approval of systems designed to convert 2004 and subsequent model year motor vehicles to use alcohol or alcohol/gasoline fuels in lieu of the original certification fuel system are contained in the "California Certification and Installation Procedures for Alternative Fuel Retrofit Systems for On-Road Motor Vehicles and Engines," adopted by the State board on [*DATE OF ADOPTION*], which are incorporated herein by reference.

(b) Implementation Phase-In Schedule.
Notwithstanding subsection (a), a retrofit system manufacturer may apply "California Exhaust Emission Standards and Test Procedures for Systems Designed to Convert Motor Vehicles Certified for 1993 and Earlier Model Years to Use Alcohol or Alcohol/Gasoline Fuels" to certify retrofit systems for 1994 and 1995 model-year vehicles in accordance with the following implementation phase-in schedule. Each manufacturer may certify a maximum of 85 percent of its total 1994 model-year engine family retrofit systems, 45 percent of its total 1995 model-year systems, and 45 percent of its total 1996 model-year systems, according to the requirements of these test procedures and the "California Exhaust Emission Standards and Test Procedures for Systems Designed to Convert Motor Vehicles Certified for 1993 and Earlier Model

Years to Use Liquefied Petroleum Gas or Natural Gas Fuels," adopted by the State Board on April 16, 1975, as amended November 21, 1995. The remaining percentage of each manufacturer's certified 1994, 1995, and 1996 model-year engine family retrofit systems and all ~~of~~ 1997 ~~and subsequent~~ through 2003 model-year engine family retrofit systems shall be certified according to "California Certification and Installation Procedures for Alternative Fuel Retrofit Systems For Motor Vehicles Certified For 1994 ~~and Subsequent~~ through 2003 Model Years and for 1994 through 2003 ~~all~~ Model Year Motor Vehicle Retrofit Systems Certified for Emission Reduction Credit." The percentages shall be determined from the total number of retrofit systems certified and shall be met prior to the end of the next respective calendar year. "California Exhaust Emission Standards and Test Procedures for Systems Designed to Convert Motor Vehicles Certified for 1993 and Earlier Model Years to Use Alcohol or Alcohol/Gasoline Fuels" shall not be applied to certify a retrofit system for installation on a transitional low-emission vehicle (TLEV), low-emission vehicle (LEV), or ultra-low-emission vehicle (ULEV) or to certify a retrofit system designed to convert a vehicle to TLEV, LEV, or ULEV emission standards (as defined in Section 1960.1, Title 13, California Code of Regulations), or to certify a retrofit system for emission reduction credits.

(c) Expedited Approval Provisions.
A manufacturer of new 2004 or subsequent model year passenger cars, light-duty trucks, medium-duty vehicles or heavy-duty engines or vehicles that are fueled by alternative fuels, as defined in title 13, California Code of Regulations, Chapter 5, Standards for Motor Vehicle Fuels, sections 2290– 2293.5 that obtains a new vehicle or engine certification from ARB may request certification of an alternative fuel retrofit system that is identical in configuration to the fuel system in the California certified vehicle or engine under the "California Certification and Installation Procedures for Alternative Fuel Retrofit Systems for On-Road Motor Vehicles and Engines," adopted by the State board on [*DATE OF ADOPTION*], which are incorporated herein by reference. The manufacturer may request approval to carry-over or carry-across data used to obtain California certification of a new vehicle or new engine to demonstrate compliance with the emission testing requirements specified under the "California Certification and Installation Procedures for Alternative Fuel Retrofit Systems for On-Road Motor Vehicles and Engines," adopted by the State board on [*DATE OF ADOPTION*], which are incorporated herein by reference. For purposes of this provision, the term "identical" means that all engine parts on the alternative fuel retrofit system that affect emissions must be of the same design, specifications, tolerances as those of the fueling system as disclosed in the manufacturer's certification application for the new vehicle or new vehicle engine.

NOTE: Authority cited: Sections 39515, 39600, 39601 and 43006, Health and Safety Code. Reference: Sections 43000, 43004, 43006, 43008.6, 43013 and 43108, Health and Safety Code; and Sections 27156, 38391 and 38395, Vehicle Code.

APPENDIX B

B. Proposed Amendments to the "California Certification and Installation Procedures for Alternative Fuel Retrofit Systems for Motor Vehicles Certified for 1994 and Subsequent Model Years and for all Model Year Motor Vehicle Retrofit Systems Certified for Emission Reduction Credit"

NOTE: The proposed amendments to this document are shown in underline to indicate additions and ~~strikeout~~ to indicate deletions compared to the test procedures as last amended November 21, 1995.

State of California
AIR RESOURCES BOARD

California Certification and Installation Procedures for Alternative Fuel Retrofit Systems for Motor Vehicles Certified for 1994 through 2003 Model Years ~~and Subsequent Model Years~~ and for 1994 through 2003 ~~all~~ Model Year Motor Vehicle Retrofit Systems Certified for Emission Reduction Credit

Adopted: March 11, 1993
Amended: April 26, 1995
Amended: November 21, 1995
Amended: [INSERT DATE OF AMENDMENT]

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California Certification and Installation Procedures for Alternative Fuel Retrofit Systems for Motor Vehicles Certified for 1994 through 2003 Model Years ~~and Subsequent Model Years~~ and for 1994 through 2003 ~~all~~ Model Year Motor Vehicle Retrofit Systems Certified for Emission Reduction Credit

1. APPLICABILITY

(a) "Certification and Installation Procedures for Alternative Fuel Retrofit Systems for Motor Vehicles Certified for 1994 through 2003 Model Years ~~and Subsequent Model Years~~ and Retrofit Procedures for Emission Reduction Credit for 1994 through 2003 ~~all~~ Model Years ("these Procedures") apply to alternative fuel retrofit systems designed for installation on gasoline- or diesel-fueled light-, medium-, and heavy-duty motor vehicles for 1994 through 2003 ~~and subsequent~~ model years, and alternative fuel and conventional fuel retrofit systems for emission reduction credits for 1994 through 2003 ~~all~~ model years.

(b) Only these procedures shall be used to certify a retrofit system for the purpose of generating emission reduction credits. Each retrofit system manufacturer shall certify all engine family systems to be used for generating emission reduction credits regardless of model year (MY) or fuel used.

(c) Only these Procedures shall be used to certify a retrofit system for installation on a transitional low-emission vehicle ("TLEV"), low-emission vehicle ("LEV"), or ultra-low-emission vehicle ("ULEV") or to certify a retrofit system designed to convert a vehicle to TLEV, LEV, or ULEV emission standards (as defined in Section 1960.1, Title 13, CCR).

(d) Each manufacturer shall certify a minimum of 15 percent of 1994, 55 percent of 1995, 55 percent of 1996, and 100 percent of 1997 through 2003 ~~and subsequent~~ model year engine family retrofit systems according to the requirements of these Procedures except as provided in paragraph 1. (b). "California Exhaust Emission Standards and Test Procedures for Systems Designed to Convert Motor Vehicles Certified for 1993 and Earlier Model Years to Use Liquefied Petroleum Gas or Natural Gas Fuels," (for certifying liquefied petroleum gas or natural gas retrofit systems) and "California Exhaust Emission Standards and Test Procedures for Systems Designed to Convert Motor Vehicles Certified for 1993 and Earlier Model Years to Use Alcohol or Alcohol/Gasoline Fuels" (for certifying alcohol and alcohol/gasoline retrofit systems) shall be used to certify the remaining percentage of 1994, 1995, and 1996 model year engine family systems and 1993 and prior model year engine family systems, except as provided in paragraph 1. (b) and 1. (e). The percentages shall be determined from the total number of retrofit systems certified and shall be met prior to the end of the next respective calendar year.

(e) A retrofit system manufacturer may as an option use these Procedures to certify non-credit generating alternative fuel retrofit systems designed for installation on pre-1994 model year gasoline- or diesel-fueled light-, medium-, and heavy-duty motor vehicles, with the following addition: the Executive Officer may order 25,000 mile durability vehicle testing for alternative fuel retrofit systems designed for installation on pre-1994 model year vehicles which include hardware or components other than the fuel conversion system as part of the overall retrofit system.

(f) A certification for an alternative fuel retrofit system issued pursuant to these Procedures shall have the effect of a certification of an alternative fuel retrofit system pursuant to Health and Safety Code Section 43006. A certification for retrofit equipment utilizing any fuel, issued pursuant to these regulations, shall have the effect of an exemption issued pursuant to Vehicle Code Sections #27156 and 38395.

2. DEFINITIONS

"Alternative fuel" refers to liquefied petroleum gas, natural gas, alcohol and alcohol/gasoline fuels.

An "alternative fuel retrofit system" is a package of fuel, ignition, emission control, and engine components that are modified, removed, or added during the process of modifying a motor vehicle to operate on an alternative fuel. Such systems can be optionally certified to generate credits.

"Conventional fuel" means gasoline or diesel fuel.

"Credit-generating conventional fuel retrofit system" is a retrofit system that is certified to generate credits and that operates exclusively on the fuel for which the engine family was originally certified.

"Credits" refers to mobile source emission reduction credits.

"Drivability" of a vehicle refers to the smooth delivery of power, as demanded by the driver. Typical causes of drivability degradation are rough idling, misfiring, surging, hesitation, or insufficient power. Conversion from gasoline to gaseous fuels usually entails a loss of volumetric efficiency, resulting in some power loss. Normal power loss shall not be considered to be drivability degradation.

"Dual fuel" refers to a retrofit system which utilizes both an alternative fuel and a conventional fuel without further hardware changeover required.

"Installer" refers to a person who installs alternative fuel or credit-generating conventional fuel retrofit systems on motor vehicles.

"Retrofit system" is a package of fuel, ignition, emission control and engine components that are modified, removed, or added during the process of modifying an engine to operate at an emission rate lower than the rate to which the engine family was originally certified.

"Retrofit system manufacturer" or "manufacturer" refers to a person who manufactures or assembles an alternative fuel or credit-generating conventional fuel retrofit system for sale in California and requests or is granted the Executive Order certifying the alternative fuel or credit generating conventional fuel retrofits system.

"Tier 1" refers to the emission standards applicable to 1995 and subsequent model year light-duty vehicles not considered as TLEV's, ULEV'S or LEV'S, and as described in Section 1960.1, Title 13, California Code of Regulations.

For purposes of these Procedures "useful life" is the duration, expressed in miles, of the longest durability period for the new vehicle or engine emission standards to which the vehicle or engine family was certified. (This is typically 50,000 miles for light-duty vehicles. However, as of the 1993 model year, a phase-in of new, more stringent, light-duty standards with 100,000 mile useful life requirements will begin.)

3. GENERAL REQUIREMENTS

(a) Product Specifications:

In addition to all other standards or requirements imposed, the following general requirements shall apply to all alternative fuel or credit-generating conventional fuel retrofit systems to be certified for installation on California-certified gasoline or diesel-fueled motor vehicles:

(i) Alternative fuel retrofit systems for gaseous fuels shall be equipped with a lock off valve, actuated by an electrical or vacuum signal, preventing delivery of fuel to the carburetor, or fuel injection system, while the engine is shut down.

(ii) The drivability of a vehicle equipped with a retrofit system shall not be degraded in such a way as to encourage consumer tampering. To verify that the drivability of a retrofitted vehicle is acceptable, the Executive Officer may require that an independent laboratory evaluate drivability. The Executive Officer's determination that drivability must be evaluated shall be based on an engineering evaluation of the retrofit system described in the application for certification or on reports or

observations that retrofit systems similar in design to the system for which certification is sought have caused drivability degradation. The cost of this evaluation shall be borne by the applicant.

(iii) If the vehicle to be retrofitted was certified with an on-board diagnostic (OBD) system, pursuant to Section 1968 or 1968.1, Title 13, California Code of Regulations (CCR), the proper function of the on-board diagnostic system shall not be impaired as a result of the installation and operation of the alternative fuel or credit-generating conventional fuel retrofit system. This requirement may necessitate modification of the OBD system to prevent it from storing erroneous trouble codes (e.g., storing a code signifying faulty operation of the evaporative canister purge valve because the evaporative emission control system has been removed). All modifications to OBD components, programming or wiring, must be fully specified as parts of the retrofit system. If the retrofit system includes modifications to the OBD system, the applicant must submit an analysis showing that these modifications will not adversely affect OBD performance. Notwithstanding, for 2004 and previous model year vehicles, retrofit system manufacturers may request Executive Officer approval to disable specific on-board diagnostic monitoring strategies for which monitoring may not be reliable with respect to the use of alternative fuels (e.g., oxygen sensor response rate checks). The manufacturer shall submit data and/or an engineering evaluation to justify the request.

(iv) With the exception of idle speed control and throttle position control, no component or calibration of the fuel system that could affect emission performance shall be adjustable by the system installer or the vehicle's user.

(b) Emission Control Labels:

"California Motor Vehicle Emission Control Label Specifications," incorporated by reference in Title 13, CCR, Section 1965, shall apply to installations of alternative fuel or credit-generating conventional fuel retrofit systems, with the following additions:

(i) The retrofit system manufacturer shall provide a supplemental Emission Control Information label, which shall be affixed in a permanent manner to each retrofitted vehicle, in a location adjacent to the original Emission Control Information Label. If the supplemental label cannot be placed adjacent to the original label, it shall be placed in a location where it can be seen by a person viewing the original label.

(ii) The supplemental label shall show the vehicle model year; the Executive Order number certifying the retrofit system; the retrofit system manufacturer's name, address, and telephone number; and shall state that the retrofitted vehicle complies with California emission requirements. If the retrofit system has been certified as being capable of converting the vehicle into a Tier 1, TLEV, LEV, or ULEV, the label shall prominently display the title, "Tier 1 Vehicle," "Transitional Low-Emission Vehicle," "Low-Emission Vehicle," or "Ultra-Low-Emission Vehicle," as appropriate. If the retrofit system has been certified for credit-generation use on a heavy-duty vehicle, the label will state the applicable credit and standards, defined in Section 1956.9., Title 13, California Code of Regulations. The label shall also list any original parts that were removed during installation of the retrofit system, as well as any changes in tune-up specifications required for the retrofit system. In addition, the label shall show the installer's name, address, and telephone number; the date on which the retrofit system was installed; and the mileage (retrofitted vehicle odometer reading) and date at which the retrofit system warranties expires. It is not necessary for emission control labels installed with retrofit systems to be machine readable. The supplemental label for an alternate fuel retrofit vehicle shall clearly state that the vehicle bas been equipped with an alternative fuel retrofit system designed to allow it to operate on a fuel other than gasoline or diesel and shall identify the fuel(s) that the vehicle is designed to use.

(iii) The retrofit system manufacturer shall provide a vacuum hose routing diagram for each alternate fuel retrofit system sold, and for any other retrofit that includes changes to the vacuum hose routing. The vacuum hose routing diagram shall be placed underhood in a permanent manner at a visible and accessible location and shall show modifications to the original vacuum system.

(c) Owner's Manuals:

Each retrofit system installed shall include an owner's manual containing at least the following information:

(i) a brief description of the retrofit system, including major components and their theory of operation;

(ii) the correct refueling procedure for alternate fuel retrofits;

(iii) a listing of necessary service and service intervals, as well as tune-up data, which differ from the service requirements specified by the vehicle's or engine's original manufacturer;

(iv) the name, address, and phone number of the installer, as well as a list of the names, addresses, and phone numbers of the major dealers in California who supply parts for, or service, the retrofit system; and

(v) warranty information.

(d) Manufacturer Recordkeeping Requirement:

Manufacturers of retrofit systems shall maintain a record of the vehicle identification numbers and California license plate numbers of those vehicles on which their product has been installed. As part of this record, manufacturers shall identify the installation date and the certification number of those systems installed on each vehicle and shall identify the vehicles' owners at the time of installation, including the owners' current addresses and phone numbers at the time of installation. The retrofit system manufacturer shall supply a copy of all installation information to the Executive Officer upon request.

(e) Installer Recordkeeping Requirement:

Installers of retrofit systems shall maintain a record as specified in paragraph 3(d) and shall provide this information to retrofit system manufacturers upon request.

4. REQUEST FOR CERTIFICATION

(a) A request for certification of an alternative fuel or credit- generating conventional fuel retrofit system may be submitted by an authorized representative of the retrofit system manufacturer intending to offer the retrofit system for sale or installation in the State of California.

(b) A separate request shall be required for each model year, even though the emission standards for certifying new vehicles may be the same for consecutive model years. The request shall include all test data and other information required pursuant to these Procedures, except where other provisions of these Procedures allow carry-over or carry-across of test data from an engine family to the engine family (ies) for which certification is sought. Procedures governing carry-over and carry-across are discussed under paragraph 6, "Approval."

(c) The request for certification shall be submitted in writing, signed by an authorized representative of the retrofit system manufacturer, and shall include the following:

(i) Identification and description of the engine families for which the retrofit system to be certified is designed; the emission standards applicable

to those engine families; and if applicable, a statement that the retrofit system is designed [A] to convert conventional vehicles into either TLEVs, LEVs or ULEVs, [B] to convert a TLEV into either an LEV or ULEV, [C] to convert an LEV into a ULEV, [D] to convert 1994 or earlier model year vehicles into Tier 1 Vehicles, or [E] to convert heavy-duty vehicles for emission reduction credit. For [E] include the credit standard(s) proposed for certification from the "Optional Exhaust Emission Standards for Retrofitted Heavy-Duty Engines", as contained in Section 1956.9, Title13, California Code of Regulations.

(ii) A complete description of the alternative fuel retrofit system, including details of the carburetor, mixer, regulator, vaporizer, or fuel injection system; the feedback mixture control system (if applicable), part number(s), calibration data, hose routing, specifications for the fuel tank, and pressure regulator; a sample of the emission control label as specified in 3.(b); a sample of the warranty statement as specified in 9(a) and (b); and all necessary modifications to the engine, emission control system, or other parts of the vehicle.

(iii) Procedures for installing and maintaining the retrofit system, including tune-up specifications and discussion of any special tools or techniques required for proper installation, maintenance, or operation.

(iv) An agreement to supply the Air Resources Board, within 45 calendar days of the Executive Officer's request, with any one or more of the vehicles used for certification testing, or to provide Air Resources Board personnel with equipment to inspect and test such vehicles at the applicant's facility, if requested by the Executive Officer.

(v) For retrofit systems being certified for credit-generation, the manufacturer shall provide in writing the name(s) and address-(es) of the fabrication, assembly line(s), and test facility (ies) where the retrofit kit is manufactured and tested.

(vi) For retrofit systems being certified for credit-generation, the manufacturer shall provide an engineering analysis upon request from the Executive Officer. Such analysis shall describe the detailed operating theory of the retrofit system based on accepted scientific and engineering principles. Final certification will require ARB acceptance and approval of the analysis.

(vii) For conventional fuel retrofits for credit-generation the manufacturer shall provide a complete description of the major components of the retrofit system and part number(s).

5. TEST PROCEDURES

(a) Description of Vehicle Categories:

For the purposes of these certification Procedures, the motor vehicle fleet is divided into three major categories:

I. Passenger cars, light-duty trucks, and medium-duty vehicles as defined in "California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles" (as incorporated by reference in Section 1960.1, Title 13, CCR), which were certified to an exhaust emission standard based on a chassis-dynamometer test procedure;

II. Vehicles with gross vehicle weight ratings less than or equal to 14,000 lbs. and not originally certified to a chassis dynamometer-based exhaust emission standard; and

III. Vehicles with gross vehicle weight ratings greater than 14,000lbs.

(b) Test Procedures for Vehicles in Category I:

Vehicles in Category I may certify under these provisions, or under the alternate test procedures given in 5(g).

For vehicles in Category I, the emission standards end test procedures set forth in the "California Exhaust Emission Standards and Test Procedures for 1988 end Subsequent Model Passenger Cars, light-Duty Trucks, and Medium-Duty Vehicles" also apply to the certification of alternative fuel or credit-generating conventional fuel retrofit systems, with the following exceptions:

(i) The applicable emission standards shall be at least as stringent as the emission standards applicable to the engine families for which the retrofit systems to be certified are designed. For credit-generation, the applicable emission standards shall be the Tier 1 and LEY program standards. Dual–fuel vehicles must be certified on each of the two fuels. For dual-fuel vehicles certified for credit, the certification standards for the two fuels shall be no more than one tier apart. In addition, vehicles retrofitted to operate on a given alternative fuel shall also be subject to any additional emission standards applicable to new motor vehicles that are designed to operate on the alternative fuel, and that are of the model year and vehicle class for which certification is sought. A maximum of one emission-data vehicle per engine family for which certification is sought shall be required. Where durability testing

is required, a bench-test vehicle may be substituted for a durability vehicle end may also be considered an emission-data vehicle. Prior to the commencement of testing, the choice of-durability vehicle or bench-test vehicle, emission-data vehicle(s) and engine(s) must be approved by the Executive Officer as being representative of the range of engine families for which certification is sought.

(ii) For the purpose of applying the provisions of the "California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium- Duty Vehicles" to certification testing of alternative fuel or credit-generating conventional fuel retrofit systems, test vehicles equipped with an alternative fuel or credit-generating conventional fuel retrofit system shall be assumed to have zero miles of mileage accumulation at the time that the retrofit system is installed. Mileage may be subsequently accumulated by driving the vehicle on the road, following a typical suburban route, or on a chassis dynamometer using the Automobile Manufacturer's Association mileage accumulation cycle (40 C.F.R., Part 86, Appendix IV, as adopted January 28, 1977).

(iii) Vehicle mileage accumulation on a durability vehicle or bench aging of retrofit system components shall be conducted to determine deterioration factors. Prior to the commencement of any emission or bench aging, the applicant's test plan must be approved by the Executive Officer. Approval of the test plan shall be contingent upon a demonstration by the applicant that bench aging produces deterioration factors at least as great as durability vehicle testing.

(iv) Bench aging conducted in lieu of vehicle mileage accumulation shall be conducted for a period of time such that the resulting deterioration of the retrofit system is equivalent to that which would occur during durability vehicle mileage accumulation over a mileage equal to the useful life of the vehicle.

(v) Vehicle mileage accumulation on a durability vehicle shall be performed in conjunction with emission testing. Before beginning vehicle mileage accumulation of the retrofit system, the system shall be installed on the durability vehicle; the vehicle shall be driven 4,000 ± 100 miles and then tested an alternative fuel retrofit the vehicle shall be tested using the alternative fuel. A dual-fuel retrofit system shall be emission tested using each fuel that it is capable of operating on. At the conclusion of vehicle mileage accumulation, a second emission test or series of tests shall be performed.

Alternatively, if bench aging is used to determine deterioration factors, then bench aging shall be performed in conjunction with emission

testing of a bench-test vehicle. Before beginning bench aging of the retrofit system, it shall be installed on the bench-test vehicle, the vehicle shall be driven for 4,000 ± 100 miles, and the vehicle shall then be emission tested. Alternate fuel retrofit shall be tested using the alternative fuel. A dual-fuel retrofit system shall be emission tested using each fuel that it is capable of operating on. After the emission tests are completed, the retrofit system shall be removed from the vehicle and subjected to bench aging. At the conclusion of bench aging, the retrofit system shall be reinstalled on the bench-test vehicle, and a second emission test or series of tests shall be performed.

(vi) For exhaust emissions of each regulated pollutant measured during the vehicle mileage accumulation or bench-test procedure, a deterioration factor shall be calculated by dividing the emission rate obtained during the second emission test by that obtained during the first. If the resulting quotient is less than one, the deterioration factor shall be assigned a value of one. The deterioration constant for evaporative emissions shall be calculated by subtracting the evaporative emissions found during the first emission test from those found during the second test. If the resulting difference is less than zero, the deterioration constant shall be assigned a value of zero.

(vii) Choices of vehicle models, engines, and transmissions for use in emission-data vehicles shall be approved by the Executive Officer as being representative of the engine families for which certification is sought, prior to the commencement of testing. Following installation of the retrofit system, the emission-data vehicle shall be driven 4,000 ± 100 miles to stabilize emission rates. After the specified mileage has been accumulated, the emission-data vehicles' exhaust and evaporative emissions, where applicable, shall be tested, using the appropriate procedure as set forth in "California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles. Dual fuel vehicles shall be emission tested using each fuel that the vehicle is capable of operating on.

(viii) The deteriorated emissions of emission-data vehicles shall be calculated using the deterioration factors and constants found during vehicle mileage accumulation or bench testing. The useful life exhaust emission values are defined as the product of each emission value at 4,000 miles times the corresponding deterioration factor. For evaporative emissions, the certification emission value is; equal to the sum of the emissions measured at, or extrapolated to 4,000 miles, plus the deterioration constant. The durability vehicle, bench-test vehicle, and all emission-data vehicles shall meet the applicable new vehicle useful life emission standards, as well as all applicable emission

standards for intermediate mileage levels, for the vehicles' model year- and fuel type(s).

(c) Test Procedures for Vehicles in Category II, Not Being Certified for Credit-Generation Purposes:

Vehicles in Category II not being certified for credit may certify under these provisions; or under the alternate test procedures given in 5(g).

For durability, bench-test and emission-data vehicles in Category II, test vehicles shall have accumulated a total mileage greater than 4,000 miles and less than 10,000 miles with the original fuel system, prior to emission testing. If the manufacturer chooses to use the option as described in 1(e) for pre-1994 model year vehicles, then the 10,000 mile limit shall not be applicable. A test vehicle's engine and emission control system shall be equipped and calibrated as certified. The vehicle shall then be tested for exhaust and, if applicable, evaporative emissions using the test procedures set forth in the "California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles". The inertia weight setting shall be equal to the average of the vehicle's curb weight and gross vehicle weight rating and road load horsepower based on the frontal area of the vehicle without modifications, as determined in "California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles," Section 9.b. The test results shall be defined as the baseline emission rates. After the baseline emission rates have been measured, the retrofit system shall be installed.

(i) The procedures outlined in paragraphs 5(b)(iii) through 5(b)(vi) shall be used with the following modifications: "useful life" shall equal 120,000 miles for vehicles in Category II; the durability or bench-test vehicle's emission rates of regulated pollutants measured at 4,000 ± 100 miles after the installation of the retrofit system shall not exceed 1.10 times the baseline rates; the deteriorated exhaust emissions of regulated pollutants projected to 120,000 miles shall not exceed 1.3 times the baseline emissions; and the deteriorate evaporative emissions of regulated pollutants projected to 120,000 miles shall not exceed the baseline emissions plus 0.5 grams.

(ii) When the Executive Officer determines that deterioration factors determined in paragraph 5(c) (i) may be carried across or carried over to other engine families in Category II, the representative emission-date vehicles shall be tested as specified in paragraph 5(b) (vii). Emission rates measured at 4,000 ± 100 miles after installation of the retrofit system shall not exceed 1.10 times the vehicles baseline rates.

(d) Test Procedures for Vehicles in Category III Not Being Certified for Credit-Generation Purposes:

Vehicles in Category III not being certified for credit may certify under these provisions or under the alternate test procedures given in 5(g).

Applicants requesting certification for retrofit systems for use in Category III vehicles shall submit a test plan, subject to the Executive Officer's approval, to verify that the retrofit system will not cause excess emissions from engine families for which certification is sought. Test vehicles shall have accumulated a total mileage greater than 4,000 miles with the original fuel system prior to emission testing. A test vehicle's engine and emission control system shall be equipped and calibrated as certified. The vehicle shall then be tested for exhaust emissions as specified in the test plan. The test result shall be defined as the baseline emission rate. After the baseline emission rate has been measured, the retrofit system shall be installed. Emission rates shall then be measured at 4,000 ± 100 miles after installation of the retrofit system using the test specified in the test plan.

(i) Emission testing shall be conducted to determine exhaust emission rates of carbon monoxide and the sum of non-methane hydrocarbons plus nitrogen oxides. Emissions shall not exceed 1.10 times the baseline rates.

(ii) The procedures outlined in paragraphs 5(b) (iii) through 5(b) (vi) shall be used with the following modifications: "useful life" shall equal 180,000 miles for vehicles in Category III; the durability or bench-test vehicle's emission rates of CO, and the sum of non-methane hydrocarbons plus NOx measured at 4,000 ± 100 miles shall not exceed 1.10 times the baseline rates; the deteriorated exhaust emissions projected to 180,000 miles shall not exceed 1.3 times the baseline emissions; and, the deteriorated evaporative emissions projected to 180,000 miles shall not exceed baseline emissions plus 0.5 grams. For the purposes of this section, the evaporative baseline emissions shall be estimated by the manufacturer based on good engineering principles and judgment. The manufacturer's test plan shall specify the evaporative baseline emissions estimate and describe how this estimate was derived.

(iii) The Executive Officer may allow carry-across of durability data from certification bench testing of retrofit systems designed for vehicles in Categories I or II to. Category III retrofits system applications, if the Executive Officer determines that the carry-across durability data will adequately represent the durability performance of the retrofit-it system to be certified.

(iv) Applicants requesting certification for retrofit systems designed to allow Category III vehicles to operate on an alternative fuel in addition to diesel fuel shall conduct smoke opacity testing on the emission-data vehicle(s) utilizing the peak smoke opacity standards and procedures set forth in "Heavy-Duty Diesel Vehicle Smoke Opacity Test Procedure," as incorporated by reference in Title 13, CCR, Section 2182. Smoke opacity testing shall be conducted using each fuel that the retrofitted vehicle is designed to operate on. The applicable peak smoke opacity standard shall be that set for the model year for which certification is sought.

(v) The selection of duty cycle(s) and all other aspects of the test procedure shall be subject to approval by the Executive Officer and emission testing shall commence only after the Executive Officer has approved the test plan. The Executive Order shall be issued following review of the test data and determination that they meet the criteria specified in the test plan.

(e) Test Procedures for Vehicles in Category II Certified for Emission Reduction Credit:

Vehicles in Category II certified for emission reduction credit may use these provisions, or the alternate test plan as given in 5(h).

The procedures outlined in paragraphs 5(e) (i) and (ii) shall be used with the following modifications:

(i) Certification for credit-generation purposes shall be conducted on the retrofitted engine system. Utilizing an engine dynamometer and not on the engine and vehicle combination. The test procedure used shall be the same procedure used to certify the engine family when new.

(ii) Emissions for any pollutant shall not use the baseline rate by more than a factor of 1.10. Baseline emissions for pre- and post- retrofit comparison purposes will be the certification emission levels determined during the original engine family certification, except:

[A] The baseline for particulate matter (PM) emissions for diesel engines whose PM emission levels were not determined during the new engine family certification process shall be 0.6 gram/bhp-hr.

[B] Formaldehyde emissions from any 1993 and earlier model year engine operating on methanol- or ethanol-based fuel shall be at or below the 1993 model year standard. Formaldehyde emissions from any 1994 or subsequent model year engine

operating on methanol- or ethanol- based fuel shall be at or below the formaldehyde standard for that model year.

[C] For diesel engines, baseline carbon monoxide and hydro carbon emissions shall be the original emission certification value for the engine's model year.

[D] For engine families originally certified to a combined HC plus NOx standard, to baseline HC and NOx standards will be the combined standard or-pro-rated by the HC and NOx portions, respectively, of the original emission certification levels. If the original emission certification levels are not available, the HC and NOx baseline standards will be pro-rated by the HC and NOx certification standards of the next later model year with separate HC and NOx standards.

(iii) The "useful life" shall be 120.000 miles for vehicles in Category II, and 180,000 miles for vehicles in Category III. Deteriorated exhaust emissions projected to the useful life shall not exceed the baseline rate by more than a factor of 1.30, except for the pollutant(s) for which credits will be generated, which will not exceed the credit standard declared on the certification application as required under 4(c) (i). The deteriorated evaporative emissions, if any, projected to the useful life shall not exceed baseline emissions.

(f) Test Procedures for Vehicles in Category III Certified for Emission Reduction Credit:

Vehicles in Category III certified for emission reduction credit may use these provisions, or the alternate test plan as given in 5(h).

The procedures outlined in paragraphs 5(d) (i) through (v) shall be used with the modifications listed in 5(e) (i) through 5(e) (iii).

(g) Alternate Test Procedure for vehicles in Category I, or for Vehicles in Categories II or III Not Being Certified for Credit Generation Purposes:

The manufacturer shall submit data from durability testing conducted using test procedures used in new vehicle or engine certification. The deteriorated useful life emission levels shall meet the applicable emission standards for vehicles or engines of that model year and fuel type. The Executive Officer may certify the retrofit system based on review of the durability test data. If durability test data are not available, the manufacturer shall use the following procedures:

(i) The retrofit manufacturer shall submit derived deterioration factors. The manufacturer shall submit test data that shows similar performance characteristics between the retrofitted vehicle or engine and the original equipment manufacturer vehicle or engine. The manufacturer shall submit test data showing component durability of the retrofit system. The manufacturer shall also submit a test plan describing the procedures that will be used to validate the derived deterioration factors within two years. The manufacturer derived deterioration factors and the test plan must be reviewed and approved by the Executive Officer.

(ii) The retrofit system shall be installed on the test vehicle or engine. Certification shall be conducted on the retrofitted vehicle or engine using the same test procedure used to certify the engine family when new. Deteriorated useful life emissions based on manufacturer derived deterioration factors shall meet the applicable new engine emission standards.

(iii) Following retrofit system certification, the manufacturer will conduct engine aging, either in-use or on a dynamometer, according to the specified test plan. Emissions testing shall be conducted on the aged retrofit vehicle or engine system using the same test procedure used to certify the engine family when new. Deteriorated useful life emissions based on durability testing shall meet the applicable new vehicle or engine emission standards for that vehicle model. The manufacture shall submit test data to verify the derived deterioration factors within two years of certification of the retrofit system.

(iv) Vehicles in Category III must meet the requirements of 5(d) (iii) and 5(d) (iv).

(h) Alternate Test Procedure for Vehicles in Category II or Category III Certified for Credit Generation Purposes:

The procedures outlined in 5(g) shall be used, with the following modifications:

(i) The manufacturer shall also meet the requirements in 5(e) (i) and 5(e) (ii).

(i) Deteriorated useful life emissions based on durability testing shall not exceed the original equipment manufacturer engine certification emissions level by more than a factor of 1.30, except for the pollutant(s) for which credits will be generated, which will not exceed the credit standard declared on the certification application as required under 4(c) (i). The deteriorated evaporative emissions, if any,

projected to the useful life, shall not exceed baseline emissions.

6. APPROVAL

(a) Issuance of Executive Orders:

If, after reviewing the test data and other information submitted by the retrofit system manufacturer, the Executive Officer determines that the retrofit system meets the applicable emission standards or the criteria of approved test plan, as applicable, an Executive Order shall be issued certifying the retrofit system for sale and installation on vehicles in the engine families specified in the application. The Executive Order shall specify, if applicable, that the retrofit system is certified as [A] converting a conventional motor vehicle into a TLEV, LEV or ULEV, [B] converting a TLEV into a LEV or ULEV, [C] converting a LEV into a ULEV or [D] for heavy-duty credit conversions, the applicable credit standard(s).

(b) Carry-Over and Carry-Across:

(i) Carry-over of emission test data from the previous model year to the following model year will be allowed, if the Executive Officer determines that the carry-over data will adequately represent the emissions performance of the retrofit system to be certified. Carry-across to similar engine families will also be allowed.

(ii) An original equipment manufacturer (OEM) that produces retrofit hardware which upgrades an old engine to the identical configuration of a newer engine family that the manufacturer also produces, may carry-across the newer engine family certification test data for the retrofit hardware certification process. (For these purposes, the term "identical" means that all engine parts on the retrofitted engine which affect emissions, such as pistons, cylinder heads, etc., must be of the same design and construction as those on the newer engine family. Engine calibration, including injection timing must also be identical.)

(iii) Applications for carry-over and carry-across must be accompanied by an engineering analysis demonstrating that the emissions and durability of the retrofit system and engine family for which certification is being sought will be adequately represented by a certified retrofit system/engine family application.

(iv) Applications for carry-over and carry-across will be evaluated according to the criteria contained in EPA Advisory Circular 17F, which is incorporated herein by reference, and paragraph 4.c.5 of the "California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks, and

Medium-Duty Vehicles." These include, but are not limited to, similarity of catalyst location and configuration, similarity of fuel metering system, similarity of emission control system logic and design, and similarity of any other features that may affect the durability of the retrofit system's emission performance.

7. INSTALLATION REQUIREMENTS

(a) Prior to releasing a converted vehicle to the consumer, the installer of an alternative fuel gr credit-generating conventional fuel retrofit system shall submit the converted vehicle to a Bureau of Automotive Repair Referee Smog Check Station for inspection and testing except as provided in 7(b).

(i) The installer of an alternative fuel or credit-generating conventional fuel retrofit system shall keep a copy of the certificate of compliance, issued by the Bureau of Automotive Repair Referee Smog Check Station, as part of the record specified in paragraph 3(e). The certificate of compliance shall contain, but need not be limited to, the following: the vehicle's identification number, the vehicle's model year and make, the date of installation, and the emissions category to which the retrofitted system is certified (i.e., conventional vehicle, TLEV, LEV, or ULEV) or, for heavy-duty vehicles, the credit standard to which the system is certified. The original certificate of compliance shall be submitted to the vehicle owner upon the vehicle's release.

(ii) The installer of an alternative fuel or credit-generating conventional fuel retrofit system shall not release the converted vehicle to the consumer without the issuance of a certificate of compliance for the vehicle by a Bureau of Automotive Repair Referee Smog Check Station.

(iii) The installer of an alternative fuel or credit-generating conventional fuel retrofit system shall also meet the requirements of paragraph 9(c).

(b) The retrofit system installer may request Air Resources Board approval to use the alternative inspection schedule for fleet installation of the same retrofit kit on more than 10 vehicles with engines from similar engine families. If approval is granted the installer shall submit ten vehicles with engines from similar engine families retrofitted with the same kit to a Bureau of Automotive Repair Station as provided in 7(a) (i) and 7(a) (ii).

(i) If all ten vehicles receive a certificate of compliance, for subsequent applications of the same type, the Installer need only submit every tenth retrofitted vehicle to the Bureau of Automotive Repair pursuant to 7(a) (i) and 7(a) (ii) . For the remaining vehicles Included in the alternative inspection schedule that are not submitted to the Bureau of

Automotive Repair, the installer shall maintain a record of the vehicle's identification number, the vehicle's model year and make, the engine size, the manufacturer and fuel type of the retrofit kit, the date of installation, and the emissions category to which the retrofitted system is certified (i.e., conventional vehicle, TLEV, LEV, ULEV) or for heavy-duty vehicles, the credit standard to which the system is certified. The Air Resources Board may require random inspection of any vehicles subject to the alternate inspection schedule.

(ii) If any of the ten vehicles fail to pass inspection, the next set of ten retrofitted vehicles shall be subject to inspection at the Bureau of Automotive Repair, until an entire group of 10 passes.

8. IN-USE ENFORCEMENT TEST REQUIREMENTS

(a) Manufacturers of alternative fuel or credit-generating conventional fuel retrofit systems shall, upon order by the Executive Officer, perform in-use enforcement emission testing of their products. The Executive Officer may order in-use enforcement emission testing of not more than 20 percent of a manufacturer's certified retrofit systems/engine family applications per year. If 20 percent constitutes less than one of a manufacturer's certified systems, the Executive Officer may order in-use enforcement emission testing of not more than one certified system/engine family application per year. Manufacturers shall be required to perform emission testing of not less than ten vehicles per certified retrofit system/engine family application selected by the Executive Officer for in-use enforcement emission testing. Upon order by the Executive Officer, manufacturers shall perform the applicable emission tests pursuant to the following:

(i) No vehicle shall be accepted by the manufacturer as a representative vehicle for enforcement testing unless the following criteria are met:

(1) California certified and registered.

(2) Odometer indication of less than certified useful-life mileage and vehicle age within useful-life time period.

(3) No indication of abuse (e.g., racing, overloading, misfueling, or other misuse), neglect, improper maintenance or other factors that would have an effect on emission performance.

(4) No major repair to engine or major repair of vehicle resulting from collision.

(5) Lead content of fuel sample from the vehicle tank meets applicable standards.

(6) No indication of any problem that might jeopardize the safety of laboratory personnel.

(ii) The manufacturer shall, under ARB supervision, perform diagnosis or restorative maintenance on those vehicles selected for in-use enforcement testing. The manufacturer or a laboratory approved by the Executive Officer shall (1) identify part numbers of all essential emission control system components; (2) check air filter, all drive belts, all fluid levels, radiator cap, all vacuum hoses and electrical wiring related to emission control for integrity; check fuel metering and emission control system components for maladjustments and/or tampering, and record all discrepancies; (3) check ignition system with oscilloscope and replace any defective components; i.e., spark plugs, wires, etc.; (4) check compression; (5) check and adjust engine parameters to manufacturer's specifications; and (6) perform maintenance if the vehicle is within 500 miles of scheduled maintenance service.

(iii) For vehicles in Category I. the manufacturer or a laboratory approved by the Executive Officer shall perform the applicable emission test procedures set forth in the "California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles." The applicable emission standards shall be the vehicle's useful life standards as well as any intermediate emission standards, as stated in the-Executive Order.

(iv) For vehicles in Category II not certified for credit generation, in-use enforcement exhaust and, if applicable, evaporative emissions shall be performed using the test procedures set forth in the "California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles". The inertia weight setting shall be equal to the average of the vehicle's curb weight and gross vehicle weight rating and road load horsepower based on the frontal area of the vehicle without modifications, as determined in "California Exhaust Emission Standards and Test Procedures for 1988 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles," Section 9.b. For vehicles in Category III not certified for credit generation, in-use enforcement exhaust emission tests shall be performed in accordance with the test plan approved by the Executive Officer prior to certification testing of the engine family applications specified for in-use enforcement testing. For vehicles in Categories II

and III which are certified for credit generation. iIn-use enforcement testing will consist of repeating the procedures and requirements of paragraphs 5(e) and 5(f), respectively, except as provided for in paragraph 8(a) (viii), below.

(v) The applicable exhaust emission standards for vehicles in Categories II and III shall be the baseline emission rates established during certification testing of the engine family applications specified for in-use enforcement testing times 1.3except as provided in paragraphs 5(e) and 5(f) for credit generating systems. The applicable evaporative emission standards for vehicles in Categories II and III shall be the baseline emission rates established during certification testing of the engine family applications specified for in-use enforcement testing plus 0.5 grams except as proved in paragraphs 5(e) and 5(f) for credit generating systems.

(vi) Manufacturers shall complete in-use enforcement testing within 6 months of the issuance of the in-use compliance testing order and shall submit all test data to the Executive Officer within 30 calendar days following completion of testing.

(vii) Following review of manufacturer in-use enforcement test data, the Executive Officer may conduct confirmatory in-use enforcement testing.

(viii) OEM upgrade systems certified for credit-generation use as described in paragraph 6(b), shall be subject to the new engine family in-use testing requirements for the engine family on which the systems originally certified. Such systems will not be subject to the in-use enforcement testing requirements of these procedures.

(b) If the results of the in-use vehicle emission tests conducted pursuant to paragraphs 8(a)(i) through 8(a)(viii) indicate that the average emissions of the test vehicles for any pollutant exceed the applicable emission standards or specified limits for credit generation certification, the entire vehicle population so represented shall be deemed to exceed such standards. Upon order by the Executive Officer, the manufacturer shall have 45 days to submit an influenced recall plan in accordance with Sections 2111 through 2121, Title 13, CCR. If no such recall plan is submitted, the Executive Officer may order corrective action including recall of the affected vehicles in accordance with Sections 2122 through 2135, Title 13, CCR. For the purpose of these Procedures, the term "manufacturer" as referenced in Sections 2111 through 2135, Title 13, CCR, shall mean "retrofit system manufacturer."

9. WARRANTY REQUIREMENTS

(a) Requirements of Manufacturers:

The manufacturer of an alternative fuel or credit-generating conventional fuel retrofit system shall warrant to the person having the vehicle retrofitted and to each subsequent purchaser of the vehicle that the alternative fuel or credit-generating conventional fuel retrofit system is designed and manufactured to conform with the applicable requirements of these Procedures and is free from defects in materials and workmanship which cause the alternative fuel or credit-generating conventional fuel retrofit system to fail to conform with the applicable requirements of these Procedures or cause damage to any part on the retrofitted vehicle. This warranty shall be effective for three years or 50,000 miles, whichever first occurs, of customer service, and shall cover the full repair or replacement costs including the costs of diagnosis, labor, and parts (including any part on the retrofitted vehicle that is damaged due to a defect in the alternative fuel or credit- generating conventional fuel retrofit system).

(b) Extended Warranty Requirements:

Each manufacturer of an alternative fuel or credit-generating conventional fuel retrofit system shall identify in its application for certification the warranted parts whose individual replacement cost, at the time of certification, exceeds the cost limit defined in paragraph 9(b)(i). The replacement cost shall include the cost of the diagnosis, parts, and labor. The costs shall be those of the highest cost metropolitan area of California. Each manufacturer shall warrant to the person having the vehicle retrofitted and to each subsequent purchaser of the vehicle that these parts identified in its application for certification as exceeding the cost limit defined in paragraph 9(b)(i) are free from defects in materials and workmanship which cause the alternative fuel or credit-generating conventional fuel retrofit system to fail to conform with the requirements of these Procedures or cause damage to any part on the retrofitted vehicle, for seven years or 70,000 miles, whichever first occurs.

(i) The cost limit shall be calculated using the following equation:

$$\text{Cost limit}_n = \$300 \times (CPI_{n-2}/121.9)$$

where:
Cost limit_n is the cost limit for the year in which the alternative fuel or credit-generating conventional fuel retrofit system is to be certified.

n is the year in which the alternative fuel or credit-generating conventional fuel retrofit system is to be certified.

CPI is the annual average consumer price index for California published by the United States Bureau of Labor Statistics.

(ii) The cost shall be limit shall be revised annually by the Executive Officer. The highest cost metropolitan area in California shall be identified by the Executive Officer.

(iii) Each manufacturer shall submit to the Executive Officer the documentation used to identify the warranted parts required in this subsection. The documentation shall include the estimated retail parts costs, labor rates in dollars per hour, and the labor hours necessary to replace the parts.

(c) Requirements of Installers:

Each installer of an alternative fuel or credit-generating conventional fuel retrofit system shall warrant to the person having the vehicle retrofitted and to each subsequent purchaser of the vehicle that the alternative fuel or credit-generating conventional fuel retrofit system will not fail to conform with the applicable requirements of these Procedures due to incorrect installation, and that no part on the retrofitted vehicle will be damaged due to incorrect installation. Installers of alternative fuel or credit-generating conventional fuel retrofit systems shall install only those systems of a certified configuration and shall agree to indemnify the person having the vehicle retrofitted and to each subsequent purchaser of the vehicle for the cost of repair of any vehicle upon which a noncertified configuration was installed. In addition, the installer shall agree to indemnify the person having the vehicle retrofitted and to each subsequent purchaser of the vehicle for any tampering fines that may be imposed as a result of improper installation of the alternative fuel or credit-generating conventional fuel retrofit system. The warranties and agreements to indemnify shall be effective for three years or 50,000 miles, whichever first occurs, of customer service, and shall cover the full repair or replacement casts including the casts of diagnosis, labor, and parts (including any part on the retrofitted vehicle that is damaged due to incorrect installation of the alternative fuel or credit-generating conventional fuel retrofit system).

Before an installer installs an alternative fuel or credit-generating conventional fuel retrofit system, he or she shall have submitted to the ARB a sample of the warranty statement to be provided by the installer in accordance with this paragraph.

APPENDIX C

C. Proposed Adoption of "California Certification and Installation Procedures For Alternative Fuel Retrofit Systems For On-Road Motor Vehicles and Engines"

[Note: All text is proposed for adoption. As permitted by section 8, title 2, California Code of Regulations, the proposed text is not underlined for ease of review.]

State of California

AIR RESOURCES BOARD

CALIFORNIA CERTIFICATION AND INSTALLATION PROCEDURES FOR ALTERNATIVE FUEL RETROFIT SYSTEMS FOR ON-ROAD MOTOR VEHICLES AND ENGINES

[Note: All text is proposed for adoption. As permitted by section 8, title 2, California Code of Regulations, the proposed text is not underlined for ease of review.]

Adopted: [DATE OF ADOPTION]

Note: These procedures are incorporated by reference into section 2030 & 2031, title 13, California Code of Regulations.]

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California Certification and Installation Procedures for Alternative Fuel Retrofit Systems for On-Road Motor Vehicles and Engines.

1. APPLICABILITY

(a) "California Certification and Installation Procedures for Alternative Fuel Retrofit Systems for On-Road Motor Vehicles and Engines" (these procedures) apply to alternative fuel retrofit systems designed for installation on conventional fueled on-road vehicles and engines in the passenger car, light-duty truck, medium-duty vehicle, and heavy-duty engine and vehicle classes for 2004 and subsequent model years.

(b) Only these procedures shall be used to certify alternative fuel retrofit systems to the same or a more stringent emission standard than the standards to which the base vehicle or base engine was originally certified.

(c) A certification of an alternative fuel retrofit system issued pursuant to these procedures shall have the effect of a certification of an alternative fuel retrofit system pursuant to Health and Safety Code section 43006. A certification for an alternative fuel retrofit system utilizing any fuel, issued pursuant to these procedures shall have the effect of an exemption issued pursuant to Vehicle Code Section 27156.

2. DEFINITIONS

(a) The definitions in Section 1900(b), chapter 1, title 13 of the California Code of Regulations (CCR) apply to these procedures with the following additions:

(1) "Alternative fuel" refers to liquefied petroleum gas, natural gas, alcohol, alcohol/gasoline blend, or any fuel subject to any provision of Title 13, California Code of Regulations, Chapter 5, Standards for Motor Vehicle Fuels, Sections 2290– 2293.5.

(2) "Alternative fuel retrofit system" or "retrofit system" is a package of fuel storage and delivery, ignition, emission control, on board diagnostic, and engine components that are modified, removed, or added during the process of modifying a motor vehicle or engine to operate on an alternative fuel.

(3) "Base vehicle" or "base engine" means a certified configuration of a motor vehicle or motor vehicle engine prior to any modifications necessary to operate on an alternative fuel or fuels.

(4) "Baseline test" means an emissions test of a motor vehicle or motor vehicle engine in a proper state of maintenance prior to any modifications necessary to operate on an alternative fuel.

(5) "Bi-fuel vehicle or engine" is any motor vehicle or motor vehicle engine that is designed to be operated on two fuels wherein the two fuels are stored on-board in separate fuel tanks and metered separately, but in operation the two fuels are combusted together continuously or during part of normal vehicle operation (i.e. vehicle start-up).

(6) "Conventional fuel" means gasoline or diesel fuel.

(7) "Drivability" of a vehicle refers to the smooth delivery of power, as demanded by the driver. Typical causes of drivability degradation are rough idling, misfiring, surging, hesitation, or insufficient power. Conversion from gasoline to gaseous fuels usually entails a loss of volumetric efficiency, resulting in some power loss. Normal power loss shall not be considered to be drivability degradation.

(8) "Dual-fuel vehicle or engine" is any vehicle or engine that is designed to be operated on either an alternative fuel or a conventional fuel, with separate fuel tanks for each fuel on-board the vehicle. In operation, only one fuel is used at a time.

(9) "Emission warranty information report" means emission warranty information report as defined by section 2144, title 13, CCR.

(10) "Heavy-duty engine" means a heavy-duty engine as defined in Section 1900, title 13, CCR.

(11) "Heavy-duty vehicle" means a heavy-duty vehicle as defined in Section 1900, title 13, CCR.

(12) "Installer" refers to a person who installs alternative fuel retrofit systems on motor vehicles and/or engines for compensation or consideration of value; but does not necessarily include any person that assembles or produces an alternative fuel retrofit system for resale. Installers must be registered as Automotive Repair Dealers under California Business and Professions Code, section 9880 through sections 9889.68.

(13) "Light-duty motor vehicle" refers to either a passenger car or light-duty truck.

(14) "Light-duty truck" means light-duty truck as defined in Section 1900, title 13, CCR.

(15) "Medium-duty vehicle" means a medium-duty vehicle as defined in Section 1900, title 13, CCR.

(16) "Passenger car" means a passenger car as defined in Section 1900, title 13, CCR.

(17) "Retrofit system manufacturer", "manufacturer," or "converter" refers to a person or company who manufactures or assembles an alternative fuel retrofit system for sale in California and requests or is granted the Executive Order certifying the alternative fuel retrofit system.

(18) "Small volume retrofit system manufacturer" or "small volume conversion manufacturer" means a manufacturer with total California annual sales of less than 1,500 alternative fuel retrofit systems in any given calendar year. A manufacturer's California sales shall consist of all alternative fuel retrofit systems produced by the manufacturer and delivered for sale in California, except that alternative fuel retrofit systems produced by the manufacturer and marketed in California by another manufacturer under the other manufacturer's nameplate shall be treated as California sales of the marketing manufacturer. The annual sales from different firms shall be aggregated in the following situations: (1) alternative fuel retrofit systems produced by two or more firms, one of which is 10% or greater part owned by another, except in circumstances for which the Executive Officer determines that 10% or greater ownership by one of the firms does not result in responsibility for overall direction of both firms; or (2) alternative fuel retrofit systems produced by any two or more firms if a third party has equity ownership of 10% or more in each of the firms; or (3) alternative fuel retrofit systems produced by two or more firms having a common corporate officer(s) who is (are) responsible for the overall direction of the companies; or (4) alternative fuel retrofit systems imported or distributed by all firms where the alternative fuel retrofit systems are manufactured by the same entity and the importer or distributor is an authorized agent of the entity.

(19) "Sunset" for the purposes of these procedures shall mean after the 2017 model year.

(20) "Useful life" for purposes of these procedures, means the duration, expressed in miles or time period, of the longest durability period

for the new vehicle or engine emission standards to which the base vehicle or base engine was certified.

(21) "Warrantable condition" means any condition of an alternative fuel retrofit system that triggers the responsibility of the manufacturer to take corrective action pursuant to section 8 of these procedures.

(22) "Warranted part" means any part installed on a certified alternative fuel retrofit system, or installed in a warranty repair, which affects any regulated emissions from a previously certified vehicle or engine that is subject to any of the standards prescribed in the test procedures and the documents incorporated by reference herein.

(23) "Warranty period" means the period of time and mileage that the certified alternative fuel retrofit system or part thereof are covered by the warranty provisions.

3. GENERAL REQUIREMENTS

Overview: After submitting a request for certification pursuant to these procedures, manufacturers shall submit a test plan for approval prior to initiating any testing. Manufacturers must select for testing an emission test vehicle or engine that is representative of the vehicle or engine to be retrofitted for approval by the Executive Officer. The selection of vehicle models, engines, and transmissions must be approved by the Executive Officer as being representative of the engine families for which certification is sought, prior to the commencement of any testing.

The emission test vehicle or engine is then retrofitted with the alternative fuel retrofit system and driven for 4,000 miles or operated for 125 hours to ensure emissions stability. An emissions test is then performed to demonstrate compliance with the applicable emission standards. Durability testing is required; either through vehicle mileage accumulation, engine operation, or component bench aging, and another emissions test is performed to demonstrate compliance with applicable full useful life emission standards. Manufacturers must also perform tests to demonstrate compliance with the on-board diagnostic (OBD) requirements, provide a supplemental emissions control label and owner's manual and meets warranty and installation requirements.

In addition to all other standards or requirements imposed, the following general requirements shall apply to all alternative fuel retrofit systems to be certified under these procedures:

(a) Minimum Product Specifications: Alternative fuel retrofit systems for gaseous fuels shall be equipped with a lockoff valve, actuated by an electrical or vacuum signal, preventing delivery of fuel to the fuel injection system while the engine is shut down and shall be equipped with or designed to operate

successfully with any feed-back or feed-forward controls of the base vehicle or engine.

(b) Drivability: The drivability of a vehicle equipped with an alternative fuel retrofit system shall not be degraded in such a way as to encourage consumer tampering. To verify that the drivability of a retrofitted vehicle is acceptable, the Executive Officer may require that an independent laboratory evaluate drivability. The Executive Officer's determination that drivability is acceptable must be based on an engineering evaluation of the alternative fuel retrofit system described in the application for certification or on reports or observations that alternative fuel retrofit systems similar in design to the system for which certification is sought have caused drivability degradation. The cost of this evaluation shall be borne by the manufacturer.

(c) On-Board Diagnostic (OBD) System Compatibility: If the vehicle/engine to be retrofitted was certified with an on-board diagnostic (OBD) system, pursuant to sections 1968.2, 1971, or 1971.1, title 13, California Code of Regulations (CCR), all applicable OBD requirements (e.g., monitoring, standardization, certification, demonstration) remain applicable with the exception of the changes and allowances made in these procedures. As such, the proper function of the on-board diagnostic system shall not be impaired as a result of the installation and operation of the alternative fuel retrofit system. This includes, but is not limited to; ensuring the converted vehicle's or engine's OBD system robustly detects malfunctions at the required emission thresholds, meets the required minimum monitoring frequency requirements, implements required monitors for applicable added or modified electronic hardware or emission controls, complies with standardization requirements, and is subject to required demonstration and production vehicle and engine testing. These requirements may necessitate modification of the original vehicle or engine OBD system. All modifications affecting OBD compliance including added, modified, or removed original vehicle hardware, (e.g., components, wiring) or software (e.g., programming, calibration) must be fully documented and described as part of the alternative fuel retrofit system certification application.

(d) No component or calibration of the alternative fuel retrofit system that could affect emission performance shall be adjustable by the system installer or the vehicle's user.

(e) Emission Control Label: The emissions control label requirements in Title 13, CCR, Section 1965, shall apply to installations of alternative fuel retrofit systems, with the following additions:

(1) The alternative fuel retrofit system manufacturer shall provide a

supplemental Emission Control Information label, which shall be affixed in a permanent manner to each retrofitted vehicle, in a location adjacent to the original Emission Control Information Label. If the supplemental label cannot be placed adjacent to the original label, it shall be placed in a location where it can be seen by a person viewing the original label

(2) The supplemental label shall show the vehicle or engine model year; applicable emission standards; Executive Order number certifying the alternative fuel retrofit system; retrofit system manufacturer's name, address, and telephone number; and shall state that the retrofitted vehicle or engine complies with California emission requirements. If the retrofit system has been certified as being capable of certifying the base vehicle or engine to a more stringent emissions standard, the label shall also display the applicable vehicle emission category of the converted vehicle or engine (e.g., ULEV, SULEV, etc.) The label shall also list any parts that were added and removed during installation of the alternative fuel retrofit system, as well as any changes in tune-up specifications required for the alternative fuel retrofit system. In addition, the label shall show the installer's name, address, and telephone number; date and mileage (retrofitted vehicle odometer reading) on which the alternative fuel retrofit system was installed; and date and mileage at which the alternative fuel retrofit system warranty expires. It is not necessary for emission control labels installed with alternative fuel retrofit systems to be machine readable. The supplemental label for an alternate fuel retrofit system shall clearly state that the vehicle or engine has been equipped with an alternative fuel retrofit system designed to allow it to operate on a fuel other than gasoline or diesel and shall identify the fuel(s) that the vehicle or engine is designed to use.

(f) Owner's Manual: Each alternative fuel retrofit system installed shall include an owner's manual containing at least the following information:

(1) a brief description of the alternative fuel retrofit system, including major components and their theory of operation;

(2) the correct refueling procedure for the alternative fuel retrofit system;

(3) a listing of necessary service and service intervals, as well as tune-up data, which differ from the service requirements specified by the vehicle's or engine's original manufacturer;

(4) the name, address, phone number, and website, if available, of the

manufacturer and installer, as well as a list of the names, addresses, and phone numbers of the major dealers in California who supply parts for, or service, the alternative fuel retrofit system; and

(5) warranty information.

(g) Warranty Notification: Notification to the alternative fuel retrofit system purchaser stating that installation of the alternative fuel retrofit system may affect the original equipment manufacturer's warranty. This notification must be signed by the purchaser prior to sale of the alternative fuel retrofit system and must maintained by the retrofit system manufacturer for the duration of the warranty period and must be supplied upon the request of the Executive Officer.

(h) Manufacturer Recordkeeping and Reporting Requirement: Retrofit system manufacturers shall maintain a record of the vehicle identification numbers or engine serial numbers and California license plate numbers of those vehicles or engines on which their alternative fuel retrofit systems have been installed. As part of this record, retrofit system manufacturers shall identify the installation date and the certification Executive Order number of those alternative fuel retrofit systems installed on each vehicle or engine and shall identify the vehicle or engine owner at the time of installation, including the owners' current addresses and phone numbers at the time of installation. The retrofit system manufacturer shall supply a copy of all installation information to the Executive Officer upon request. In addition, each retrofit system manufacturer shall report annual sales based on a standard calendar year for each certified alternative fuel retrofit system, identified by certification Executive Order number, to the Executive Officer by March 1 of the following calendar year.

(i) Installer Recordkeeping Requirement: Installers of alternative fuel retrofit systems shall maintain a record as specified in paragraph 3(h) of these procedures and shall provide this information to retrofit system manufacturers upon request.

4. EMISSION STANDARDS

(a) Test Vehicle or Engine: A maximum of one emission-data vehicle or engine per test group or engine family for which certification is sought shall be required. Each emission-data vehicle or engine, regardless of actual miles or hours of operation accumulated, shall be assumed to have zero miles or hours of operation accumulated at the time the alternative fuel retrofit system is installed in the base vehicle or engine.

Emission tests shall be performed on the emission-data vehicle or engine with at least 4,000 miles or 125 hours accumulated after the retrofit to stabilize emissions. Manufacturers may conduct emissions testing at zero miles or hours of operation to verify emission compliance.

(1) Mileage accumulation shall be representative of actual vehicle or engine use and may be acquired by driving the vehicle on the road or bench aging, provided that the manufacturer has prior approval by the Executive Officer.

(2) Vehicle mileage accumulation on a durability vehicle, engine hour accumulation on a durability engine, or bench aging of retrofit system components shall be conducted to determine deterioration factors. Before beginning any emission testing or bench aging, an applicant's test plan must be approved by the Executive Officer. The Executive Officer approval of bench aging procedures shall be contingent upon a demonstration by the applicant that bench aging produces deterioration factors at least as great as those resulting from durability vehicle or durability engine testing.

(3) Bench aging conducted in lieu of vehicle mileage accumulation or engine hour operation shall be conducted for a period of time such that the resulting deterioration of the alternative fuel retrofit system is equivalent to that which would occur during durability vehicle mileage accumulation over a mileage equal to the useful life applicable to the vehicle, or equivalent to that which would occur during durability engine hour operation over the useful life applicable to the engine.

(4) Manufacturers may submit proposals to utilize alternative test methods to the Executive Officer, such as the use of portable emission measurement systems (PEMS) in lieu of mileage or engine hour accumulation (e.g., manufacturers certifying systems for heavy-duty engines and vehicles that were originally certified under an engine-dynamometer test procedure may propose an alternative test method using PEMS). Manufacturers must also include in their proposals the criteria used to demonstrate equivalency to the applicable emissions standard (e.g., the level of PEMS emissions that is equivalent to the exhaust emissions standard as generated from an engine dynamometer). The Executive Officer shall approve the use of alternative test methods based on his or her determination that such test methods will generate test results that are sufficiently similar to the test results generated by a specified test method, and that the alternate test method criteria is sufficiently equivalent in stringency as the applicable emissions standards as generated by applicable test

procedures. The Executive Officer shall base his or her determination upon all information submitted by a manufacturer and upon good engineering judgment.

(b) Dual-Fuel and Bi-Fuel Vehicles:
Dual-fuel and Bi-fuel vehicles must be tested on each of the two fuels. The emissions standards of both fuels must be the same vehicle emission category that is applicable to the base vehicle (e.g., a base vehicle is a gasoline-fueled passenger car certified to the ULEV vehicle emission category of the LEV II standards in Title 13, California Code of Regulations (CCR), section 1961. If that base vehicle is converted to a dual-fuel vehicle, the alternative fuel retrofit system must demonstrate compliance with the ULEV vehicle emission category standards for both fuels).

(c) Exhaust Emission Standards:
Exhaust emissions from alternative fuel retrofit systems that are manufactured for sale, sold, or offered for sale in California, or that are introduced, delivered or imported into California commerce and that are subject to any of the standards prescribed in this article must not exceed the emission standards to which the base vehicle or base engine was originally certified. The retrofit system manufacturer shall demonstrate compliance with these requirements through durability and emission testing. For heavy-duty vehicle applications where alternate test procedures have been approved by the Executive Officer, retrofit system manufacturers may propose appropriate standards for Executive Officer approval.

(d) Evaporative and Refueling Emission Standards:
Evaporative and refueling emissions from alternative fuel retrofit systems that are subject to any of the standards prescribed in this article and the documents incorporated by reference herein shall at a minimum meet the same emission standards to which the base vehicle was originally certified, except as allowed in 4(d)(1)below:

(1) Alternative Fuel Retrofit Systems with Sealed Fuel Systems: Alternative fuel retrofit systems that have sealed fuel systems which can be demonstrated to have no evaporative emissions are exempt from testing the evaporative emissions. Demonstrations may be based on an engineering evaluation of the alternative fuel retrofit system and data submitted by the retrofit system manufacturer and must show that the alternative fuel retrofit system has no evaporative-related emissions under normal operation. All such demonstrations must be approved in advance by the Executive Officer.

5. TEST PROCEDURES

(a) The test procedures used to determine the emission levels of alternative fuel retrofit systems certified for use with passenger cars, light-duty trucks, and medium duty vehicles which were originally certified to an exhaust emission standard based on a chassis-dynamometer test procedure are set forth in the following test procedures:

(1) The test procedures for determining compliance with the LEV II exhaust emission standards in title 13, CCR section 1961 are set forth in the "California 2001 through 2014 Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2009 through 2016 Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles," as amended December 6, 2012, and the "California Non-Methane Organic Gas Test Procedures," as amended December 6, 2012, which are incorporated herein by reference. In the case of hybrid electric vehicles, the certification requirements and test procedures for determining compliance with the emission standards in this section are set forth in the "California Exhaust Emission Standards and Test Procedures for 2005 through 2008 Model Zero-Emission Vehicles, and 2001 through 2008 Model Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes," incorporated by reference in section 1962, the "California Exhaust Emission Standards and Test Procedures for 2009 through 2017 Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes," incorporated by reference in section 1962.1, and the "California Exhaust Emission Standards and Test Procedures for 2018 and Subsequent Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes" incorporated by reference in section 1962.2.

(2) The test procedures for determining compliance with the greenhouse gas emission levels from new 2009 through 2016 model year passenger cars, light-duty trucks and medium-duty passenger vehicles in title 13, CCR section 1961.1 are set forth in "California 2001 through 2014 Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2009 through 2016 Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles," incorporated by reference in section 1961(d). In the case of hybrid electric vehicles, the certification requirements and test procedures for determining compliance with the emission standards in this section are set forth in the "California Exhaust Emission Standards and Test Procedures for 2009 through 2017 Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in

the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes," incorporated by reference in section 1962.1.

(3) The test procedures for determining compliance with the LEV III exhaust emission standards in title 13, CCR section 1961.2 are set forth in the "California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles," as amended December 6, 2012, the "California Non-Methane Organic Gas Test Procedures," as amended December 6, 2012, which are incorporated herein by reference. In the case of hybrid electric vehicles, the certification requirements and test procedures for determining compliance with the emission standards in this section are set forth in the "California Exhaust Emission Standards and Test Procedures for 2009 through 2017 Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes," incorporated by reference in section 1962.1, and the "California Exhaust Emission Standards and Test Procedures for 2018 and Subsequent Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes," incorporated by reference in section 1962.2.

(4) The test procedures for determining compliance with the greenhouse gas emission levels from new 2017 and subsequent model year passenger cars, light-duty trucks and medium-duty passenger vehicles in title 13, CCR section 1961.2 are set forth in "California 2015 and Subsequent Model Criteria Pollutant Exhaust Emission Standards and Test Procedures and 2017 and Subsequent Model Greenhouse Gas Exhaust Emission Standards and Test Procedures for Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles," incorporated by reference in section 1961.2. In the case of hybrid electric vehicles, the certification requirements and test procedures for determining compliance with the emission standards in this section are set forth in the "California Exhaust Emission Standards and Test Procedures for 2009 through 2017 Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes," incorporated by reference in section 1962.1, or the "California Exhaust Emission Standards and Test Procedures for 2018 and Subsequent Model Zero-Emission Vehicles and Hybrid Electric Vehicles, in the Passenger Car, Light-Duty Truck and Medium-Duty Vehicle Classes," incorporated by reference in section 1962.2, as applicable.

(5) The test procedures for determining compliance with the evaporative emissions standards for 2001 and subsequent model year motor vehicles are set forth in "California Evaporative Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles" incorporated by reference in title 13, CCR section 1976(c).

(6) The test procedures for determining compliance with the vehicle refueling emissions standards for 2004 and subsequent model motor vehicles are set forth in "California Refueling Emission Standards and Test Procedures for 2001 and Subsequent Model Motor Vehicles," adopted August 5, 1999, and last amended March 22, 2012, which is incorporated herein by reference in title 13, CCR section 1978(b).

(b) The test procedures used to determine emission levels of alternative fuel retrofit systems certified for use with heavy-duty engines, medium-duty vehicles that are incomplete, or diesel vehicles of 8,501-14,000 pounds gross vehicle weight rating (GVWR) which were originally certified under an engine-dynamometer test procedure, are set forth in the following test procedures:

(1) The test procedures for determining compliance with the exhaust emission standards in title 13, CCR section 1956.8(a)(2)(A) are set forth in the "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel-Engines and Vehicles," adopted December 12, 2002, as last amended April 18, 2013, and the "California Interim Certification Procedures for 2004 and Subsequent Model Hybrid-Electric Vehicles, in the Urban Bus and Heavy-Duty Vehicle Classes," adopted October 24, 2002, which are incorporated by reference herein.

(2) The test procedures for determining compliance with standards in title 13, CCR section 1956.8(c)(1)(A) or (c)(1)(B) are set forth in the "California Exhaust Emission Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Otto-Cycle Engines," adopted December 27, 2000, as last amended April 18, 2013, the "California Non-Methane Organic Gas Test Procedures," adopted July 12, 1991, as last amended December 6, 2012, and the "California Interim Certification Procedures for 2004 and Subsequent Model Hybrid-Electric Vehicles, in the Urban Bus and Heavy-Duty Vehicle Classes," adopted October 24, 2002, which are incorporated by reference herein.

(c) For the applicable test procedures listed in section 5 of these procedures, the following exceptions shall apply:

(1) Where applicable, retrofit system manufacturers certifying natural gas or liquefied petroleum gas alternative fuel retrofit systems may use a

multiplier of 1.5 times their measured non-methane hydrocarbon (NMHC) results to determine compliance with the non-methane organic gas (NMOG) standards.

(2) Until the sunset, manufacturers of dual-fueled vehicles or engines may request to be exempted from performing required emissions testing on the original fuel of the base vehicle or base engine. All such requests must be approved in advance by the Executive Officer. The Executive Officer shall approve a manufacturer's request for an exemption if the retrofit system manufacturer demonstrates to the Executive Officer that the alternative fuel retrofit system does not alter or interfere with the normal operation of the base vehicle or base engine's original emission control system and will not affect the operation of the base vehicle or base engine's original emission control system. Demonstrations may be based on an engineering evaluation of the alternative fuel retrofit system and data submitted by the retrofit system manufacturer. The Executive Officer shall base his or her determination upon all information submitted by a manufacturer and upon good engineering judgment.

(3) Until the sunset, the following exceptions shall apply to small volume retrofit system manufacturers:

(A) All exhaust and evaporative emission testing for natural gas alternative fuel retrofit systems may use natural gas test fuel that meets the Federal natural gas certification fuel specifications as identified in the Code of Federal Regulations (40CFR), Part 86.1313-2007, dated July 01, 2011 which is incorporated by reference herein. This option requires retrofit system manufacturers to provide a fuel analysis with their final emission results using American Society for Testing and Materials (ASTM) test method listed in 40CFR, Part 86.1313-2007, which is incorporated by reference therein, to validate that the test fuel meets the federal natural gas certification fuel specifications. Commercially available natural gas fuel may be used for service accumulation without analysis.

(B) All exhaust and evaporative emission testing for liquefied petroleum gas (LPG) may use LPG test fuel that meets ARB motor-vehicle LPG fuel specifications as identified in Title 13, CCR, section 2292.6, last amended December 08, 1999 which is incorporated by reference herein. This option requires applicants to provide a fuel analysis with their final emission results using ASTM test methods listed in Title 13, CCR, section 2292.6, last amended December 08, 1999 which are incorporated by reference therein, to validate that the test fuel meets ARB motor-

vehicle fuel specifications. Commercially available LPG fuel may be used for service accumulation without analysis.

(C) Deterioration factors (DF) to determine compliance with applicable emission standards may be used in lieu of intermediate or high mileage emission tests. ARB shall provide assigned DFs to manufacturers. If no ARB assigned DFs are available, manufacturers may use the assigned DF's, as published by the U.S. EPA National Vehicle and Fuel Emissions Laboratory guidance letter CD-12-07 (Revised) dated March 30, 2012 and incorporated by reference herein, where applicable or may propose another DF in the absence of a U.S. EPA assigned DF. In proposing a DF the retrofit system manufacturer must demonstrate using test data, that the proposed DF is appropriate for use in determining compliance with the applicable emission standards. All such demonstrations must be approved in advance by the Executive Officer. The Executive Officer shall base his or her determination upon all information submitted by a manufacturer and upon good engineering judgment.

(D) Test procedures other than those specified in this Procedure may be used only if prior written approval is obtained from the Executive Officer. For purposes of this procedure, a test procedure is a methodology used to determine, with a high degree of accuracy, precision, and reproducibility, the value of a specified parameter. Once the test procedure is utilized to generate test data, the results are compared to the applicable requirements. The Executive Officer shall base his or her determination whether a proposed alternate test procedure may be used upon all information submitted by a manufacturer and upon good engineering judgment.

6. ON-BOARD DIAGNOSTIC (OBD) REQUIREMENTS FOR RETROFIT CERTIFICATION

(a) All applicants must provide a Statement of Compliance, in writing, that the requirements of section 3(c) of these procedures have been met prior to receiving certification of their alternative fuel retrofit system. Specifically, except as provided in 6(b) and 6(c), manufacturers of retrofit systems must comply with section 1968.2, 1971, or 1971.1, title 13, CCR, as applicable, for OBD requirements applicable to the model year of the base engine/vehicle.

(b) Except as allowed in 6(b)(1), 6(b)(2), and 6(c) below, small volume retrofit system manufacturers of systems designed to convert gasoline base vehicles/engines subject to section 1968.2, title 13, CCR must comply with section 1968.2, title 13, CCR for OBD requirements applicable to the model

year of the engine. For the specific sections identified below, in lieu of complying with all applicable OBD requirements per section 1968.2, title 13, CCR, the manufacturer may use the following alternative criteria in 6(b)(1) or (2). For small volume retrofit system manufacturers certifying systems to section 1971 or 1971.1, title 13, CCR, or systems designed to convert diesel base vehicles/engines subject to section 1968.2, title 13, CCR, the manufacturer may propose a plan for EO approval to apply the provisions of 6(b)(1) and (2) below to the applicable sections of 1971, 1971.1, or 1968.2, title 13, CCR. The EO will approve the plan based on the appropriate application of these provisions to the applicable sections of 1971, 1971.1, or 1968.2.

(1) For applicants certifying to the same emission standard as the base vehicle or engine:

(A) Section 1968.2(e)(6.2.1)(C) – If the OBD system on the base engine/vehicle has a dedicated monitor to detect air-fuel ratio cylinder imbalance malfunctions specified in section 1968.2(e)(6.2.1)(C), title 13, CCR, the applicant may waive detection of the malfunctions by the dedicated monitor if the applicant demonstrates that the OBD system robustly detects (e.g., meets the in-use monitoring frequency requirements, avoids false passes and false indications of malfunctions) the imbalance malfunctions by using another monitor to detect them.

(B) Section 1968.2(h)(2.3): Durability requirements for OBD test vehicles: In lieu of using a vehicle required under section 1968.2(h)(2.3), title 13, CCR, applicants may use one of the following test vehicle configurations until the sunset (i.e., up to and including the 2017 model year):

1. A vehicle with the catalyst system and oxygen sensors aged per the bench aging cycle as specified in 6(b)(1)(B)1.a. through e. below. When conducting the aging, the catalyst system and oxygen sensors shall be placed and aged consistent with the test vehicle original equipment manufacturer (OEM) catalytic converter configuration (i.e., such that the relative distance between catalytic converter(s) and oxygen sensor(s) is maintained). Notwithstanding the above, aging with the downstream catalytic converter(s) located closer to the upstream converter(s) than in their OEM configured positions (i.e., in a hotter environment) is also acceptable to the ARB. Unleaded fuels commercially available in the United States shall be used during the aging.

a. Adjust parameters until stoichiometric operation is achieved with inlet temperature, exhaust flowrate, carbon monoxide (CO) concentration, and oxygen (O_2) concentrations specified in Mode No. 1 in Table 6.1.

b. Add enrichment until CO concentration specification of Mode No. 2 is achieved to determine enrichment amount to be used for Mode Nos. 2 and 3 in Table 6.1.

c. Remove enrichment and return to stoichiometric operation at Mode No. 1 specifications in Table 6.1.

d. Add air injection until O_2 concentration of Mode No. 4 is achieved to determine air injection flow rate to be used for Mode Nos. 3 and 4 in Table 6.1.

e. Perform aging cycling through Mode Nos. 1-4 in Table 6.1 for 100 hours.

6.1 Rapid Aging Test Procedure

Mode No.	Description	Parameter	Specification
1	Stoichiometric Fuel-Air Ratio (Closed-Loop)	Inlet Temperature	825°C±20°C
		Exhaust Flowrate	80 SCFM[1] per catalytic converter
		Time Duration	40 seconds
		CO concentration	≤ 1.0%
		O_2 concentration	≤ 1.0%
2	Fuel-Rich Operation (Power Enrichment) (Open-Loop)	Time Duration	6 seconds
		CO concentration set for	3.0%±0.3%
3	Fuel-Rich Operation with Air Injection	Time Duration	10 seconds
		Amount of Enrichment	same as used in Mode No. 2
		Air Injection Flow Rate	same as used in Mode No. 4
4	Stoichiometric Operation with Air Injection (Closed-Loop)	Time Duration	4 seconds
		O_2 concentration	3.0%±0.3%

2. An in-use vehicle that has been converted with the applicant's alternative fuel retrofit system and has subsequently accumulated actual in-use mileage in excess of 25,000 miles on the alternative fuel. The proposed test vehicle must be complete, intact, and representative of the test group included in the application for certification. No component/system changes of the proposed test vehicle during mileage accumulation are allowed.

(C) Section 1968.2(h)(3): Demonstration testing requirements for certification: In lieu of meeting the testing requirements in section 1968.2(h)(3), title 13, CCR, applicants may use an alternative test plan that meets the following criteria in 6(b)(1)(C)1. through 4. until the sunset (i.e., up to and including the 2017 model year). After the

[1] "SCFM" refers to standard cubic feet per minute.

sunset (i.e., for 2018 and subsequent model years), applicants may use the testing requirements in 6(b)(2)(B):

1. *Section 1968.2(h)(3.1): Exhaust Gas Sensors:* Applicants may propose a single test using the worst case slow response pattern (e.g., symmetric slow response, asymmetric slow rich to lean transition) provided they can demonstrate, using good engineering judgment, that the pattern selected is the worst case in terms of affecting vehicle emissions with the least amount of sensor degradation. This testing shall be limited to the primary sensors. If the exhaust system contains exhaust gas sensors in parallel, the test shall be performed with the "parallel" sensors equally deteriorated. For other monitors required to be tested under section 1968.2(h)(3.1) (e.g., monitors that detect other sensor parameters that can cause emissions to exceed the malfunction threshold), the applicant shall meet the criteria of 6(b)(1)(C)4. below.

2. *Section 1968.2(h)(3.4): Fuel System:* For vehicles with adaptive feedback based on the primary fuel control sensor(s), applicants shall perform tests with the adaptive feedback based on the primary fuel control sensor(s) at the rich and lean limit(s) per the requirements of section 1968.2, title 13, CCR. For other monitors required to be tested under section 1968.2(h)(3.4) (e.g., monitors that detect malfunctions of the feedback based on a secondary fuel control sensor that can cause emissions to exceed the malfunction threshold), the applicant shall meet the criteria of 6(b)(1)(C)4. below.

3. *Section 1968.2(h)(3.7): Catalyst System:* Applicants shall perform a test using a catalyst system deteriorated to the malfunction criteria per the requirements of section 1968.2, title 13, CCR. If the catalyst system contains catalysts in parallel, the test shall be performed with the "parallel" catalysts equally deteriorated. If the MIL first illuminates after emissions exceed the applicable emission threshold specified in section 1968.2(e), title 13, CCR, in lieu of the 25-percent upper and lower limits specified in section 1968.2(h)(6.4.2)(B), title 13, CCR, the manufacturer shall use upper and lower limits of 50 percent of the applicable standard.

4. *Remaining Monitors*: Applicants may request a waiver from testing the remaining monitors (i.e., monitors specified under section 1968.2(h)(3), title 13, CCR, except for the monitors demonstrated per 6(b)(1)(C)1. through 3. of these procedures) provided the applicant submits a statement attesting the

underlying emission controls (e.g., exhaust gas recirculation (EGR) hardware and control calibration) of the waived monitors (e.g., EGR flow monitor) and the waived monitors themselves were not changed by the application of the alternative fuel retrofit system.

(D) Section 1968.2(i): Certification documentation requirements: In lieu of providing all the information required in section 1968.2(i), title 13, CCR, applicants may propose a documentation plan with limited OBD information for EO approval. The EO shall approve a documentation plan that includes all the modifications, deletions, and additions to the OBD system on the base vehicle/engine due to the addition of the conversion system, including a description of how these changes are integrated into the OBD system of the base vehicle/engine to ensure compliance with the standardization requirements of sections 1968.2(d)(2) and (g), title 13, CCR (e.g., how the conversion system achieves illumination of the malfunction indicator lamp and fault code reporting on the base vehicle or engine for faults detected by an added alternate fuel conversion system computer). The plan may exclude the submission of misfire percentage probability of detection charts required by section 1968.2(i)(2.5.2), title 13, CCR if the misfire monitor calibrations are not changed on the retrofit system.

(2) For applicants certifying to a more stringent emission standard than the base vehicle or engine:

(B) Section 1968.2(e)(6.2.1)(C): If the OBD system on the base engine/vehicle has a dedicated monitor to detect air-fuel ratio cylinder imbalance malfunctions specified in section 1968.2(e)(6.2.1)(C), title 13, CCR, the applicant may waive detection of the malfunctions by the dedicated monitor if the applicant demonstrates that the OBD system robustly detects (e.g., meets the in-use monitoring frequency requirements, avoids false passes and false indications of malfunctions) the imbalance malfunctions by using another monitor to detect them.

(C) Section 1968.2(h)(3): Demonstration testing requirements for certification: In lieu of meeting the testing requirements in section 1968.2(h)(3), title 13, CCR, applicants may use an alternative test plan that meets the following criteria in 6(b)(2)(B)1. through 2.:

1. *Sections 1968.2(h)(3.1), (h)(3.4), and (h)(3.7): Exhaust Gas Sensors, Fuel System, Catalyst System:* Applicants may use the alternative test plans specified in 6(b)(1)(C)1. through 3. above. For other monitors required to be tested under

sections 1968.2(h)(3.1) and (h)(3.4) (e.g., monitors that detect malfunctions of the feedback based on a secondary fuel control sensor that can cause emissions to exceed the malfunction threshold), the applicant shall meet the criteria of 6(b)(2)(B)2. below.

2. *Remaining Monitors*: Applicants may request to receive conditional certification based on the initial application prior to demonstrating the remaining monitors of the OBD system (i.e., monitors specified under section 1968.2(h)(3), title 13, CCR, except for the monitors demonstrated per 6(b)(2)(B)1. of these procedures). The EO shall remove the conditional status of the certification approval if the demonstration data are submitted within an appropriate time after conditional certification is granted and if the data show that the monitors operate and function properly at the more stringent emission standard.

(c) Certification documentation requirements: In lieu of providing all the information required in section 1968.2(i), 1971(f), and 1971.1(j), title 13, CCR, as applicable, for certification documentation requirements, applicants may propose a documentation plan with limited OBD information for EO approval. The EO shall approve a documentation plan that includes all the modifications, deletions, and additions to the OBD system on the base vehicle/engine due to the addition of the conversion system. This plan shall include a description of how these changes are integrated into the OBD system of the base vehicle/engine to ensure compliance with the standardization requirements of sections 1968.2(d)(2) and (g), 1971(d), and 1971.1(d) and (h), title 13, CCR, as applicable (e.g., how the conversion system achieves illumination of the malfunction indicator lamp and fault code reporting on the base vehicle or engine for faults detected by an added alternate fuel conversion system computer). The plan may exclude the submission of misfire monitor data demonstrating the probability of detection of misfire events required by section 1968.2(i) and 1971.1(j), title 13, CCR if the misfire monitor calibrations are not changed on the retrofit system.

7. REQUEST FOR CERTIFICATION

(a) A request for certification of an alternative fuel retrofit system shall be submitted to ARB by the manufacturer, or its authorized representative, intending to offer the alternative fuel retrofit system for sale in California in a format approved by ARB.

(b) The request must include all the information required pursuant to these procedures, including:

(1) Identification and description of the test group or engine family for which the alternative fuel retrofit system to be certified is designed;

(2) A complete description of the alternative fuel retrofit system, including detailed schematics, wiring diagrams, and parts list; an explanation of how the alternative fuel retrofit system interacts with or integrates into the base vehicle or base engine; all the necessary modifications to the base vehicle or engine and its OBD system; supplemental emission control label; owner's manual; warranted parts list; and warranty statements and warranty notifications;

(3) Procedures for installing and maintaining the alternative fuel retrofit system, including tune-up specifications and discussion of any special tools or techniques required for proper installation, maintenance, or operation;

(4) Names and addresses of installers;

(5) Names and addresses of the fabrication, assembly line, and test facilities where the alternative fuel retrofit system and its major components are manufactured and tested;

(6) Agreement to supply the Air Resources Board, within 45 calendar days of the Executive Officer's request, with any one or more of the vehicles used for certification testing or to provide Air Resources Board personnel with the equipment to inspect and test such vehicles at the manufacturer's facility, if requested by the Executive Officer; and

(7) All required emissions test data as specified in these procedures.

(c) Manufacturers planning to obtain ARB certification for the first time should send a "Letter of Intent" to certify alternative fuel retrofit systems in California to:

Chief
Mobile Source Operations Division
California Air Resources Board
9480 Telstar Avenue, Suite 4
El Monte, CA 91731
Attn: Alternate Fuel Retrofit System Certification

The Letter of Intent should include general information on the manufacturer's product offering and contact information including (i) base vehicle test group and/or base engine family, (ii) base vehicle or engine weight class; (iii) persons authorized to sign documents for submittal to ARB, (iv) persons authorized to submit signed documents to ARB, and (v) persons authorized to

communicate with ARB staff during the certification review process. Upon receiving the "Letter of Intent", ARB will assign a manufacturer code to the manufacturer and register the authorized personnel in ARB's electronic application submittal system. Thereafter, all certification related documents must be submitted electronically according to the format described by ARB through the electronic submittal system.

8. CONFIRMATORY TESTING

ARB may conduct confirmatory tests to verify the emission test results submitted by the retrofit system manufacturer. Confirmatory tests, if required, shall be performed by ARB within 45 days of receipt from the retrofit system manufacturer of all data, materials, and vehicles or engines necessary to conduct the test. Confirmatory testing conducted by ARB shall utilize the same test vehicle or engine and procedures as those used by the retrofit system manufacturer. In the event of discrepancies between ARB's confirmatory test results and the retrofit system manufacturer's test results, ARB's evaluation for certification may be based solely on ARB's test results.

9. WARRANTY REQUIREMENTS

(a) Requirements of Manufacturers:
Each retrofit system manufacturer shall warrant to the person having the vehicle or engine retrofitted and to each subsequent purchaser of the vehicle or engine that the alternative fuel retrofit system is designed and manufactured to conform with the applicable requirements of these procedures without causing damage to any part on the retrofitted vehicle or engine, and is free from defects in materials and workmanship which cause the alternative fuel retrofit system to fail to conform with the applicable requirements of these procedures or cause damage to any part on the retrofitted vehicle or engine. This warranty shall cover customer service and the full repair or replacement costs including the costs of diagnosis, labor, and parts, including any part on the retrofitted vehicle or engine that is damaged by the alternative fuel retrofit system. This warranty requirement will be effective from the date of installation to whichever is longer of 9(a)(1) or 9(a)(2).

(1) Three years or 50,000 miles, whichever occurs first.

(2) Remaining original emission-related equipment manufacturer warranty period.

(b) Extended Warranty Requirements:
Each retrofit system manufacturer shall identify in its application for certification the warranted parts whose individual replacement cost, at the time of certification, exceeds the cost limit defined in paragraph

9(b)(1). The replacement cost shall include the cost of the diagnosis, parts, and labor. The costs shall be those of the highest cost metropolitan area of California. Each retrofit system manufacturer shall warrant to the person having the vehicle or engine retrofitted and to each subsequent purchaser of the vehicle or engine that these parts identified in its application for certification as exceeding the cost limit defined in paragraph 9(b)(1) are free from defects in materials and workmanship which cause the alternative fuel or credit-generating conventional fuel retrofit system to fail to conform with the requirements of these procedures or cause damage to any part on the retrofitted vehicle or engine, for seven years or 70,000 miles, whichever occurs first.

(1) The cost limit shall be the same as calculated in CCR Title 13 Section 2037(c), except the model year shall be applicable to the calendar year the alternative fuel retrofit system is certified.

(2) The cost limit shall be revised annually by the Executive Officer. The highest cost metropolitan area in California shall be identified by the Executive Officer.

(3) Each manufacturer shall submit to the Executive Officer the documentation used to identify the warranted parts required in this subsection. The documentation shall include the estimated retail parts costs, labor rates in dollars per hour, and the labor hours necessary to diagnose and replace the parts, using the highest cost metropolitan area in California.

(c) Requirements of Installers:
Each installer of an alternative fuel retrofit system shall warrant to the person having the vehicle or engine retrofitted and to each subsequent purchaser of the vehicle or engine that the alternative fuel retrofit system will not fail to conform with the applicable requirements of these procedures due to incorrect installation, and that no part on the retrofitted vehicle or engine will be damaged due to incorrect installation. Installers of alternative fuel retrofit systems shall install only those systems of a certified configuration and shall agree to indemnify the person having the vehicle or engine retrofitted and to each subsequent purchaser of the vehicle or engine for the cost of repair of any vehicle or engine upon which a noncertified configuration was installed. In addition, the installer shall agree to indemnify the person having the vehicle or engine retrofitted and to each subsequent purchaser of the vehicle or engine for any tampering fines that may be imposed as a result of improper installation of the alternative fuel retrofit system. The warranties and agreements to indemnify shall be effective for 3 years or 50,000 miles, whichever occurs first, of customer service, and shall

cover the full repair or replacement costs including the costs of diagnosis, labor, and parts (including any part on the retrofitted vehicle or engine that is damaged due to incorrect installation of the alternative fuel retrofit system).

Prior to installation each installer must submit to ARB the warranty statement to be provided by the installer to the purchaser in accordance with the following paragraph 9.(c)(1).

(1) Warranty Review and Reporting Requirements. Each manufacturer shall monitor its warranty claims and retain them for a period of at least three years from the date of installation of the conversion. Manufacturers shall maintain the records in both hard copy and electronic format. Upon request by ARB, manufacturers shall make available the warranty claims or a report summarizing the warranty claims by production year, conversion system, vehicle or engine model and model year, total production, and individual component. Manufacturers may include in the report an explanation of the root cause of the component failure, if known, and whether or not an improved component has been developed. If warranty claims for an individual component exceed one (1) percent or 25 components for any specific application of its certified conversion kits, ARB may use the information to initiate confirmatory or in-use enforcement testing.

10. INSTALLATION REQUIREMENTS

(a) Prior to releasing a converted vehicle or engine to the consumer, the installer of an alternative fuel retrofit system for light and medium-duty vehicles shall submit the converted vehicle to a Bureau of Automotive Repair Referee Smog Check Station for inspection and testing, except as provided in section 10(a)(1). The installer shall not release the converted vehicle to the consumer without the issuance of Certificate of Compliance for the vehicle by a Bureau of Automotive Repair Referee Smog Check Station. The installer shall keep a copy of the Vehicle Inspection Report and provide a copy to the vehicle owner upon the vehicle's release.

(1) For fleet installations of multiple retrofit systems, the installer may transfer responsibility for the required inspections directly to the fleet owner. The installer must notify the fleet owner, in writing, of the requirements to submit the converted vehicles to a Bureau of Automotive Repair Referee Smog Check Station for inspection and testing. If the fleet owner agrees to perform the required inspections, they must submit copies of the certificates of compliance to the Executive Officer by December 31 of each year

for the installation of the alternative fuel retrofit systems that year.

11. APPROVAL

(a) Issuance of Executive Orders:
If, after reviewing the test data and other information submitted by the retrofit system manufacturer, the Executive Officer determines that the alternative fuel retrofit system meets the requirements of these procedures or the criteria of an approved test plan, as applicable, he or she shall issue an Executive Order certifying the alternative fuel retrofit system for sale and installation on the vehicles or engines with the test groups or engine families specified in the certification request.

(b) Carry-Over and Carry-Across:

(1) Carry-over of durability and emission test data from the previous model year to the following model year and from one test group or engine family to similar test groups or engine families will be allowed if the Executive Officer determines that the carry-over/carry-across data will adequately represent the durability and emission performance of the alternative fuel retrofit system to be certified.

(2) Requests for carry-over and carry-across must be accompanied by test data and an engineering analysis demonstrating that the durability and emission performance of the alternative fuel retrofit system and the test group or engine family for which certification is sought will be adequately represented by the durability and emission performance of the certified alternative fuel retrofit system and test group or engine family.

(3) Applications for carry-over and carry-across will be evaluated according to the criteria specified in EPA Advisory Circular 17F, dated November 16, 1982, updated January 21, 1988 which is incorporated by reference herein. The Executive Officer shall permit the use of federal durability data vehicles if he or she determines that the federal data will adequately represent the durability characteristics of the California configuration. This determination shall be based upon similarity of catalyst location and configuration; similarity of fuel metering system; similarity of major features of emission control system logic and design; and similarity of any other features determined by the Executive Officer to be likely to affect durability.

12. IN-USE ENFORCEMENT TESTING REQUIREMENTS

(a) Retrofit system manufacturers shall, upon order by the Executive Officer, perform in-use enforcement emission testing of their products. The cost of these tests shall be borne by the manufacturer. The Executive Officer may order in-use enforcement emission testing of not more than three retrofitted vehicles or engines per certified retrofit system test group or engine family per year. For each vehicle or engine that fails to meet the applicable emission standards, two more vehicles or engines shall be selected and tested up to a total of ten vehicles or engines. Upon order by the Executive Officer, manufacturers shall perform the applicable emission tests pursuant to the following:

(1) No vehicle or engine shall be accepted by the retrofit system manufacturer as a representative vehicle or engine for in-use enforcement testing unless the following criteria are met:

(A) California certified and registered.

(B) Odometer indication of less than the certified useful life mileage and vehicle age within the useful life time period.

(C) No indication of abuse (e.g. racing, overloading, mis-fueling, or other mis-use), neglect, improper maintenance, or other factors that would have an effect on emission performance.

(D) No major repair to engine or major repair of vehicle resulting from collision.

(E) No indication of any problem that might jeopardize the safety of laboratory personnel.

(2) The retrofit system manufacturer shall, under ARB supervision, perform diagnosis or restorative maintenance on those vehicles or engines selected for in-use enforcement testing. The retrofit system manufacturer or a laboratory approved by the Executive Officer shall (1) identify part numbers of all essential emission control system components; (2) check air filter, all drive belts, all fluid levels, radiator cap, all vacuum hoses and electrical wiring related to emission control for integrity; check fuel metering and emission control system components for maladjustments and/or tampering, and record all discrepancies; (3) check ignition system where applicable and replace any defective components that are due for replacement; (4) check and adjust engine parameters to manufacturer's specifications; and (5) perform maintenance if the vehicle is within 1,000 miles of scheduled maintenance service.

(3) The retrofit system manufacturer or a laboratory approved by the Executive Officer shall perform all applicable emission test procedures set forth in these procedures. The applicable emission standards shall be the vehicle's or engine's useful life standards as stated in the Alternative Fuel Retrofit System Certification Executive Order.

(4) For heavy-duty vehicle or engine applications where alternate test procedures and standards were used, the retrofit system manufacturer or a laboratory approved by the Executive Officer shall repeat the same alternate test procedures and standards approved to obtain their Alternative Fuel Retrofit System Certification Executive Order.

(5) Retrofit system manufacturers shall complete in-use enforcement testing within six months of the issuance of the in-use enforcement testing order by the Executive Officer and shall submit all test data to the Executive Officer within 30 calendar days following completion of testing.

(6) Following review of retrofit system manufacturer in-use enforcement test data, the Executive Officer may conduct confirmatory in-use enforcement testing.

(7) If the results of the in-use enforcement tests conducted pursuant to paragraphs 12(a)(1) through 12(a)(6) of these procedures indicate that the average emissions of the test vehicles or engines for any pollutant exceed the applicable emission standard, the entire vehicle or engine population so represented shall be deemed to exceed such standard. Upon order by the Executive Officer, the manufacturer shall have 45 days to submit a recall plan in accordance with Sections 2111 through 2121, Title 13, CCR. If no such recall plan is submitted, the Executive Officer may order corrective action including recall of the affected vehicles or engines in accordance with Sections 2122 through 2135, title 13, CCR. For the purpose of these procedures, the term "manufacturer" as referenced in Sections 2111 through 2135, title 13, CCR, shall mean "retrofit system manufacturer."

13. CONFIRMATORY IN-USE ENFORCEMENT TESTING REQUIREMENTS

(a) Emission Confirmatory Testing: The Air Resources Board may conduct confirmatory tests to verify the in-use enforcement emission test results submitted by the retrofit system manufacturer. Confirmatory tests, if required, shall be performed by the Air Resources Board within 45 days

of receipt from the retrofit system manufacturer all data, materials, and vehicles or engines necessary to conduct the test. Confirmatory testing conducted by the Air Resources Board shall utilize the same test vehicle or engine and procedures as those used by the retrofit system manufacturer. In the event of discrepancies between the Air Resources Board's confirmatory test results and the retrofit system manufacturer's test results, the Air Resources Board's evaluation for compliance may be based solely on the Air Resources Board's test results.

(b) OBD Confirmatory Testing: OBD confirmatory testing shall be conducted per section 1968.2 (h)(7) or 1971.1 (i)(6) as applicable.

APPENDIX D

D. Economic Analysis

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Economic Analysis of Certification Procedures

This appendix describes the methodology used to estimate differences in certification costs from the current alternate fuel conversion procedures to the proposed changes for conversion systems certified to the same chassis dynamometer based emission standard to that of the original vehicle subject to OBD requirements. These costs can be assigned to two areas related to certification: emission testing and OBD demonstration. Regarding emission certification, the proposed regulation does not change the estimated tailpipe testing costs and it eliminates the need to conduct the evaporative emissions test if the fuel system is enclosed yielding a reduction of $6,368 (staff used $6,400 for rounding purposes).

Certification costs vary depending on the complexity of the engine, emission control system used, and OBD capability. Therefore, staff decided to use a realistic worst case (most complex) system to estimate cost for the current OBD certification procedure. As shown in table D-1, staff estimates each OBD emission test will cost $2,100. This includes the cost to conduct the emission testing, collect OBD scan tool data and remove and replace the demonstration parts associated with each test. Staff applied the $2,100 test cost to each of the required emissions tests outlined in table D-2.

Table D – 1: Estimated Cost per Emission and Fault Insertion Test

Task	Cost
OBD Data Collection	$200
Emission Test	$1,500
Labor (4 Hours) per Test	$400
Total Cost per OBD Test	**$2,100**

Table D-2 estimates the total number of OBD certification tests and hardware costs and compares the number of tests and cost for the current (worst case) certification procedures with the proposed streamlined procedures for certification to the same chassis dynamometer based standards as the original vehicle. As shown in table D-2, the proposed test procedures will require four threshold monitor demonstration emission tests as compared to worst case scenario under the existing regulation of 19 threshold monitor demonstration emission tests.

Table D-3 provides a summary and comparison of OBD costs for certifying to the current worst case procedures to the more flexible procedures as proposed and to the recently revised EPA procedures as published by EPA. Since the number of tests is reduced, the cost for the OBD demonstration parts will decrease from $49,200 to

$42,000. The cost to conduct the demonstration tests will decrease from $39,900 to $8,400. Some of the costs for demonstration parts are specific to the vehicle/test group being tested (e.g., for the threshold catalyst) and are recurring for additional demonstration vehicles. Other costs for demonstration parts (e.g., exhaust gas sensor demonstration hardware) may be shared with other vehicles/test groups that utilize similar emission control system hardware that is compatible with the demonstration hardware. Lastly, the cost to age the vehicle to the level required for demonstration testing will decrease from $50,000 to $20,000.

Table D – 2: Estimated Alt Fuel Conversion OBD Demonstration Costs

System	Monitoring Requirement	Current ARB (Worst Case)	ARB Proposal	ARB Demonstration Hardware Cost
		# of Emission Tests		
Fuel System	Primary Rich	1	1	$1,000
	Primary Lean	1	1	
	Secondary Rich	1	0	$1,000
	Secondary Lean	1	0	
	Imbalance Rich	1	0	$1,000
	Imbalance Lean	1	0	
Exhaust Gas Sensor	6 Patterns	6	1	$5,000
Full Useful Life Catalyst		1	1	$35,000
EGR		1	0	$100
Misfire		1	0	$5,000
Air Injection		1	0	$100
Valve Timing	Advanced	1	0	$1,000
	Retarded	1	0	
	Response	1	0	
	Total OBD Tests	**19**	**4**	

Table D-3: Summary and Comparison of OBD Certification Costs

OBD Requirements	Current ARB (Worst Case) $/MY	ARB Proposal $/MY	Current EPA $/TG
OBD Emission Tests	$ 39,900	$ 8,400	$ 9,500
OBD Demonstration Parts	$ 49,200	$ 42,000	$ 13,000
OBD Test Vehicle Aging	$ 50,000	$ 20,000	$ 0
Total OBD Costs	**$ 139,100**	**$ 70,400**	**$ 22,500**

Table D-3 compares the cost of the current worst case scenario with the cost of staff's proposal based on the necessary demonstration parts and testing, yielding a projected and OBD demonstration cost savings of $63,500 per model year.

APPENDIX E

E. Reference Letters

Alternative Fuels Advocates, LLC

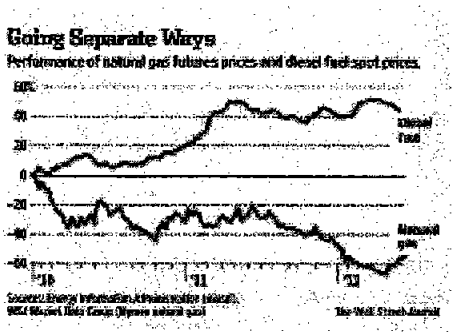
To: California Air Resources Board
Attn: Annette Hebert – Mobile Source Operations Division
cc: Tom Cackette – Chief Deputy Executive Officer
Date: August 2, 2012
Re: Streamlining of certain Natural Gas / Propane vehicle and engine certification procedures

Dear Annette,

We wish to thank you and your staff for taking time out of your busy schedules to meet with us on June 14th regarding this important subject. Alternative Fuels Advocates (AFA) is committed to working closely with the Natural Gas and Propane vehicle industries in providing the Air Resources Board (ARB) with data and resources necessary to update policies and regulations so as to lessen the burden on both the applicant and the ARB while still maintaining high standards of emissions and OBD monitoring compliance which California has pioneered over the years.

Background

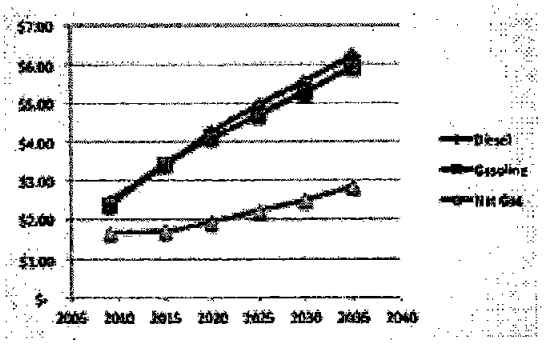
As depicted by the graph below, while consumers continue to be faced with higher petroleum derived fuel costs, the price at the pump for low carbon natural gas derived Natural Gas / Propane fuels has dropped dramatically. According to a recent US DOE report[1] while the nationwide average retail price for gasoline is at $3.89, the current nationwide average retail price for Natural Gas is $2.08 per gasoline gallon equivalent with Propane[2] averaging at $2.50 in the state.



[1] http://www.afdc.energy.gov/afdc/price_report.html

[2] California propane prices are considerably lower than the national average due to surpluses produced from oil and gas fields here. As California continues to rely on importing petroleum for vehicle fuel we are at the same time regrettably exporting much of our indigenously produced low carbon propane to other states and countries. Approximately 70% of the US propane supply is currently derived from domestic natural gas.

According to the U.S. Energy Information Administration's *Annual Energy Outlook 2011*, this trend is expected to continue for many years to come:



Over the first three years in which I was the Program Manger of the California Energy Commission's Alternative and Renewable Fuel and Vehicle Technology Program (program funding of $100 million per year in incentives for alternative fuels and advanced vehicle technologies), it became apparent that California public and private fleets, who desire to reduce petroleum use in favor of using non-petroleum, low carbon Natural Gas and Propane fuels , have been continually frustrated with the lack of ARB-certified vehicle and engine choices vis-à-vis to what is becoming increasingly available outside of California under recently-streamlined Federal certification procedures[3]. There is also a perception that the ARB certification process requires more time than is reasonably necessary, causing many potential applicants to shun the California market altogether[4].

Model Year 2012 Natural Gas& Propane Chassis & Engine Certifications		
	EPA	ARB
Certifications Issued	79	7
OEM Test Groups Covered	21	7
Applicants	11	4

For alternative fuel system manufacturers certification timeframes are crucial. There is a limited window from when the OEM ships the first vehicle of a model year to when the model year ends in which to fully engineer, test, and certify with both the US EPA and the ARB. Because of this crucial timing, manufacturers hold heightened concerns about the delays in the iterative certification process which can easily jeopardize the amount of time available for selling the once-certified vehicles. Standardizing the response times and schedules in the certification process could alleviate these concerns, provide certainty for hitting the vehicle 'sales

[3] http://www.epa.gov/oms/consumer/fuels/altfuels/420f11006.htm

[4] A preliminary analysis of certification processing times is included here as Attachment A.

window', and remove the existing industry stakeholder perceptions that the additional iterations are ill-focused at best, and/or punitive at worst.

In response to the reality of shrinking options for ARB-approved alternative fuel vehicle systems, many of the "CAA Section 177" states which had previously adopted California vehicle emissions standards are now forgoing the California standards and choosing to go with the Federal standards as pertaining to natural gas vehicles[5].

An improved and streamlined certification pathway for alternative fuel vehicle technologies, for both new and existing vehicles and engines, can serve as a discrete action that will help enable the state to meet its petroleum reduction and alternative fuels use goals, along with its climate change goals, with early adoption of low-carbon Natural Gas and Propane motor fuels. Lastly, the remedies proposed can be a catalyst to the benefit of increased economic development in this vital market sector of the economy, a benefit which is substantial and sustainable for several decades into the future.

Areas for Potential Streamlining

After consultation with the industry, we at Alternative Fuels Advocates have identified a number of areas in which the ARB could provide much needed administrative changes in lessening the certification burden for both examiner and applicant:

1. Improved guidance documentation
2. Alternative Fuels Specialists
3. Update of §2030 to reflect current state of the art
4. Harmonize natural gas certification fuel with Federal standard
5. Harmonize natural gas NMHC to NMOG multiplier with Federal standard
6. Relief from aged post-exhaust component requirements
7. Relief from re-validating dual-fuel gasoline systems
8. Leverage experience of the US EPA

1. Improved guidance documentation

We are encouraged that ARB has planned a workshop on August 14th and offer this summary of issues for guidance in advance. It would be very beneficial to the industry if the following areas were addressed in the guidance document and in subsequent initiatives to advance clean low carbon fuel conversion systems:

What constitutes a complete OBD II application and what are reliable turnaround times?

One clear message from the industry is that while the OBD II regulation may be well defined, specifics as to what documentation is required from an applicant alongside

[5] So far New Jersey and Pennsylvania have opted out of the California's arguably outdated §2030 standard, with a half dozen other states now considering similar legislative changes.

a reliable timeframe for productive two way iteration and eventual approval suffers from lack of definition regarding the procedure and its time requirements. Areas which could be better defined by the ARB OBD II group include:

- Examples of acceptable / unacceptable methods to induce faults
- Permissible shortcuts
- Typical mistakes made by first time applicants, testing omitted, etc.
- Common sources of rejection, i.e. missing datasets, tables, graphs, etc.
- What to do when you feel your application or responses have been ignored

Ideally the ARB would publish a template OBD II application example that includes all of the elements currently required for approval. This would eliminate the guesswork for first time applicants while also providing ARB OBD II examiners with complete applications in a more unified format.

Checklist of required submissions with estimated turnaround times for each is needed.

While the EPA Verify submission process has a clearly defined sequential pathway for dataset uploading and approval, the ARB relies on a more ad-hoc approach of requiring separate DMS uploads for not only the core application but also various other documents in addition to physical label submissions. Documenting these steps as well as estimated turnaround times for each would no doubt lessen the burden on ARB certification representatives, especially when working with first-time applicants.

Requirements for dual-fuel vehicle and engine certification

As elsewhere in the United States, dual fuel[6] vehicles could to be providing an important tool for California in transitioning to non-petroleum and low carbon fuel alternatives as the refueling infrastructure is being built out. While the USA EPA has in recent years issued dozens of certifications for dual fuel vehicle and engine systems, in California there have been no such certifications granted since 2005. Much of this is likely attributed to a lack of information in the public domain as to ARB's interpretation of the California regulations pertaining to dual-fuel vehicle certification requirements, alongside a clearly stated rationale for how they are more protective of public health and welfare than the updated applicable Federal standards.

The alternative fuel vehicle industry is becoming increasingly concerned that there are at least three dual-fuel applications in to the ARB for model year 2013 (one OEM, two SVM) with none yet approved as of the end of July.

Post-certification responsibilities

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[6] Vehicles which operate either on gasoline or the alternative fuel, but not both simultaneously.

A clearly stated summary of §1968.2(j) production vehicle reporting requirements, warranty and recall reporting, running change notification, end of year fees, and other post-certification responsibilities would assist the alternative fuel system supplier in maintaining compliance.

2. Alternative Fuels Specialists

As provided above, the macroeconomics favoring demand for low carbon natural gas and propane fueled vehicles should continue for the foreseeable future. While the OEMs are once again making efforts to supply product to this market there will no doubt be increased strain on ARB staff to field requests from consumers and small volume manufacturers for guidance in understanding and meeting California's regulations.

In a manner similar to EPA's OTAQ successful initiatives, we would encourage the ARB to appoint at least one senior staff member to focus on outreach and in expediting regulatory compliance activities for all of the alternative fuels. The specialist will also be able to draw on ARB staff expertise as needed. For example one source of frustration to some current applicants occurs when the examiner managing the certification is unfamiliar with the base OEM gasoline vehicle and application, resulting in what would otherwise be avoidable time-consuming correspondence between the alternative fuels applicant and examiner.

3. Update §2030 to reflect current state of the art

California's requirement for separate certification pathways as to new vehicle conversions (expiring at model year end) and retrofit vehicle conversions (never expiring) is a serious and substantial barrier to the nascent California alternative fuel vehicle industry. As we discussed in our meeting in June, Title 13 §2030 – Certification and Installation Procedures for Alternative Fuel Retrofit Systems – was implemented *seventeen years ago* and clearly needs updating to reflect the state of the art today. It is encouraging that the ARB is planning to revisit this regulation next year, however in the mean time we suggest that administrative guidance be published as soon as possible for those wishing to pursue this non-expiring certification pathway to include:

- OBD regulations should correspond to the model year of the vehicle, i.e. §1968.2 not §1968.1 for OEM model years 2005 and newer [§2030 3(iii)]
- Test procedures should also correspond to those applicable to the vehicle model year
- OBD approvals previously granted under new vehicle certification should be applicable for retrofit certification for the same OEM test groups
- Certification and VECI labeling to current standards (i.e. SULEV) should be acceptable as these standards didn't exist in 1995 [§2030 3(b)]
- Assigned DF's may be utilized in lieu of mileage accumulation [§2030 5(g)] so long as data is provided showing less deteriorative effect on emissions control components while running on the alternative fuel (i.e. comparative

mid-catalyst temperature traces). Kit manufacturers must come back within two years to validate the DFs per MAC 95-10

- Durability of components added to the vehicle may be demonstrated via manufacturer-provided bench data as is the case for new vehicle certification
- Use of criteria per 40 CFR §85.510(b)(1)(A) to determine carry-across to similar engine families / test groups [§2030 6(b)]
- Limit testing to one or two vehicles which might be required for in-use testing[7] as currently the regulation is "not less than ten vehicles" [§2030 8(a)]
- Guidance as to how to test Category III "vehicles" for pre- and post-conversion emissions [§2030 5(d)] as it is impossible to load a chassis dynamometer with a vehicle in this weight category and furthermore Federal regulation requires engine dynamometer validation.

4. Harmonize certification fuel with Federal standard

Natural Gas Emissions Test Fuel
The following table provides a comparison between the California and Federal Regulations for natural gas vehicle certification test fuel:

Natural Gas Test Fuel Comparison

	California 13 CCR 2292.5	Federal 40 CFR 86.113-94
Cost in gasoline gallon equiv.	Over $100	Under $2
Lead time	3 months - custom	None - ubiquitous
Methane	90.0% ± 1.0%	89% min.
Ethane	4.0% ± 0.5%	4.5% max.
C3 & Higher	2.0% ± 0.3%	2.3% max.
C6 & Higher	0.2% max.	0.2% max.
Oxygen	0.5% max.	0.6% max.
Inert Gases	3.5% ± 0.5%	4% max.

It is unfortunate that California continues to cling to the outdated notion of low methane, high ethane fuel composition along the SAE J1616 recommended practices continuum[8] as somehow causing higher emissions – when in reality the opposite is true. Public-domain test data from Southern California Gas Company and additional data in possession of AFA shows that the *California test fuel consistently provides marginally cleaner results* as compared to the Federal Natural Gas test fuel, and that

[7] By comparison, the verified diesel emission control system (VDECS) retrofit in use compliance requirements provide that only four (4) units per engine family need be tested, and then only after 100 units or more are in use in California. Note also that §2030 8(a) could be misconstrued as having the potential to require up to 20 percent of all systems/engines sold to be called out of the field for in-use testing, which would be a daunting sword over the manufacturer's head indeed.

[8] SAE J1616, in summary, recommends motor vehicle fuel methane composition of 88 to 96 mole percent with the balance being a decreasing proportion of non-methane alkanes (i.e., ethane, propane, butanes, etc.).

variations to as low as 78.6% methane have little impact on emissions or fuel economy of natural gas vehicles[9].

We note that the California regulation provides that fuel meeting the Federal criteria may be used for mileage accumulation and OBD II validation but not for determining emission level certification. Furthermore, in practice, the ARB does indeed accept certification data from test vehicles operating on commercially available Natural Gas sources so long as a chemical analysis is provided. We would encourage the formalization of this policy, and eventual change in the regulation, so as to harmonize with the less burdensome Federal requirement.

5. Harmonize NMHC to NMOG multiplier with Federal standard

Producing NMOG emission data is a very expensive and time-consuming process. Sample exhaust must be impinged and forwarded on to third party laboratories for additional speciation to obtain these values. While post-test NMHC data may be used as a surrogate for NMOG for gasoline and diesel via established multipliers, no such multipliers exist for California certification of Natural Gas test results.

Recognizing this, the US EPA has reviewed Natural Gas data submitted over many years and has determined a worst-case factor of 1.5x NMHC to NMOG. We ask ARB to harmonize with this Federal multiplier, and provide clear guidance for this change.

6. Relief from aged post-exhaust component requirements

A significant hurdle for Natural Gas and Propane fuel system providers is California's requirement to use a vehicle aged to the end of full useful life for use in OBD II validation testing[10]. While obtaining aged Natural Gas and Propane components such as fuel regulators and injectors is generally not a hardship, procuring aged OEM post-exhaust components (catalysts, O2 sensors) using an ARB-approved durability procedure generally costs in excess of $30,000 and can take many weeks. However, this is also contingent on the manufacturer being able to readily access the components at the start of a new model year (late summer/early fall).

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[9] In response to "hot gas" vehicle fuel concerns raised by ARB, a comprehensive study on Natural Gas fuel properties vs. resulting emissions was performed for Southern California Gas Company (Sempra) by Sierra Research in November 2009. The resulting data shows no evidence of Natural Gas formulation influencing vehicle emissions. In response, ARB Executive Order dated October 12, 2010 to Southern California Gas Company *temporarily* exempts Sempra customers from regulation 13 CCR 2292.5, as the ARB continues its evaluation of the relationship between Natural Gas fuel composition and emissions. Due to the temporary nature of the order, the regulatory uncertainty it provides gives cause for ongoing concern for transit districts, thousands of transit bus patrons, school bus districts and school children, and other natural gas fleets and vehicle users, and appears to exceed the authority provided to ARB for its requested CAA Section 209(b) waivers to address natural gas vehicle fuel properties. The full report may be downloaded here: http://www.socalgas.com/documents/business/gasquality/SierraResearch_EffectsofGasCompositiononEmissionsfromaLight-DutyNaturalGasVehicle.pdf

[10] §1968.2(h)(2.3)

As discussed earlier, given a limited window of opportunity each model year, a delay of even a few weeks in waiting on catalyst aging can make the difference between providing vehicles to California customers or not prior to the OEM ending production of the current model year base gasoline vehicle. This issue directly limits the 'market window' of certified vehicle availability, which jeopardizes the sales volume for that model year vehicle- a crucial element in the decision to attempt to certify in California, or not.

In the past decade since California's requirement to use a representative end of life vehicle in OBD II validation was implemented, post-exhaust components have become significantly more *durable*. OEMs have progressed from reporting large multiplicative 100k miles deterioration factors in model year 2000 to relatively insignificant 120k miles additive factors in model year 2012 as shown in the following table of 70th percentile DF values, as published under 40 CFR §86.1826(b)(1)(i).

Model Yr.	NMHC	CO	NOx
2000 (multiplicative)	1.8 x	1.9 x	2.3 x
2005 (multiplicative)	1.37 x	1.62 x	1.73 x
2012 Bins 2-3 (additive)	0.002 +	0.1 +	0.00 +
2012 Bins 4-5 (additive)	0.012 +	0.3 +	0.01 +
2012 Bins 6-8 (additive)	0.030 +	0.6 +	0.04 +

The US EPA has also determined from extensive experience with alternative fuel vehicle and engine data that *"based on knowledge of exhaust temperature development data at the catalyst inlet, it is reasonable to conclude that, in general, OEM DFs developed on gasoline would represent a worst case DF relative to DFs developed using Natural Gas, LNG, Propane, and ethanol fuel types"*[11].

As the OEM DF for a given test group is already known on gasoline, and given the above broad industry DF data, it would seem reasonable to us that threshold monitors which are calibrated using durable state of the art 4k miles catalysts would provide fully compliant results on end of useful life catalysts as well, especially if OEM DF's were included in the emissions result in determining compliance with the applicable threshold.[12]

7. Relief from re-validating dual-fuel gasoline systems

As discussed above, ARB guidance in the public domain as to dual-fuel vehicle and engine system certification pathways would be very beneficial.

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[11] Ref. CD-12-07 analysis published March 20, 2012 – http://www.epa.gov/otaq/datafiles/cd1207.pdf

[12] Note this proposed alternate test vehicle environment would not apply to the catalyst monitor validation which would continue to be deteriorated per criteria presented in §1968.2(e)(1.2.7)

In cases where the gasoline system hardware and calibration remain unchanged, it would seem reasonable to rely on OBD data as submitted by the OEM as is the case with the Federal requirements and also, for example, as allowed by the ARB in its soon to be enacted specially constructed vehicle regulation[13]. However, currently for dual-fuel vehicles the ARB requires the following evaporative tests to be run:

a. 2-day evaporative test (gasoline only)
b. 3-day evaporative test with running loss (gasoline)
c. 3-day evaporative test with running loss (Natural Gas)
d. 2-day evaporative test (CNG)

The estimated cost of this testing is $25,000. We agree that testing is necessary if significant changes are made to the gasoline fuel system (fuel tank, canister configuration etc.), however when the closed Natural Gas system is added without making any changes to the base OEM gasoline system, it seems reasonable that this requirement be waived in harmony with well-established Federal procedures[14].

Finally, we are aware that the ARB has required at least one alternative fuel system provider to provide a **full OBD II demonstration on both fuels**, effectively doubling the time and costs associated with certification to upwards of $400,000 or more. While the rationale for this testing requirement is confidential between the ARB and the applicant, on the surface it would appear to be an overreach of regulatory interpretation, especially as applied to a single-year certification of a vehicle from a small volume manufacturer[15].

8. Leverage experience of the US EPA

Together with all automotive manufacturers, alternative fuel systems suppliers appreciate the efforts underway to participate in the Verify project with the US EPA so as to harmonize certification application data for all certification categories. We also encourage the ARB to draw on the extensive experience that the US EPA OTAQ group has gained in examining alternative fuel vehicle and engine data.

Many of the suggestions contained in this letter have been requested by individual manufacturers in the past, resulting in latitude by the ARB on a case-by-case basis only. For years the US EPA took the same approach, however with the growing number of applicants and submissions it became clear to US EPA that reviewing statistically significant data already in its files to come up with improved regulation would greatly reduce the time wasted by both applicant and examiner. Much of this

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[13] Ref. California Proposed Regulation Order Title 13, Division 3, Chapter 1, Article 1.5, section (g)(10)

[14] This is of course provided that the alternative fuel system provider is able to demonstrate that gasoline vapors are being continuously purged while operating on either fuel, thus the evaporative emissions of the vehicle will be unchanged.

[15] The only regulation we could find which specifically calls out options for dual-fuel OBD II monitoring pertains to denominator specifications as presented in §1968.2(d)(4.3.2), hence our desire as stated earlier for public domain guidance from the ARB as to its interpretation of the regulation in ensuring full OBD II compliance while operating on either fuel.

Federal data and experience would be of benefit for California to consider in looking toward updated regulations covering alternative fuel vehicles and engines as well.

Summary

We trust that the upcoming workshop is a signal that the ARB is beginning to take a more proactive approach in balancing the demands of a rapidly growing low carbon alternative fuels industry with the need for California to remain vigilant as to mobile source emission reduction goals. Our impression is that the industry is prepared to provide data and additional laboratory validation if required to support the improvement and streamlining of processes and removal of undue validation burdens.

We are determined to continue this collaborative and collegial initiative with your agency and are very encouraged by the response to date. The Natural Gas and Propane vehicle industries are engaged in seeking the administrative remedies in the near-term that can lead to a more robust alternative fuel vehicle production and sales environment for California. This is critically important now, at a time when California consumers seek viable non-petroleum, low-carbon and more affordable fuel and vehicle choices for their fleets and households.

We look forward with optimism, and believe that the Air Resources Board staff will seek additional information if necessary, and continue the open collaboration with these dynamic fuel and vehicle industries. This effort will be a key to opening the door to an improved and eased set of certification procedures that can result in a reduced petroleum, low-carbon fuels and vehicles, and an enhanced economic transportation future for California and its citizens.

Attachment A
Comparison of Certification Timelines

Data in the public domain as to response times from each agency is scarce. Very few of the FOI versions of manufacturers applications to EPA for certificates of conformity are posted at the EPA online document index system, and of those only a fraction include data which indicate dates of OBD II and full certification application. Additional FOI documents could be requested from EPA and possibly from the ARB for a more complete statistical analysis.

No public data exists as to OBD II application response times from ARB, so presented here is public data from EPA only.

OBD II Application Response Time

From scarce FOI applications which include both OBD submission and approval dates:

Manufacturer	Test Group*	Federal OBD Application Date	Federal OBD Approval Date	Days
Roush	ARHD05.46R6	10/08/09	10/15/09	7
BAF Technologies	ABAFT05.41FN	10/29/09	11/03/09	5
Altech Eco	BAECT04.64DB	07/07/10	07/22/10	15
Altech Eco	BAECV02.5VEA	01/07/10	01/13/10	6
IMPCO	BZ9XV03.9GD9	11/12/09	11/23/09	11
Autogas America	BAGTT06.2375	08/23/10	09/15/10	23

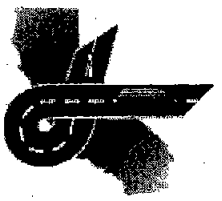
			Avg. days:	11

Certification Application Response Time

For the following analysis we assume simultaneous applications to EPA and ARB:

Manufacturer	Test Group*	Submitted	EPA Cert	Days	ARB Cert	#Days
BAF Technologies	BBAFT05.45HK	11/29/10	12/21/10	22	5/11/11	163
	BBAFT02.01DV	09/22/12	10/01/10	9	5/11/11	231
	ABAFV04.61FN	11/10/09	11/24/09	14	12/17/09	37
	ABAFT05.41FN	09/29/09	11/10/09	42	12/17/09	79
	ABAFT05.42FN	08/10/09	09/25/09	46	12/17/09	129
Baytech Corp.	BBTTT06.0918	09/16/10	11/12/10	57	12/20/10	95
NaturalDrive	BNTDT06.0FEB	12/01/10	12/08/10	7	12/09/10	8
Roush	BRHT05.45HN	06/28/10	07/02/10	4	03/18/11	263
				-----		-----
			EPA Avg:	25	ARB Avg:	126

* Indicates the EPA test group; corresponding ARB test group names may differ for same carlines.



California Natural Gas Vehicle Coalition

March 8, 2013

Annette Hebert
Chief Mobile Source Operations Division
California Air Resources Board
9480 Telstar Avenue, Suite 4
El Monte, CA 91731
Re: CARB's Alternative Fuel Vehicle Conversion Certification Program

Dear Annette:

The California Natural Gas Vehicle Coalition appreciates the time and effort the Air Resources Board put into the working group calls and the workshop in El Monte in January. Simplifying and improving the alternative fuel conversion certification program is a top priority for our organization. The time and expense involved in complying with the Air Resources Board's (ARB) certification program is a significant obstacle to getting more clean alternative fuel vehicles onto California roads.

As we commented to you and more broadly in our newsletter our members felt pretty good about the direction in which ARB was moving on this issue coming out of the January 22 workshop. However the letter we received a couple weeks later responding to our suggested changes to the On Board Diagnostics portion of the program left us feeling much less positive. That said we are still motivated to work with you to make this program simpler and more practical without sacrificing air quality.

This letter is intended to be an overview of the concerns and suggestions the California Natural Gas Vehicle Coalition and our members have raised. Individual companies will provide more detailed and technical suggestions to ARB. CNGVC is asking the Air Resources Board to: simplify the on-board diagnostics (OBD) testing requirements, simplify the reporting requirements for the testing that is done, simplify the application process to enable a speedy transition from an alternative fuel vehicle original equipment Executive Orders (EO) to an aftermarket EO, extend the life of EOs, allow the use of commercially available fuel for testing, simplify the evaporative emissions

testing for dual fuel vehicles, and review and seek alignment with the USEPA's certification program.

On Board Diagnostics testing requirements

As we have discussed this is where most of the cost and time are spent in ARB's certification process. Our members maintain that ARB's significantly more burdensome requirements do not provide significantly more air quality benefits than the USEPA program. We submit that ARB requirements are a significant obstacle to getting more clean cars onto California roads.

We strongly support reducing the testing, limiting the recalibration of monitors, and reducing the volume of reporting that is required. The contrast between ARB's and USEPA's programs in this area is quite striking. EPA requires calibration and emissions testing of 5 major monitors. Companies are required to report emission test results. This can be done in a few pages, sometimes just one spreadsheet. EPA staff is often able to review this information in just a week and make a quick determination of whether to approve or not approve. Contrast that process with ARB's. ARB requires more monitors to be adjusted, more tests for each of those monitors to be conducted, lots of documentation on the adjustments to monitors, and obviously many more test results to be reported. This often leads to a package that is 200-300 pages long. It takes ARB about 3 months to review this package and then there is often considerable Q&A between ARB and the applicant.

Possibly the most costly and time consuming portion of ARB's OBD testing is the requirement to age components for testing. USEPA allows the use of assigned deterioration factors rather than the threshold aged approach. We strongly encourage ARB to allow companies that have proven their technical skill and reliability to use assigned deterioration factors to demonstrate compliance with your OBD requirements.

Application process

We strongly support allowing alternative fuel certifications for new vehicles or engines to automatically qualify for aftermarket certification if requested. We believe this request can be made with a one page letter or possibly by checking a box on the application form. Some additional documentation will be needed for labeling and warranty changes but that should be all that is needed.

Extension of certification life

We support the extension (renewal) of new vehicle or engine certifications to allow manufacturers one full year of sales. For us this means and Executive Order would extend until December 31st of the year following a given model year. This change

should be helpful but is not an alternative to shortening the certification process on the front end. As a reminder once we pass the first Quarter of each calendar year it is challenging to get current model year vehicles from the OEMs because they are switching production to the new model year.

Test fuel

We request that ARB allow companies to use commercially available fuel rather than a specialized test fuel. Commercially available fuel is more representative of the real world and thus real world emissions. Test fuel can cost $100 per gallon. Our second option would be for ARB to harmonize natural gas certification test fuel requirements with federal standards.

Evaporative Testing

The time and cost to conduct the evaporative testing for dual fuel vehicles is unreasonable and unnecessary. The shed testing currently required includes four tests which all together can take a month. We believe the same verification can be achieved with one 2 or 3 day test just on the natural gas system. We encourage ARB to review the current requirements in this area.

USEPA's approach

As you know USEPA revamped their testing and certification program in the last 18 months. We understand that ARB staff is reviewing this program. We appreciate this and request that ARB look for every opportunity to align ARB's requirements with EPA's to reduce costs and time for the companies seeking to bring more clean vehicles to market.

The California Natural Gas Vehicle Coalition thanks you for the work you and your team have put into reviewing this program and seriously considering our suggestions for improvements.

Sincerely,

Tim Carmichael

Tim Carmichael

President

APPENDIX F

F. Participants, Public Notices, and Workshop Presentations

Public Workshop and Workgroup Meeting Participants

Organization/Company/Agency	
Alternative Fuels Advocates, LLC	Fuel Freedom
Alternative Fuels Assoc.	GNA
Arro Autogas	Greenkraft
AVL	IMPCO
BAF	Inspired Fuel Concepts, Inc.
Blue Star Gas	Landirenzo
CA Natural Gas Vehicle Coalition	Mazda
Caltek USA	Mutual Propane
Campbell-Carnell	Robert Myers, Consultant
Cavagna Group	NRDC
City of Los Angeles-Fleet Services	New West Technologies
City of Monterey Park	North American Repower
Clean Air Power	Prins Alternative Fuel Systems
Clean Fuel USA	Roush
CNG Consulting	SoCal Green Taxi
CNG United	South Coast Air Quality Management District
Complete Coach Works	Suburban Propane
Delta Liquid Energy	Tiax LLC
Dunlap Group	Tom's Truck Center
ECO	Transfer Flow, Inc.
Emissions Compliance Services	Tweny Corp.
Emissions Guru	VIA Motors
Engine and Aftertreatment Engineering	Western Propane Gas Association
FEV, Inc.	Western Research Institute
Fiat Industrial S.P.A.	Westport

Air Resources Board

Mary D. Nichols, Chairman
9480 Telstar Avenue, Suite 4
El Monte, California 91731 • www.arb.ca.gov

Matthew Rodriquez
Secretary for
Environmental Protection

Edmund G. Brown Jr.
Governor

July 20, 2012

Mail-Out #MSO 2012-02

To: ALL MANUFACTURERS OF
- PASSENGER CARS (PC), LIGHT-DUTY TRUCKS (LDT), MEDIUM-DUTY VEHICLES (MDV) AND ENGINES USED IN SUCH MDV
- HEAVY-DUTY (HD) VEHICLES AND ENGINES USED IN SUCH HD VEHICLES
- ALTERNATIVE FUEL RETROFIT SYSTEMS

ALL OTHER INTERESTED PARTIES

SUBJECT: Public Workshop to Discuss Current Alternative Fuel Conversion Requirements for New and Used Vehicles and Engines used in Such Vehicles

The California Air Resources Board (ARB) staff invites you to participate in a public workshop to clarify ARB's current requirements regarding conversion of vehicles and engines to operate on alternative fuels. Vehicle and engine manufacturers and other interested parties are welcome to provide input. The workshop will be held at the following time and location:

Date:	Tuesday, August 14, 2012
Time:	9:00 a.m. – 1:00 p.m. (PST)
Location:	California Air Resources Board Annex 4 Auditorium 9528 Telstar Avenue El Monte, CA 91731

Since United States Environmental Protection Agency promulgated changes to its rules affecting alternative fuel conversions in 2011, ARB has received numerous inquiries regarding its requirements for conversion of vehicles and engines to alternative fuels. The primary fuels of interest have been liquefied natural gas, compressed natural gas, and propane. Manufacturers have requested guidance on how to certify and show compliance with ARB's regulations. As a result, the workshop is intended to clarify ARB's regulations and test procedures regarding conversions of new (unregistered) vehicles and engines and in-use (already registered) vehicles and engines to operate on alternative fuels. The workshop will focus on both new vehicle and engine and in-use vehicle and engine certification processes. It will cover the timing needed for certification review, filing and electronic process, testing and other requirements, and documents to be submitted.

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our website: http://www.arb.ca.gov.

Prior to the workshop, a draft guidance document, agenda and any handouts will be available on the ARB website at http://www.arb.ca.gov/msprog/onroad/cert/ldctp/ldctp.htm

For those unable to attend in person, this workshop will be available by webinar. Prior to the workshop, the webinar link will be available on website listed above.

If you have a disability-related accommodation need, please go to http://www.arb.ca.gov/html/ada/ada.htm for assistance or contact the ADA (Americans with Disabilities Act) Coordinator at (916) 323-4916. If you need assistance in a language other than English, please contact the Bilingual Coordinator at (916) 322-0473.

Your participation in the workshop is welcome. If you cannot attend, but would like to provide comments, or if you have any questions regarding conversions of new PC, LDT, and chassis certified MDV, please contact Mr. Duc Nguyen, Manager of the On-Road Light-Duty Certification Section, at (626) 575-6844 or by email at dnguyen@arb.ca.gov. For questions regarding conversions of new HD vehicles and engines, including engines used in diesel and incomplete MDV 8,501 to 14,000 pounds gross vehicle weight rating, please contact Ms. Kimberly Pryor, Manager of the Compression-Ignition and Heavy-Duty Certification Section, at (626) 575-6640 or by email at kpryor@arb.ca.gov. For questions regarding aftermarket retrofit system conversions of used vehicles and engines, please contact Ms. Rose Castro, Manager of the Aftermarket Parts Section, at (626) 575-6848 or by email at rcastro@arb.ca.gov.

Sincerely,

Annette Herbert, Chief
Mobile Source Operations Division

Certification of Alternative Fuel Conversions for New and Used Vehicles/Engines

Workshop

August 14, 2012

Outline

- Scope
- Regulations
  - New Vehicles/Engines Certification
  - Aftermarket Retrofit
  - OBD II
- Certification/Retrofit Procedures

Scope of Workshop

- Alternative fuel conversion of new versus used vehicles/engines
- Applicable vehicles/engines:
  - Light-duty vehicles (passenger cars, light-duty trucks, medium-duty passenger vehicles, medium-duty vehicles)
  - Heavy-duty vehicles/engines

Scope of Workshop

(continued)

- Applicable alternate fuels:
  - Dedicated alternative fuel
    - Compressed Natural Gas (CNG)
    - Liquefied Natural gas (LNG)
    - Liquefied Petroleum Gas (LPG or Propane)
  - Dual-fuel (e.g., gasoline or CNG operation solely)
  - Bi-fuel (e.g., diesel and CNG together)

New versus Used in California

- New vehicle:
  - vehicle whose equitable or legal title has never been transferred to an ultimate purchaser
- Used vehicle:
  - vehicle whose equitable or legal title has been transferred to an ultimate purchaser
- New engine:
  - engine or engine/vehicle whose equitable or legal title has never been transferred to an ultimate purchaser
- Used engine:
  - engine or engine/vehicle whose equitable or legal title has been transferred to an ultimate purchaser

Ultimate Purchaser in California

- Ultimate Purchaser is the first person to purchase a new motor vehicle/engine for purposes other than resale
- The transfer of the equitable or legal title, and not the actual vehicle, to the ultimate purchaser makes the vehicle no longer a new vehicle

Certified for Sale in California

- No vehicle/engine may be sold in CA before it has been certified by ARB
- Vehicle/engine may be sold and operated in California if built in all material respects as described by the manufacturer and approved by ARB

No Modifications to Certified Vehicles/Engines

Emission-related modifications to vehicles/engines causing them to no longer be in their certified configuration are considered tampering

The modifier must obtain California certification to sell the vehicles/engines

Alternative Fuel Vehicle/Engine Conversion Paths

- New Vehicle/Engine
  - The manufacturer of the alternative fuel conversion will be considered the OEM and must comply with all new vehicle/engine requirements
  - The OEM may receive an Executive Order to sell new converted vehicle/engine in CA
- Used Vehicle/Engine
  - The manufacturer of the alternative fuel conversion kit must comply with the aftermarket alternative fuel procedures
  - The alternative fuel conversion manufacturer may receive an Executive Order to sell conversion kits in CA

New Vehicle/Engine Regulations

- 13 CCR § 1961
  - Exhaust Emission Standards and Test Procedures – 2004 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles.
- 13 CCR § 1956.8
  - Exhaust Emissions Standards and Test Procedures – 1985 and Subsequent Model Heavy-Duty Engines and Vehicles.
- 13 CCR § 1976
  - Standards and Test Procedures for Motor Vehicle Fuel Evaporative Emissions.
- 13 CCR § 1968.2
  - Malfunction and Diagnostic System Requirements – 2004 and Subsequent Model-Year Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles and Engines.
- 13 CCR § 1971
  - Engine Manufacturer Diagnostic System Requirements – 2007 and Subsequent Model-Year Heavy-Duty Engines.
- 13 CCR § 1971.1
  - On-Board Diagnostic System Requirements – 2010 and Subsequent Model-Year Heavy-Duty Engines.

New Vehicle/Engine Certification Requirements

- Submit an application and update it for changes
- Meet the applicable emission standards and adhere to the appropriate test procedures
- Demonstrate durability
- Meet the applicable labeling requirements
- Provide emissions warranty to the ultimate purchaser
- Identify all makes and models
- OBD II

New Vehicle/Engine Certification Requirements

Identify all makes and models

- Manufacturer's name and its own model names, or
- With permission from base vehicle/engine OEM, manufacturer may use the OEM's make and model names

Exhaust and Evaporative Requirements

- Vehicles/engines must adhere to applicable tailpipe exhaust emissions requirements
- Vehicles must adhere to applicable evaporative emissions requirements
  - SHED testing for light-duty vehicles
  - SHED testing or engineering evaluation for heavy-duty vehicles
  - Fuel tank, fuel lines, canister, etc.

In-Use Vehicle/Engine Warranty Reporting

- New alternative fuel vehicle/engine OEMs are required to report failed emission-related parts
  - 3 years for light-duty vehicles
  - 5 years for high cost parts
  - 12 years for PZEV (10 years for HEV battery pack)
  - 5 years for heavy-duty engines

Aftermarket

No aftermarket part that alters or modifies the design or function of the original emission control system may be sold or installed on a vehicle/engine unless the part has been approved by ARB

Aftermarket Regulations

- Applicable to used vehicles/engines
- Statutory authority: HSC 43006
- Regulations contained in:
  - Sections 2030 & 2031 Title 13, CCR
  - "California Certification and Installation Procedures for Alternative Fuel Retrofit Systems for Motor Vehicles Certified for 1994 and Subsequent Model Years and for All Model Year Motor Vehicle Retrofit Systems Certified for Emission Reduction Credit," last amended September 25, 1997
  - http://www.arb.ca.gov/msprog/aftermkt/afcfuel/afcfuel.htm

Aftermarket Certification Requirements

- Compliance with base vehicle/engine certification emission standards or more stringent standards
- Testing based on engine family
- Durability demonstration
- On-Board Diagnostic II compliance
- Evaluation of impact on auxiliary emission control devices
- Supplemental emission control information label
- Manufacturer and installer warranty
- Installation inspection
- In-use enforcement testing

New Vehicle/Engine Certification Process

Major Steps for Certification

1. (New Mfrs.) Register with U.S. EPA and ARB.
2. Group vehicles/engines into test groups/engine families.
3. Demonstrate service accumulation durability & emissions compliance for each test group/engine family.
4. Submit Applications to ARB via the Document Management System (DMS).

Major Steps for Certification

5. Receive Certificate of Conformity from U.S. EPA and Executive Order from ARB.
6. Produce and label each vehicle/engine according to specifications described in applications.
7. Do not introduce vehicles/engines into commerce in CA until certified.
8. Receive U.S. EPA and ARB approval for any emissions-related production running changes.

New MFR Must be Registered

Register with U.S. EPA as a manufacturer.

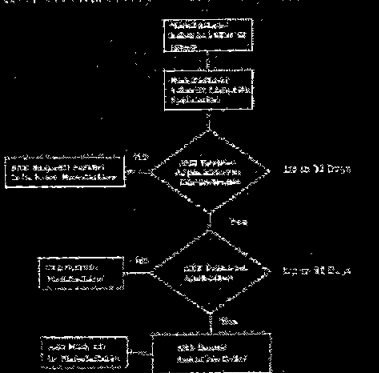
Submit to ARB via regular mail a hard copy "Letter of Intent" to certify vehicles in CA.

- Name, address, e-mail, Mfr.'s name, EPA-assigned Mfr.'s code, types of vehicles/engines to be certified.

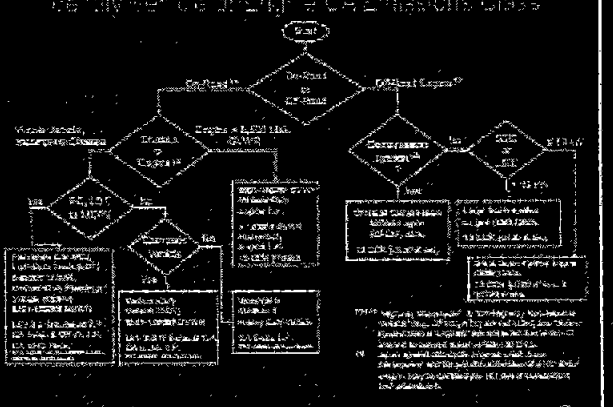
ARB assigns unique ARB Mfr.'s code to enable access to Document Management System (DMS).

ARB issues its Executive Orders (EOs) to the vehicle/engine manufacturer.

Certification Process Flowchart



Identify Your Engine's CA Emissions Class



Certification application documents

- Letter of Intent
- Cover letter/Statements of Compliance
- Application
  - Certification summary
  - Supplemental information
- Emission Control Label
- Warranty Statement
- Tamper Resistance Compliance
- Durability Plan
- OBD II Documentation
- Confirmatory Test data
- NMOG, VEC, ABT Plan (if applicable)

Post-Certification

- NMOG, VEC Fleet Average or ABT (Averaging, Banking, Trading) Reports
- Manufacturer-Run In-Use Testing (LD)
- Running Changes
  - Submit new application if changes are made during the model year
- Field Fixes
- Carryover Applications
  - May carry over emission data to the next model year
  - Must submit an application each year

Passenger Car, Light-Duty Truck, Medium-Duty Passenger Vehicle

Examples: car, pick-up, SUV, passenger van

Testing Requirements:

- FTP (NMOG, CO, CO_2, NO_x, PM, HCHO); HWFET (NO_x, CO_2); 50°F FTP[a] (NMOG, CO, NO_x, HCHO); 20°F FTP (CO)
- Evaporative: Diurnal (3-day & 2-day), Hot Soak, Running Loss, ORVR
  - Dedicated CNG and LNG fueled vehicles are exempt
  - MDPVs are ORVR exempt

[a] LPG is subject to the 50°F test; CNG is exempt.

Medium-Duty Vehicle Complete Vehicle – Chassis Certified

Examples: full size pick-up, cargo van

Testing Requirements:

- FTP NMOG, CO, NO_x, HCHO; HWFET NO_x
- Evaporative: Diurnal, Hot Soak, Running Loss
  - Dedicated CNG and LNG fueled vehicles are exempt

LEV-II Regs. Webpage:

Medium & Heavy-Duty Vehicle Incomplete Chassis

Examples: truck chassis, van chassis

Testing Requirements:

- Evaporative: Diurnal, Hot Soak, Running Loss
  - 2D chassis, compliance by engineering analysis
  - Dedicated CNG and LNG fueled vehicles are exempt

Evaporative Emissions Regs. Webpage:

Medium & Heavy-Duty Engine

Examples: heavy-duty truck, bus

Testing Requirements:

- HD Otto or Diesel cycle engine test procedures; THC/NMHC, CO, NO_x, HCHO, PM
- Engines intended for HD vehicle applications, e.g., urban bus, must adhere to heavy heavy-duty diesel standards & test procedures

Heavy-Duty Engine Regs. Webpage:

Emission Standards & Test Procedures, CA vs. U.S. EPA

When certifying to a CA standards all CA test procedures must be followed

- Example: CA vehicles > 8,500 lbs. GVWR are tested with dynamometer loading set at adjusted loaded vehicle weight (ALVW or [curb weight+GVWR]÷2, whereas federal medium-duty passenger vehicles are tested at loaded vehicle weight (curb weight+300 lbs.)]
- When certifying to the "Cleaner Federal Vehicle" or "BIN" standard, the test vehicle's weight follows EPA's test procedures

On-Road Vehicles (PC, LDT, MDV, MDE, HDV/E)

Certification Requirements:

- Labeling
  - Vehicle Emission Control Information (VECI) / Engine Label
    - Under hood or affixed onto the engine block, permanent
    - Identifies engine & evaporative family
    - Identifies CA, 50-state, 49-state certification status
    - Vacuum hose routing diagram, if applicable
    - EPA Conversion Label (mileage & date of conversion) must be separate from VECI / engine label
  - Environmental Performance (EP) Label
    - Applies to PC, LDT, MDPV
    - Smog Score from cert. std.
    - Global Warming Score from CO_2-equivalent emissions
    - Ok to use Federal Fuel Economy and Environment Label

Group Vehicles/Engines into Exhaust Families

- Characteristics of Test Groups/Engine Families
  - Displacement, number of cylinders, cylinder configuration
  - Emission control systems, i.e., catalytic converter number & location, EGR, SCR or DPF
  - Fuel system, i.e., carburetor, TBI, MFI, SFI
  - Cooling Mechanism, i.e., liquid vs. air

[Ref. 40 CFR §86.1827-01]

Group Vehicles into Evaporative Families LP and Dual Fuel with Gasoline

- Characteristics of Evaporative Families
  - Vapor Storage Device design, i.e., canister housing material & working capacity
  - Fuel Tank design, i.e., metal vs. plastic, vented vs. unvented
  - Fuel System, i.e., carburetor, TBI, MFI, SFI
  - Purge strategy, i.e., uncontrolled vs. controlled

[Ref. 40 CFR §86.1821-01]

Carryover Data

- Must submit certification application for each model year
- May carry over emission data from the previous model year, as long as, no changes to the engine or emission control system
- May carry across emission data from one engine family to another, if representative
- Subject to ARB Approval

Certification 101

A new vehicle or engine must comply with exhaust and evaporative standards. For PC, LDV, complete MDV, and MDPV, the whole vehicle, not the engine by itself, is certified.

- Chassis or engine dyno testing for exhaust emissions
- Sealed Housing for Evaporative Determination (SHED) testing for evaporative emissions
- On-board Refueling Vapor Recovery (ORVR) testing for refueling emissions

Demonstrate UL Durability & Emissions Compliance

Chassis-based durability used here for illustration. Engine dynamometer-based durability follows similar requirements.

1. a. Durability Demonstration
   - Accumulate mileage on a prototype test vehicle.
   - Mileage or service accumulation cycle is set forth in 40 CFR, §1833-01 for PC/LDT/chassis-certified MDV.
   - Conduct periodic exhaust & evaporative emission tests during mileage accumulation per restriction in 40 CFR, §1834-01 for PC/LDT/chassis-certified MDV.

Demonstrate UL Durability & Emissions Compliance (cont'd)

1. b. Durability Demonstration – Evaporative System

   Evaporative emission control system component bench aging. See Mail-out 07-13, or request assigned deterioration factor

1. c. Test vehicle = worst case configuration in test group having greatest probability of exceeding the standards.

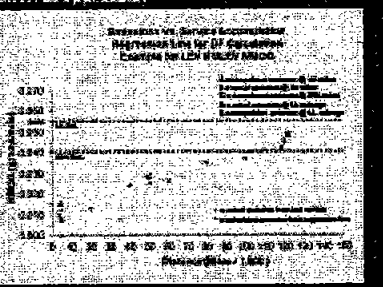
1. d. Unscheduled maintenance must be approved by ARB

1. e. All test data and projected emissions must be below applicable standard

1. f. Calculate deterioration factors (DF) for all pollutants

Demonstrate UL Durability & Emissions Compliance (cont'd)

2. a. DF calculated from least squares linear regression of emission test data. Plot separate regression lines for NMHC, NO_x, CO, HCHO, PM, Evap and ORVR as applicable.



Demonstrate UL Durability & Emissions Compliance (cont'd)

2. b. Determine multiplicative DFs.

$$DF_{Mult} = \frac{C}{A} = \frac{\text{Projected emissions @ 50K miles}}{\text{Interpolated emissions @ 4K miles}}$$

$$DF_{UL} = \frac{E}{A} = \frac{\text{Projected emissions @ UL mileage}}{\text{Interpolated emissions @ 4K miles}}$$

Determine additive DFs:

$DF_{Add} = C - A$

$DF_{UL} = E - A$

Demonstrate UL Durability & Emissions Compliance (cont'd)

3. Determine certification level for all pollutants. All certification levels must be ≤ the applicable certification standard

4. Retain test vehicle for possible confirmatory testing at ARB and for testing future production running changes

Other Ways to Demonstrate UL Durability

Carry across DFs from OEM

- Good engineering practice, i.e., vehicles/engine operating on alternate fuel causes less deterioration to emission control system than gasoline operation
- Obtain permission from OEM to use their durability data.

Accelerated mileage accumulation or engine dyno accumulation

Bench aged catalysts & other emission control devices

Assigned DFs

- Not automatic
- Must make a showing of durability of fuel and emission control system

Auxiliary Emission Control Devices (AECDs)

1. AECD: Any element of design which senses temperature, vehicle speed, engine RPM, transmission gear, manifold vacuum, or any other parameters for the purpose of activating, modulating, delaying, or deactivating the operation of any part of the emission control system

Auxiliary Emission Control Devices (AECDs)

2. All AECDs must be described in the application and approved by ARB
3. Unapproved AECDs may be deemed a defeat device – a violation of certification

[Ref. 40 CFR, §86.1809-01 for PC/LDT/chassis certified MDV]

[Ref. 40 CFR, §86-004-16 for MDE/HDE/MDV]

Model Year

New Vehicles/Engines are certified and EOs are issued on a model year basis

A model year generally runs from Jan. 2 of the previous calendar year for which the model year is named to Dec. 31 of the calendar year for which the model year is named, e.g., a 2012 model year vehicle/engine may be produced from Jan. 2, 2011 through Dec. 31, 2012

A model year "X" vehicle/engine cannot be produced after Dec. 31 of calendar year "X"

Model Year (Cont'd)

A manufacturer may certify an alternate fuel conversion using the previous model year base vehicle/engine (e.g., a 2013 CNG vehicle using a 2012 base gasoline vehicle) provided that from one model year to the next:

- The emission control system remains the same
- The emission standards remain the same
- Phase-in requirements (e.g., emission standards, OBD II monitoring) are met
- OBD II deficiencies are addressed or remedied
- Advance planning is key to successful carry-over of previous model year's data

Additional Requirements

Assembly Line End-Of-Line Test (PC/LDT/chassis certified MDV only)

- Functional check of the emission control system
- Quality entails interrogating the OBD II system
- Required on 100% of all CA vehicles

Identify locations of all assembly plants and distribution centers (upon request)

Identify special procedures and tools used in the conversion process

ARB personnel is allowed access to assembly plants, distribution facilities, and test facilities for the purpose of vehicle selection (for confirmatory/audit testing) and for observing emission tests

Aftermarket Retrofit Certification Process

Retrofit System Certification Process

Manufacturer submits certification plan

ARB approves durability and emission testing plan

Manufacturer conducts testing per ARB approved plan

Manufacturer submits certification application

ARB evaluates the application and issues the Executive Order upon approval

Test Requirements On-Road Retrofit System

- Emission testing and durability
- Test procedures based on vehicle category
  - Category I: PC, LDT, MDV certified to chassis dynamometer-based standards
  - Category II: GVWR ≤ 14,000 lbs. certified to engine dynamometer-based standards
  - Category III: GVWR > 14,000 lbs. certified to engine dynamometer-based standards

Test Requirements - Category I

- Actual mileage accumulation
  - Emission test at 4,000 miles
  - Mileage accumulation to useful life
  - Emission test after mileage accumulation
  - Show compliance with certification standards & determine deterioration factors (DF)
- Bench aging
  - Emission test at 4,000 miles
  - Remove retrofit system and bench age retrofit system to useful life
  - Re-install bench aged system and emission test
  - Show compliance with certification standards & determine DFs

Test Requirements - Category I (Continued)

- Alternate test procedure (ARB MAC 96-10)
  - Emission test at 4,000 miles
  - Apply DFs and show compliance with certification standards
  - Qualify DFs prior to certification and validate DFs within two years of certification
  - Emission test at end of durability testing and validate DFs

Test Requirements - Category I (continued)

- To use derived or U.S. EPA-assigned DFs:
  - Submit DF qualification data & DF validation plan prior to certification
- Submit DF qualification data
  - Base vehicle and retrofitted vehicle performance characteristics, such as air/fuel calibration control, catalyst temperature traces
  - Component durability data, such as
  - data from previously certified system/vehicle, bench testing
- Submit DF validation plan
  - Dynamometer driving schedule/in-use mileage accumulation routes
  - Emission test mileage points up to useful life
  - Maintenance schedules

Test Requirements - Category II

- Actual mileage accumulation or bench aging
  - Establish baseline emissions - use same test procedures as Category I
  - Emission test at 4,000 miles: emissions </= 1.10 times baseline
  - Mileage accumulation or bench aging to useful life (UL)
  - Emission test at UL miles: emissions </= 1.5 times baseline

Test Requirements - Category II (continued)

- Alternate test procedure (ARB MAC 96-07):
  - Use derived or U.S. EPA-assigned (Guidance letter
  - CCD-00-12) deterioration factors
    - Emission test at 100 hours using same test procedures used by base engine to certify when new
    - Apply deterioration factors (DF) and show compliance with certification standards
    - Qualify DFs prior to certification and validate DFs within two years of certification
    - Emission test at end of durability testing and validate DFs

Test Requirements - Category III

Actual mileage accumulation or bench aging

- Establish baseline emissions - use test procedures proposed by manufacturer and approved by ARB
- Emission test at 4,000 miles; emissions </= 1.10 times baseline
- Mileage accumulation or bench aging to 180,000-mile useful life
- Emission test at 180,000 miles; emissions </= 1.5 times baseline

Test Requirements - Category III

Alternate test procedure (ARB MAC 05-07):

use derived or U.S. EPA-assigned (Guidance letter

OCD-00-12) deterioration factors

- Emission test at 100 hours using same test procedures used by base engine to certify when new
- Apply deterioration factors (DF) and show compliance with certification standards
- Qualify DFs prior to certification and validate DFs within two years of certification
- Emission test at end of durability testing and validate DFs

Test Requirements-Category II & III (continued)

- To use derived or U.S. EPA-assigned DFs:

  Submit DF qualification data and DF validation plan prior to certification
- Submit DF qualification data
  - Base engine and retrofitted engine performance characteristics, such as
  - horsepower & torque curves, fuel feed curves, air/fuel calibration control, catalyst temperature traces
  - Component durability data, such as
  - data from previously certified system/engine, bench testing

Test Requirements-Category II & III (continued)

- Submit DF validation plan
  - Engine dynamometer schedules or in-use mileage accumulation routes representative of in-use engine operation
  - Emission test mileage points - minimum of 1,000 hours (diesel)/2,000 hours (gasoline), must show correlation between hours and miles
  - Maintenance schedules

Test Requirements - Category II & III (continued)

To generate credits, perform actual mileage accumulation or bench aging

- Base engine certification emission levels = baseline emissions
- Emission test at 4,000 miles using same test procedures used by base engine to certify when new; emissions </= 1.10 times baseline emissions
- Mileage accumulation or bench aging to 120,000- or 180,000-mile useful life (UL)
- Emission test at UL miles; emissions </= credit standards or 1.3 times baseline emissions

Other Requirements On-Road Retrofit System

Dual-fuel system (utilizes an alternative fuel or a conventional fuel) tested using each fuel

Evaporative emission test determined based on retrofit system design

Manufacturer describes impact on AECD (auxiliary emission control devices)

OBD compliance

Carry-Over & Carry-Across On-Road Retrofit System

- Carry-over of emission data allowed if data represent emissions from the vehicle/engine seeking certification
- Carry-over & carry-across of durability data allowed if (ARB MAC 95-05):
  - Durability data vehicle/engine shared among engine families as found in the base vehicle/engine certification application and use the same retrofit system
  - If engines do not share durability data vehicle/engine:
    - Durability data must be derived from an engine certified to same or more stringent emission standards
    - Durability data engine and engine seeking certification must have similar engine characteristics/weight category
    - Catalyst temperatures of engine seeking certification are equal to or less than those of the durability data engine (EPA Advisory Circular 17F)

Gasoline Deterioration Factors On-Road Retrofit System

- Use of gasoline DFs allowed if following conditions are met (ARB MAC 95-05):
  - One-time demonstration of retrofit system durability for:
    - Emissions, calibration, and catalyst temperature data at 4,000 miles and at useful life
  - Following the one-time durability demonstration, provide:
    - Equivalent gasoline and alternative fuel calibration (tunneb, air/fuel ratio curves) at 4,000 miles
    - Equivalent gasoline and alternative fuel catalyst temperatures at 4,000 miles

On-Road Supplemental Label

- Affix adjacent to the original vehicle emission control information label
- Supplemental label must show:
  - Base vehicle/engine model year
  - Retrofit system certification Executive Order number
  - Retrofit system manufacturer name, address, phone number
  - Device warranty, if applicable
  - List of base vehicle/engine parts removed during the conversion
  - Changes to tuneup specifications required by retrofit system
  - Installer name, address, phone number
  - Date of retrofit system installation
  - Mileage and date at which retrofit system warranty expires
  - Statement that the vehicle/engine has been converted to operate on a fuel other than gasoline or diesel and identify the alternative fuel

Manufacturer & Installer Warranty On-Road Retrofit System

Manufacturers

- Warrant retrofit system to meet California requirements for 3 years or 50,000 miles or 7 years or 70,000 miles (high cost parts), whichever first occurs, from the date of installation
- Warranty covers costs of diagnosis, parts, and labor

Installers

- Warrant installation work for 3 years or 50,000 miles, whichever first occurs, from the date of installation

On-Road Installation Inspection

Prior to releasing a retrofitted vehicle to end user, installer submits the vehicle to the Bureau of Automotive Repair (BAR) Referee Smog Check Station for inspection and testing and obtains certificate of compliance

- Alternative inspection schedule
  - Installer submits 10 vehicles with similar engine families to Referee station
  - If all ten vehicles receive a certificate of compliance, installer allowed to only submit every tenth retrofitted vehicle
  - Installer maintains records on the remaining vehicles

On-Road In-Use Enforcement Test Requirements

- Manufacturers subject to in-use enforcement testing
- Testing on no more than 20 percent of certified retrofit systems/engine family applications per year
- Emission testing on no less than 10 vehicles per certified retrofit system/engine family application selected for in-use testing
- If average emissions exceed standards, recall may be ordered

Contacts

- Mr. Duc Nguyen, Manager of the On-Road Light-Duty Certification Section
- Ms. Kimberly Pryor, Manager of the Compression-Ignition and Heavy-Duty Certification Section
- Ms. Rose Castro, Manager of the Aftermarket Parts Section

On-Board Diagnostics (OBD) Requirements

- Applicable to new vehicles and engines
- Applicable light-duty regulations
  - 1968.2 OBD II (light-duty) and 1968.5 OBD II enforcement
  - In place since the 1996 model year
- Applicable heavy-duty regulations
  - 1971 EMD (engine manufacturer diagnostics)
  - 1971.1 HD OBD (heavy-duty) and 1971.5 HD OBD enforcement
    - Full HD OBD not required until 2019 (proposed MY "phase-in" per 1971.1(g)(2.5) requirements 2013+MY
- OBD website:

OBD 101

- Mostly software in the engine and other ECUs
  - Not a single sensor that directly measures tailpipe emission level
- Runs 'monitors' in the background to diagnose emission-controls
  - Monitors virtually every powertrain component/system that can affect emissions
  - Typically 20-30 monitors on an individual vehicle
  - Most critical monitors correlated to tailpipe emissions, less critical monitors calibrated to verify function/rationality
- Illuminates the MIL and stores info for repair techs for faults
- Dominant mechanism used in inspection programs nationwide to fail vehicles (e.g., vehicles in need of emission repairs)

Major Areas for Alt Fuels

- Work involved to comply
- Certification process
- Post-certification required testing

Work involved to comply with OBD

- Base OEM Vehicle Selection
  - Start with OBD II certified
  - Convert the same model year (e.g., a 2012 vehicle to a 2012 alt fuel vehicle)
- Control strategy/calibration changed to base vehicle
  - Base control calibration changes (e.g., for fuel properties, etc.) can affect OBD requirements
- Emission threshold monitors
  - Critical emission control monitors set to detect faults before tailpipe emissions exceed a specified level (e.g., detect an EGR fault before > 1.5 x standards)
  - Rely on correlation established by manufacturer from sensed parameter to tailpipe emission level (e.g., sense EGR flow and correlate to tailpipe emission level as flow is restricted)
  - Change to alt fuel alters this correlation
    - Tailpipe emissions may be misconstrued as "good" or a portion of the fleet
  - Certifying conversion to a different tailpipe std (i.e., LEV II to LEV III), exacerbates this
    - Custom calibrations

Work involved to comply with OBD (cont.)

- Demonstration testing
  - Each emission threshold monitor tested with fault implanted
    - Varies tailpipe characteristic exceeding emission threshold
  - Required on 1-3 vehicles per year per manufacturer
  - OBD data collected during testing called out in §1968.4
  - Done on vehicle representative of full useful life (e.g., 120,000 miles)
- Added/Modified/Deleted components
  - Need to add monitors for added components
  - Need to verify/recalibrate monitors for modified components
  - Need to "properly" disable diagnostics for deleted components

Work involved to comply with OBD (cont.)

- Monitoring frequency
  - Minimum in-use frequency required for most critical monitors
  - Data in vehicle tracks how often monitors run relative to how often vehicle is operated
  - Conversions need to ensure they don't jeopardize monitoring frequency
- Standardization
  - SAE and ISO standards called out in section (g)
  - Covers everything from real-time sensor data to information about the calibration being run by the vehicle
  - Conversions need to verify the data being output is still accurate
    - Deleted components/disabled monitors reported appropriately
    - Appropriate fault codes being used
    - Calibration version (CAL ID) information changed to reflect all fuel calibration

Certification Process

- Certification plans, OBD groups, test vehicle selection
  - Come in well in advance of cert. with plans for the year
    - Identify all test groups to be converted/offered for sale, projected sales, etc.
  - ARB will identify specific test groups for demonstration, post-certification testing, etc.
    - Based on total number of test groups planned for the year
- Application
  - Detailed submittal requirements called out in section (h)
    - System description, summary table, etc.
  - Need to document added/modified/deleted diagnostics
    - Testing to new if you are seeking a/underline to show changes from DEM
  - Demonstration data showing emission threshold compliance
- Deficiencies
  - Can still be certified if you fall short of requirements
  - Deficiency(ies) can be granted
    - Require ARB approval, must meet good faith effort to comply and to continue compliance actions to possible restrictions on any over-or-next rating
  - More than two and $25-$50 per vehicle per deficiency fines apply

Post-Certification Testing

- Standardization Compliance
  - (j)(1): Uses SAE J2534 reprogramming interface plus SAE J1699-s software to test adherence to standard value requirements
  - Test one production vehicle per test group, within first two months of production
- Monitor Compliance
  - (j)(2): Instants fault one by one to verify MIL illumination for every diagnostic
  - 2-5 vehicles per year by size of manufacturer, within first six months of production
  - No emission testing, only test monitors added/modified/affected by all fuel conversion
- In-use Monitoring Frequency Compliance
  - (j)(3): Download standard read data from actual in-use vehicles to verify minimum monitoring frequency satisfied
  - Up to 15 vehicles per test group, within first 12 months of production
  - USPS standard scan tool to download data

OBD Contacts

- Contacts:
  Mike McCarthy, Manager - mmccarth@arb.ca.gov
  Advanced Engineering Section

Notice for January 22, 2013 Workshop

Air Resources Board

Mary D. Nichols, Chairman
9480 Telstar Avenue, Suite 4
El Monte, California 91731 • www.arb.ca.gov

Matthew Rodriquez
Secretary for
Environmental Protection

Edmund G. Brown Jr.
Governor

December 13, 2012 Mail-Out #MSC 12-27

TO: All Interested Parties

SUBJECT: PUBLIC WORKSHOP TO DISCUSS PROPOSED AMENDMENTS TO THE ALTERNATIVE FUEL CONVERSION CERTIFICATION PROCEDURES FOR NEW AND IN-USE VEHICLES AND ENGINES

The Air Resources Board (ARB or the Board) staff invites you to participate in a public workshop to discuss proposed amendments to the alternative fuel conversion certification procedures. Recent changes promulgated by the U.S. Environmental Protection Agency (U.S. EPA) to its procedures for certifying alternative fuel conversions generated numerous inquiries from industry regarding suggested updates to ARB's regulations. ARB also held an educational public workshop to discuss current alternate fuel conversion requirements for new and used vehicles and engines used in such vehicles on August 14, 2012, in El Monte, California. In response to comments received, staff is now considering changes to the current alternative fuel conversion certification procedures for both new (unregistered) and in-use (already registered) vehicles and engines.

You may attend the public workshop in person or participate via teleconference. The workshop will be held at the date and time shown below:

Date:	Tuesday, January 22, 2013
Time:	1:00 p.m. to 4:00 p.m. (Pacific Time)
Location:	Air Resources Board Auditorium – Annex 4 9528 Telstar Avenue

The following information is needed to participate via teleconference:

Call-in Time:	Between 12:45 p.m. and 1:00 p.m.
USA Toll Free Number:	888-677-4430
Passcode:	36034

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our website: http://www.arb.ca.gov.

California Environmental Protection Agency

Printed on Recycled Paper

At the public workshop, staff will discuss preliminary concepts in how to simplify the application process while preserving emissions benefits including how to better align ARB's alternative fuel certification procedures with changes recently promulgated by U.S. EPA. These include: applicability, demonstrating emission compliance, demonstrating on-board diagnostic compliance, and carry-over for new vehicle/engine alternative fuel certifications to subsequent model years. Regarding these proposals, the primary fuels of interest are liquefied natural gas, compressed natural gas, and propane; however, conversions to other fuels may be discussed.

Staff will post an agenda and presentation on ARB's On-Road Light Duty Emissions Certification Requirements website at http://www.arb.ca.gov/msprog/onroad/cert/ldcto/ldcto.htm and on the Aftermarket, Performance and Add-On Parts – Certification of Alternate Fuel Retrofit Systems website at http://www.arb.ca.gov/msprog/aftermkt/altfuel/altfuel.htm prior to the workshop.

The Mobile Source Program Mailouts and Manufacturers Advisory Correspondence (ms-mailings) list serve will be used to notify stakeholders of upcoming events relating to proposed changes to the alternative fuel conversion certification procedures. If you would like to receive notification by email of upcoming events relating to the proposed changes, please sign up at http://www.arb.ca.gov/listserv/listserv.ind.php?listname=ms-mailings.

Interested members of the public may present comments orally or in writing at the workshop. Comments may also be submitted by postal mail before the workshop or by electronic submittal:

Postal Mail: Mr. Dean Bloudoff
Air Resources Board
1001 "I" Street, P.O. Box 2815
Sacramento, California 95812

Electronic submittal: dbloudoff@arb.ca.gov

If you need special accommodation due to a disability, please go to http://www.arb.ca.gov/html/ada/ada.htm for assistance, or contact the American Disabilities Act Coordinator at (916) 323-4916. If you require other special accommodations or language services please contact Ms. Dee Enos-Friedman, at (916) 322-4722 or via email at denosfri@arb.ca.gov, as soon as possible or no later than 10 business days before the scheduled workshop.

Teletypewriter/Telecommunications Device for the Deaf/Speech-to-Speech users may dial 7-1-1 for the California Relay Service.

We welcome and encourage your participation. If you have any questions about this workshop, please contact Mr. Craig Duehring, Manager, at (916) 323-2361, or via email at cduehrin@arb.ca.gov, or Mr. Dean Bloudoff, Air Resources Engineer, at (916) 322-8987, or via email at dbloudof@arb.ca.gov.

Sincerely,

/s/

Robert H. Cross, M.S.M.E., P.E.
Chief, Mobile Source Control Division

cc: See next page

January 22, 2013 Workshop Presentation

Public Workshop: Proposed Amendments to the Alternative Fuel Conversion Certification Procedures for New and In-Use Vehicles and Engines

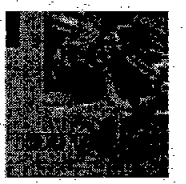
Air Resources Board Auditorium
El Monte, California
January 22, 2013

California Environmental Protection Agency

Air Resources Board

Agenda

- Purpose
- Background
- Preliminary staff proposals
- Other items under consideration
- Next steps
- Contact information



Need for Proposed Amendments

- Update and simplify the application and approval process
- Update the in-use alternative fuel certification requirements
- Better align ARB's procedures with recent changes adopted by U.S. EPA
- Streamline ARB's new and in-use alternative fuel vehicle/engine certification requirements

Background

- New vs. used (in-use) alternative fuel conversions differ
- Overview of the current New vehicle/engine conversion requirements
- Overview of the current in-use vehicle/engine conversion requirements

New vs. Used Conversions

- New vehicle/engine: equitable title has never been transferred to an ultimate purchaser
- Used (in-use) vehicle/engine: any vehicle/engine that is not "new"
- Issue: Requests for in-use conversions of previously ARB certified new vehicle/engine requires applicant to repeat certification
  - Must comply with all new vehicle/engine certification requirements

New Vehicle/Engine Certification Requirements

- Submit an application and update it for changes
- Meet the applicable emission standards and adhere to the appropriate test procedures
- Demonstrate durability
- Meet the applicable labeling requirements
- Provide emissions warranty to the ultimate purchaser
- Identify all makes and models
- Comply with on-board diagnostic (OBD) requirements

New Vehicle/Engine Regulations

- 13 CCR § 1962
  - Exhaust Emission Standards and Test Procedures – 2004 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles.
- 13 CCR § 1956.8
  - Exhaust Emissions Standards and Test Procedures – 1985 and Subsequent Model Heavy-Duty Engines and Vehicles
- 13 CCR § 1976
  - Standards and Test Procedures for Motor Vehicle Fuel Evaporative Emissions
- 13 CCR § 1968.2
  - Malfunction and Diagnostic System Requirements – 2004 and Subsequent Model-Year Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles and Engines.
- 13 CCR § 1971
  - Engine Manufacturer Diagnostic System Requirements – 2007 and Subsequent Model-Year Heavy-Duty Engines
- 13 CCR § 1971.1
  - On-Board Diagnostic System Requirements – 2010 and Subsequent Model-Year Heavy-Duty Engines.

In-Use Vehicle/Engine Certification

- Applies to the conversion of any vehicle/engine that's not "new"
- Certification program administered by ARB's Aftermarket Parts Section
- Successful applicants receive a non-expiring Executive Order
- Allows applicants to market and sell alternative fuel retrofit systems in California

In-Use Vehicle/Engine Certification Requirements

- Comply with base vehicle/engine certification emission standards or more stringent standards
- Certification based on engine family
- Demonstrate durability
- Supplemental emission control information label
- Manufacturer's and installer's warranty
- Evaluation of impact on auxiliary emission control devices
- Comply with OBD requirements
- Installation inspection
- In-Use enforcement testing

In-Use Vehicle/Engine Regulations

- 13 CCR § 2030
  - Liquefied Petroleum Gas or Natural Gas Retrofit Systems.
- Associated Test Procedures:
  - California Exhaust Emission Standards and Test Procedures for Systems Designed to Convert Motor Vehicles Certified for 1993 and Earlier Model Years to Use Liquefied Petroleum Gas or Natural Gas Fuels
  - California Certification and Installation Procedures for Alternative Fuel Retrofit Systems for Motor Vehicles Certified for 1994 and Subsequent Model Years and for All Model Year Motor Vehicle Retrofit Systems Certified for Emission Reduction Credit

Preliminary Staff Proposals

LPG

CNG

LNG

Application Process

- New vehicle/engine alternative fuel certifications will automatically qualify for aftermarket certification if requested
- Develop separate webpage for all alternative fuel conversion certification information
- Extend or renew new vehicle/engine alternative fuel certifications to allow manufacturers 1 full year of sales

Test Fuel

- Harmonize natural gas certification test fuel requirements with Federal Standards
- Investigate the feasibility of harmonizing liquid propane gas certification test fuel requirements
- Harmonize natural gas NMHC to NMOG multiplier with Federal Standards

Dual-Fuel Systems

- Currently, new vehicle/engine must comply with exhaust and evaporative emission standards when operating on each fuel
- In-Use: For evaporative emissions, manufacturers can provide engineering justification for a test waiver with the original fuel
- Investigate the feasibility of allowing similar engineering justification to waive exhaust emissions testing with the original fuel

Deterioration Factors (DF's)

- Numeric factors applied to low mileage mass emissions to account for the potential increase in emissions due to mileage accumulation
- Defined as the estimate of the ratio of the true mean response at high mileage to the true mean response at low mileage
- Used to determine compliance probabilities in lieu of high-mileage emissions tests

DF's (continued)

- New and in-use alternative fuel certification allows the use of assigned DF's
- In-use requires manufacturers to validate assigned DF's within 2 years of receiving certification
- Investigating the feasibility of replacing DF validation with in-use testing
- Request for data

OBD Requirements

- Investigating the feasibility of reducing testing/recalibrating of threshold monitors
- Investigating the feasibility of reducing full useful life testing
- Considering changes that would move some testing to post-certification in lieu of pre-certification

OBD Requirements (continued)

- Changes would also require additional commitment by alternative fuel conversion manufacturers
  - Extended warranty
  - Recall provisions
- Changes may require cap on annual sales, would only be available to alternative fuel conversion manufacturers (not OEM vehicle/engine manufacturer)

Installation Control

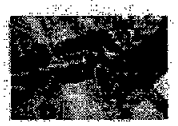
- Regulations currently require post-conversion BAR inspection for each in-use conversion
- Investigating the feasibility of alternative installation controls
- Actively seeking stakeholder input

In-Use Compliance Testing

- In-use emissions testing is required upon order by ARB's Executive Officer
- Testing of a minimum of ten vehicles per engine family is required, but only if requested
- Staff open to reducing the requirements, actively seeking stakeholder input

Update In-Use Certification Procedures

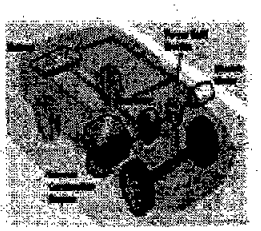
- Staff is proposing changes to §2030
  - Streamline test procedures
  - Update regulatory language
  - Where feasible, align procedures with recent changes adopted by U.S. EPA



Alternative Test Methods

- What role, if any, can alternative test methods, such as PEMS, play in the certification process?
- Are these types of systems robust enough for certification testing or should they only be used for in-use compliance?
- Actively seeking stakeholder input
- Data needs

Other Items Under Consideration



New/In-Use Hybrid Conversions

- Should hybrid conversions be included in the proposed regulatory changes?
- Is there a market demand for these types of systems?
- Complexity of conversion may need to be considered
- Actively seeking stakeholder input

Next Steps

- Please provide comments to ARB by mid February
- Next workshop tentatively scheduled for April 2013
- Third quarter 2013 Board hearing

Contact Information

Craig Duehring
(916) 323-2361
cduehrin@arb.ca.gov

Dean Bloudoff
(916) 322-8987
dbloudof@arb.ca.gov

For More Information...

New vehicle/engine alternative fuel conversion certifications, please go to:
http://www.arb.ca.gov/msprog/onroad/cert/ldcto/ldcto.htm

In-use vehicle/engine alternative fuel conversion certifications, please go to:
http://www.arb.ca.gov/msprog/aftermkt/alt fuel/alt fuel.htm

Certification Contact Information

- Mr. Duc Nguyen, Manager, On-Road Light-Duty Certification Section
  dnguyen@arb.ca.gov
- Ms. Kimberly Pryor, Manager, Compression-Ignition and Heavy-Duty Certification Section
  kpryor@arb.ca.gov
- Mr. Tony Martino, Manager, Aftermarket Parts Section
  amartino@arb.ca.gov
- Mr. Mike McCarthy, Manager, Advanced Engineering Section (OBD) mmccarth@arb.ca.gov

Notice for May 1, 2013 Workshop

Air Resources Board

Mary D. Nichols, Chairman
9480 Telstar Avenue, Suite 4
El Monte, California 91731 • www.arb.ca.gov

Matthew Rodriquez
Secretary for
Environmental Protection

Edmund G. Brown Jr.
Governor

April 9, 2013 Mail-Out #MSC 13-11

TO: All Interested Parties

SUBJECT: PUBLIC WORKSHOP TO DISCUSS PROPOSED AMENDMENTS TO THE ALTERNATIVE FUEL CONVERSION CERTIFICATION PROCEDURES FOR NEW AND IN-USE VEHICLES AND ENGINES

The California Air Resources Board (ARB or Board) invites you to participate in a public workshop to discuss proposed amendments to the alternative fuel conversion certification procedures for both new and in-use vehicles and engines. Alternative fuel conversions involve reconfiguring a previously certified gasoline or diesel vehicle or engine to operate on natural gas, propane, alcohols, or a blend of conventional and alternative fuels. Staff will be soliciting input on proposals to address the following areas:

- Application and review process
- Requirements for demonstrating emission compliance
- Test fuel specifications
- Requirements for demonstrating on-board diagnostic compliance
- Changes to address the sales window for converted vehicles and engines
- Other items of interest

Workshop Participation

You may attend the public workshop in person or participate via teleconference. The workshop will be held at the date and time shown below:

Date:	Wednesday, May 1, 2013
Time:	1:00 p.m. to 4:00 p.m. (Pacific Time)
Location:	Air Resources Board Auditorium – Annex 4 9528 Telstar Avenue El Monte, California 91731

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our website: http://www.arb.ca.gov.

California Environmental Protection Agency

Printed on Recycled Paper

The following information is needed to participate via teleconference:

USA Toll Free Number:	888-677-4430
International	1-517-308-9042
Passcode:	29542

Background

On August 14, 2012, staff held an informational workshop in El Monte, California, to discuss ARBs current alternative fuel conversion requirements for new and used vehicles and engines. Based on comments received at the workshop and recent changes adopted by the U.S. Environmental Protection Agency (U.S. EPA) to their procedures for certifying alternative fuel conversions, staff began investigating the need for updates to ARB's procedures.

On January 22, 2013, staff held a public workshop in El Monte, California, to discuss preliminary concepts designed to simplify the application process and better align ARB's alternative fuel conversion certification procedures with the changes recently adopted by U.S. EPA.

At both workshops, staff solicited comments from stakeholders and affected industry to develop staff's current proposals. These proposals will be presented to all interested parties at the May 1 public workshop.

Additional Information

Staff will post presentation materials and an agenda prior to the workshop to ARBs alternative fuel conversion certification procedures website at, http://www.arb.ca.gov/msprog/onroad/altfuelconv/altfuelconv.htm .

ARB will also use the Alternative Fuel Conversion Certification Procedures list serve to provide stakeholders with further information regarding staff's proposals. If you wish to sign up for this list serve, please visit: http://www.arb.ca.gov/listserv/listserv_ind.php?listname=altfuelconv

Interested members of the public may present comments orally or in writing at the workshop. Comments may be submitted by email to dbloudoff@arb.ca.gov or by postal mail before the workshop:

Postal Mail: Mr. Dean Bloudoff
Air Resources Board
1001 "I" Street, P.O. Box 2815
Sacramento, California 95812

If you require special accommodations or have special language needs, please contact Ms. Dee Enos-Friedman, at (916) 323-4440 or via email at denosfri@arb.ca.gov, as soon as possible or no later than 10 business days before the scheduled workshop. Teletypewriter/Telecommunications Device for the Deaf/Speech-to-Speech users may dial 7-1-1 for the California Relay Service.

We welcome and encourage your participation. If you have any questions about this workshop, please contact Mr. Craig Duehring, Manager, at (916) 323-2361 or via email at cduehrin@arb.ca.gov, or Mr. Dean Bloudoff, Air Resources Engineer, at (916) 322-8987 or via email at dbloudof@arb.ca.gov.

Sincerely,

/s/

Annette Hebert, Chief
Mobile Source Control Division

cc: Mr. Craig Duehring, Manager
In-Use Control Measures Section
Mobile Source Control Division

Mr. Dean Bloudoff
Air Resources Engineer
Mobile Source Control Division

Ms. Dee Enos-Friedman
Office Technician
Mobile Source Control Division

May 1, 2013 Workshop Presentation

Public Workshop: Proposed Amendments to the Alternative Fuel Conversion Certification Procedures for New and In-Use Vehicles and Engines

Air Resources Board Auditorium
El Monte, California
May 1, 2013

California Environmental Protection Agency
Air Resources Board

Agenda

- Purpose
- Background
- Staff proposal
- Next steps

Need for Proposed Amendments

- Better align ARB's procedures with recent changes adopted by U.S. Environmental Protection Agency
- Streamline ARB's new and in-use alternative fuel vehicle/engine certification programs
- Update and simplify the application and approval process
- Reduce market barriers for small volume convertors
- Preserve emission benefits

Background - New Vehicle Conversions

- Requires new vehicle/engine certification
- Submit an application and update it for changes
- Meet the applicable emission standards and adhere to the appropriate test procedures
- Demonstrate durability
- Meet the applicable labeling requirements
- Provide emissions warranty to the ultimate purchaser
- Identify all makes and models
- Comply with on-board diagnostic (OBD) requirements

Background - New Vehicle/Engine Certifications

- 13 CCR § 1961 - Exhaust Emission Standards and Test Procedures - 2004 through 2016 Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles.
- 13 CCR § 1961.1 - Greenhouse Gas Exhaust Emission Standards and Test Procedures - 2009 through 2016 Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles.
- 13 CCR § 1961.2 - Exhaust Emission Standards and Test Procedures - 2018 and Subsequent Model Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles.
- 13 CCR § 1961.3 - Greenhouse Gas Exhaust Emission Standards and Test Procedures - 2017 and Subsequent Model Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles.
- 13 CCR § 1956.8 - Exhaust Emission Standards and Test Procedures - 2005 and Subsequent Model Heavy-Duty Engines and Vehicles.
- 13 CCR § 1968 - Standards and Test Procedures for Motor Vehicle Fuel Evaporative Emissions.
- 13 CCR § 1968.2 - Malfunction and Diagnostic System Requirements – 2004 and Subsequent Model-Year Passenger Cars, Light-Duty Trucks and Medium-Duty Vehicles and Engines.
- 13 CCR § 1971 - Engine Manufacturer Diagnostic System Requirements – 2007 and Subsequent Model-Year Heavy-Duty Engines.
- 13 CCR § 1971.1 - On-Board Diagnostic System Requirements – 2010 and Subsequent Model-Year Heavy-Duty Engines.

Background - In-Use Vehicle Conversions

- Requires Aftermarket Parts certification
- Certify to same or more stringent emission standards
- Certification based on engine family
- Demonstrate durability
- Supplemental emission control information label
- Manufacturer's and installer's warranty
- Evaluate the impact on auxiliary emission control devices
- Comply with OBD requirements
- Installation inspection
- In-use enforcement testing

In-Use Vehicle/Engine Conversion Regulations

- 13 CCR § 2060
  - Liquefied Petroleum Gas or Natural Gas Retrofit Systems
- 13 CCR § 2061
  - Alcohol or Alcohol/Gasoline Fuels Retrofit Systems
- Associated Test Procedures:
  - California Exhaust Emission Standards and Test Procedures for Systems Designed to Convert Motor Vehicles Certified for 1993 and Earlier Model Years to Use Liquefied Petroleum Gas or Natural Gas Fuels
  - California Certification and Installation Procedures for Alternative Fuel Retrofit Systems for Motor Vehicles Certified for 1994 and Subsequent Model Years and for All Model Year Motor Vehicle Retrofit Systems Certified for Emission Reduction Credit
  - California Exhaust Emission Standards and Test Procedures for Systems Designed to Convert Motor Vehicles Certified for 1993 and Earlier Model Years to Use Alcohol or Alcohol/Gasoline Fuels

Discussion Overview

- Single process to certify retrofit systems
- Streamlined application and review process
- Reduced testing requirements
- Demonstrate base vehicle emissions maintained
- Better alignment with U.S. EPA requirements
- Not applicable to full vehicle certification

Summary of Added Flexibility

- Applies to small-volume convertors
- For previously CA certified vehicles only
- For conversions to the same tailpipe emission standard as the base vehicle
- Added flexibility for emissions testing
- Reduced OBD demonstration
- Changes sunset after 5 years

Small Volume Convertors

- Defined as retrofit system manufacturers with California annual sales of less than 4,500 alternative fuel retrofit systems in any given calendar year
  - Out-of-state sales don't apply
  - All engine families/fuel types

Retrofit System Certification

- For conversions to the same tailpipe emission standard as the base vehicle
- Certifies conversion kit and installation
- Provides path for converting relatively new vehicles at the point of sale
- Issue "non-expiring" Executive Order
- Applies to new and used vehicle conversions

Certification Fuel

- Natural Gas
  - Same as Federal Standards
- Liquid propane gas
  - Same as motor vehicle fuel per Title 13, California Code of Regulations, section 2292.6
- Fuel specifications handout available

Allow Emissions Multiplier

- For exhaust emissions testing, allow for option to use non-methane hydrocarbon (NMHC) X1.5 multiplier for both liquid propane gas & natural gas to determine non-methane organic gases (NMOG)
- Currently administratively allowed for natural gas conversions if requested

Test Waivers for Dual-Fuel Systems

- Applies to exhaust and evaporative emissions testing on the original fuel
- Manufacturers must submit an engineering justification for the waiver(s)
- Waivers will be allowed where no changes have been made that effect emissions while operating on the original fuel
- Requires approval by the Executive Officer

Deterioration Factors (DF's)

- Allow for use of U.S. EPA assigned DF's in lieu of high-mileage emissions tests
  - Accepted for test vehicles with mileage accumulation up to 25K miles
  - Test vehicles with >25K miles may provide assigned DF's
- Manufacturer's may propose DF for Executive Officer approval if none available
- DF validation replaced with in-use testing

Streamlined OBD Proposal

- Available to small volume convertors for conversions to same emission standard as base vehicle
- Reduced to 4 demonstrations (demos) if no changes
- Allows use of less expensive rapid aged parts or in-use vehicle
- Unchanged monitors only required to show functionality
- Requires compliance statement for all monitors
- Post-certification testing unchanged

OBD Application

- Focused only on retained demos & added/modified/deleted hardware and software
- Waive additional tests if underlying/base emission controls unchanged
  - Such as: EGR, VVT, misfire, cold start, secondary air, A/F cylinder imbalance rich & lean, downstream O2 sensor(s)

OBD Retained Demos

- Fuel system rich & lean, oxygen (O2) sensor, catalyst monitor demonstration
  - Only require "worst-case" pattern for O2 sensor demo
  - Add options in lieu of original equipment manufacturer full useful life aged demo parts
    - Rapid aged catalyst(s) & O2 sensor(s) per Aftermarket Parts aging cycle, or
    - Complete/converted in-use vehicle >25K miles
  - Catalyst monitor demo still requires threshold catalyst(s)
    - Margins increased additional 25% to eliminate under/over shooting

OBD Waived Demos

- Unchanged monitors
  - Implant gross fault(s) & show monitor detects, no emissions test
- Requires applicants to provide compliance statement for all monitors
- No change to post-certification compliance testing

In-Use Compliance Testing

- In-use emissions testing is required upon request by ARB's Executive Officer
- Emissions testing of a minimum of 3 vehicles per engine family
- For each failure, 2 more vehicles must be tested up to a maximum of 10
- Requires convertors to track/report sales

Smog Check

- Registration of vehicle conversions previously registered on different fuel
- Allow fleets to assume responsibility for required Bureau of Automotive Repair (BAR) inspection
- Currently seeking BAR input

Alternative Test Methods

- Investigating option to use PEMS for heavy-duty alternative fuel conversions
- PEMS used in lieu of engine dynamometer testing
- Cost-effective alternative for generating data on emissions compliance
- Convertors agree to sign up for PEMS in-use compliance testing

Conversion to a More Stringent Emissions Standard

- Currently required to adhere to the new vehicle/engine certification requirements
  - Fuel change not enough to reduce emissions to meet the more stringent standard -- requires re-engineering
  - Changes impact other emission control components, such as catalytic convertors, OBD systems
  - Changes fall outside the design scope of the original base vehicle
  - Full certification needed to ensure expected emissions reductions achieved throughout the converted vehicles actual life

Issues for Conversion to a More Stringent Emission Standard

- Not needed to sell conversions in California
  - Primarily for carpool lane access, incentive funding
- Staff's proposal already reduces market barriers for conversions
  - Adequate to show base emissions maintained
  - Not adequate to address changes to a lower standard
- Full testing needed to assure lower emissions throughout vehicles useful life
- Changes could undermine purpose of economic incentives

Next Steps

- Please provide comments to ARB by mid May
- Send comments to Craig Duehring at cduehrin@arb.ca.gov
- Initial Statement of Reasons available August 7, 2013
- September 2013 Board hearing

Contact Information

Craig Duehring
(916) 323-2361
cduehrin@arb.ca.gov

Tony Brasil
(916) 323-2927
abrasil@arb.ca.gov

For More Information...

Please visit the Alternative Fuel Conversion Certification Procedures informal regulatory page at:
http://www.arb.ca.gov/msprog/onroad/altfuelconv/altfuelconv.htm

Stay informed by joining the Alternative Fuel Conversion Certification Procedures list serve at:
http://www.arb.ca.gov/listserv/listserv_ind.php?listname=altfuelcon

Certification Contact Information

- Mr. Duc Nguyen, Manager, On-Road Light-Duty Certification Section
  dnguyen@arb.ca.gov
- Ms. Kimberly Pryor, Manager, Compression-Ignition and Heavy-Duty Certification Section
  kpryor@arb.ca.gov
- Mr. Tony Martino, Manager, Aftermarket Parts Section
  amartino@arb.ca.gov
- Mr. Mike Regenfuss, Chief, Engineering Studies Branch (OBD) mregenfu@arb.ca.gov

TITLE 17. CALIFORNIA AIR RESOURCES BOARD

NOTICE OF PUBLIC HEARING TO CONSIDER PROPOSED AMENDMENTS TO THE ANTIPERSPIRANTS AND DEODORANTS REGULATION; CONSUMER PRODUCTS REGULATION; AEROSOL COATING PRODUCTS REGULATION; THE TABLES OF MAXIMUM INCREMENTAL REACTIVITY VALUES; TEST METHOD 310; AND PROPOSED REPEAL OF THE HAIRSPRAY CREDIT PROGRAM

The Air Resources Board (ARB or Board) will conduct a public hearing at the time and place noted below to consider amendments to the Regulation for Reducing Volatile Organic Compound Emissions from Antiperspirants and Deodorants; the Regulation for Reducing Emissions from Consumer Products; the Regulation for Reducing the Ozone Formed from Aerosol Coating Product Emissions; the Tables of Maximum Incremental Reactivity (MIR) Values; and Method 310, Determination of Volatile Organic Compounds (VOC) in Consumer Products and Reactive Organic Compounds in Aerosol Coating Products; and to consider repeal of the Hairspray Credit Program.

DATE: September 26, 2013

TIME: 9:00 a.m.

PLACE: California Environmental Protection Agency
Air Resources Board
Byron Sher Auditorium
1001 I Street
Sacramento, California 95814

This item may be considered at a two-day meeting of the Board, which will commence at 9:00 a.m., September 26, 2013, and may continue at 8:30 a.m., on September 27, 2013. This item may not be considered until September 27, 2013. Please consult the agenda for the hearing, which will be available at least 10 days before September 26, 2013, to determine the day on which this item will be considered.

INFORMATIVE DIGEST OF PROPOSED ACTION AND POLICY STATEMENT OVERVIEW PURSUANT TO GOVERNMENT CODE 11346.5(a)(3)

Sections Affected: Proposed amendments to title 17, California Code of Regulations (CCR) sections 94501, 94506, 94508, 94509, 94512, 94513, 94515, 94520, 94521, 94522, 94523, 94524, 94525, 94526, 94527, 94528, 94700, and the repeal of sections 94560, 94561, 94562, 94563, 94564, 94565, 94566, 94567, 94568, 94569, 94570, 94571, 94572, 94573, 94574 and 94575; proposed amendments to sections 1, 2, 3, 4, 5, Appendix A, and repeal of Appendix B of Method 310, "Determination of Volatile Organic Compounds (VOC) in Consumer Products and Reactive Organic Compounds in Aerosol Coating Products (September 29, 2011)," which is incorporated by reference in title 17, CCR, sections 94506, 94515 and 94526.

Documents Incorporated by Reference

1. Method 310, Determination of Volatile Organic Compounds (VOC) in Consumer Products and Reactive Organic Compounds in Aerosol Coating Products (September 29, 2011);

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 in Aerosol Coating Products (September 29, 2011):

   ASTM D1613 - 06 "Standard Test Method for Acidity in Volatile Solvents and Chemical Intermediates Used in Paint, Varnish, Lacquer, and Related Products;"

   ASTM D523 - 08 "Standard Test Method for Specular Gloss;" and

   ASTM D5381 - 93(2009) "Standard Guide for X-Ray Fluorescence (XRF) Spectroscopy of Pigments and Extenders."

Background and Effect of the Proposed Rulemaking:

Background on the Proposed Rulemaking

Section 41712 of the California Health and Safety Code requires ARB to adopt regulations to achieve the maximum feasible reduction in VOC emissions from consumer products (including aerosol coatings). As part of the regulatory process, ARB must determine that adequate data exist for it to adopt the regulations. ARB 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, ARB 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); the Hairspray Credit Program, title 17, CCR, sections 94560-94575; 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 Antiperspirants and Deodorants Regulation sets forth volatile organic compound limits and other requirements for antiperspirant and deodorant products. The regulation was originally approved for adoption on November 8, 1989, and has been amended several times. The most recent amendments were approved for adoption on October 26, 2000.

The Consumer Products Regulation sets forth VOC limits and other requirements for numerous categories of consumer products. 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 October 18, 2012. Among other things the regulation sets forth requirements for "Aerosol Adhesive," "Multi-purpose Solvent," and "Paint Thinner" products.

On March 6, 2009, the South Coast Air Quality Management District (SCAQMD) adopted Rule 1143, "Consumer Paint Thinners and Multi-Purpose Solvents" (Rule 1143). As allowed by State law, this rule established requirements specific to "Consumer Paint Thinners" and "Consumer Multi-Purpose Solvents" sold, supplied, offered for sale, or manufactured for sale in the SCAQMD. The categories are defined similarly to those in the Consumer Products Regulation. Rule 1143 has been amended several times, most recently on December 3, 2010.

The Aerosol Coating Products Regulation limits the ozone formation potential (reactivity) of all aerosol coating product emissions. The regulation was originally approved for adoption on March 23, 1995, to establish mass-based VOC limits and other requirements. At a June 22, 2000, hearing reactivity limits, based on the MIR scale, were approved for adoption. The most recent amendments were approved for adoption on November 17, 2006.

The Tables of MIR Values are used to determine reactivity of aerosol coating products. These values were approved for adoption on June 22, 2000, and have been amended twice, most recently on November 3, 2009.

Method 310 was adopted on September 25, 1997, and has been amended numerous times, most recently on November 18, 2010. 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).

The Hairspray Credit Program was approved for adoption on November 13, 1997, and provided an incentive for manufacturers to comply early with the June 1, 1999, 55 percent VOC limit for hairspray products, or for manufacturers to develop products with lower VOC levels than required. Manufacturers were allowed to generate credits through January 1, 2005, and use them through January 1, 2010.

Effect of the Proposed Rulemaking

The proposed rulemaking would require various consumer products to reformulate to reduce VOC or reactivity content to meet specified limits. These reformulations would result in an equivalent VOC emission reduction of about four tons per day. Reducing VOC emissions is an important strategy for reducing ground level ozone concentrations. The proposals would also streamline and clarify various regulatory provisions, improve enforcement, and add analytical procedures. The proposals would also strengthen enforceability of provisions for "Multi-purpose Solvent" and "Paint Thinner" to ensure that all of the expected benefits from ARB's regulation and the SCAQMD's Rule 1143 are fully realized.

Public Process

As part of the public process, staff conducted several surveys to obtain the necessary data to inform development of the various regulatory provisions. Summaries of the data were shared with the public. In addition, staff conducted three public workshops and held numerous meetings with individual companies, industry associations, SCAQMD staff, and other stakeholders. The proposal has been developed over the course of about three years.

Objectives of Proposed Amendments:

Objectives of Proposed Amendments to the Antiperspirants and Deodorants Regulation

Staff is proposing to amend the definition of "Volatile Organic Compound" to exclude trans-1,3,3,3-tetrafluoropropene (HFO-1234ze). It is negligibly reactive with respect to forming ozone, and a multimedia impacts assessment determined that no other potential health or environmental impacts would be expected. Another proposal would update the reference to Method 310.

Objectives of Proposed Amendments to the Consumer Products Regulation

Definitions

Staff is proposing to add, modify, reorganize, clarify, or delete numerous definitions in the Consumer Products Regulation. The proposed definitional modifications, among other things, would clarify the types of products included or excluded from various categories, define new categories, and delete expired portions of the definitions. Among the proposed modifications are the following:

- Modifying the "Lubricant" definition to clarify that "Multi-purpose Lubricant" and "Silicone-based Multi-purpose Lubricant" categories do not include lubricants labeled for a single purpose; clarify that any product meeting the definition for "Dry Lubricant" is exempt from the requirements for other lubricant products; and clarify that "Gear, Chain, or Wire Lubricant" does not include lubricants labeled solely for use on chains of chain-driven vehicles;

- Modifying the definitions of "Multi-purpose Solvent" and "Paint Thinner" products to include all product forms; clarifying the types of products that are either included or excluded in the categories; and strengthening the exemption criteria for paint thinners used with "Industrial Maintenance Coatings," "Zinc-Rich Primers," or "High Temperature Coatings;"

- Defining "No Rinse Shampoo" and "Thermal Protectant" products and excluding them from the "Hair Styling Product" definition as long as certain criteria are met;

- Defining aerosol "Screen Printing Adhesive;"

- Defining "Single Purpose Cleaner" and "Single Purpose Degreaser" and excluding these products from the definitions of "General Purpose Cleaner" and "General Purpose Degreaser," respectively;

- Exempting trans-1,3,3,3-tetrafluoropropene (HFO-1234ze) from the definition of "Volatile Organic Compound;" and

- Modifying the definition of "Undercoating" to specify that such products are labeled solely for application to vehicle substrates to prevent rust or deaden sound, and that products making additional claims are "Flexible Coatings" as defined in the Aerosol Coating Products Regulation.

Requirements

The proposed amendments would set lower VOC limits for aerosol "Mist Spray Adhesive" and "Web Spray Adhesive" products. New VOC limits are proposed for aerosol "Screen Printing Adhesive," and aerosol "Multi-purpose Solvent" and "Paint Thinner" products. Other proposals would establish VOC limits of 25 grams per liter for nonaerosol "Multi-purpose Solvent" and "Paint Thinner" products sold in the SCAQMD and establish analytical procedures to determine VOC content for these products that are consistent with those in the SCAQMD's rule. The requirements for nonaerosol "Multi-purpose Solvent" and "Paint Thinner" products sold in other areas of the State would be unchanged. However, proposed amendments would specify that VOC content for "Multi-purpose Solvent" and "Paint Thinner" products would be determined prior to any recommended dilution. To address ongoing concerns related to safety and flammability, staff is proposing to extend provisions in section 94512(e) until December 31, 2017.

In addition to VOC limits, the amendments would prohibit the use of methylene chloride, perchloroethylene, and trichloroethylene in "Single Purpose Cleaner," "Single Purpose Degreaser," and aerosol forms of "Screen Printing Adhesive," "Multi-purpose Solvent,"

and "Paint Thinner" products. This change is proposed to ensure that as manufacturers reformulate their products to comply with VOC limits they do not begin using these toxic air contaminants. Staff is also proposing to prohibit use of compounds with GWP values of 150 or greater in aerosol forms of "Mist Spray Adhesive," "Web Spray Adhesive," "Screen Printing Adhesive," "Multi-purpose Solvent," and "Paint Thinner."

All of these requirements would become effective between January 1, 2015, and January 1, 2017.

To address feasibility, the VOC limit for "Multi-purpose Lubricant" products of 10 percent by weight scheduled to become effective December 31, 2015, would be delayed until December 31, 2018. This proposed change would delay an emission reduction of about 1.3 tons per day for three years. Additionally, reporting requirements in section 94513(f)(2) would be delayed to March 31, 2017.

Test Methods

Staff is proposing changes to the Test Methods section to reproduce staff's proposed changes to Method 310.

Objectives of the Proposed Amendments to the Aerosol Coating Products Regulation

Deleting Expired Requirements

Throughout the Aerosol Coating Products Regulation staff is proposing to delete the expired requirements related to VOC limits.

Definitions

Staff is proposing to add, modify, reorganize, clarify, or delete numerous definitions in the Aerosol Coating Products Regulation. The definitional modifications would, among other things, clarify the types of products included or excluded from various categories, define new categories and terms, and delete expired portions of the definitions. Among the proposed modifications are the following:

- Defining "Antimicrobial Compound," "Coating," "Extender," "Flexible Coating," "Fragrance," "General Coating," "Label," "Pigment," "Plasticizer," "Principal Display Panel or Panels," "Resin," "Specialty Coating," "Two-Component Coating," and "Uniform Finish Coating;"
- Expanding the definition of "Electrical Coating" to include electronic and conformal coating products; and
- Modifying the definitions for "Flat Coating," "Nonflat Coating," and "Metallic Coating" to specify that such products making claims to function as both paint and primer are included in these categories.

Requirements

Staff is proposing new or lower reactivity limits for all "General Coating" and a number of "Specialty Coating" categories that would become effective on January 1, 2017. Reactivity limits for other "Specialty Coating" categories with very low emissions would be set as low as possible without requiring reformulation, which would be small and not cost effective. These limits would become effective January 1, 2015.

Staff is proposing to revise the sell-through and product dating provisions to provide consistency with the Consumer Products Regulation.

Staff is proposing modifications to provisions for determining a product's reactivity content. The amendments would clarify assignment of MIR values, and establish default MIR values to be used when an ingredient is not listed in the Tables of MIR Values.

Exemptions

Staff is proposing to rescind the exemptions for "Electrical Coating" and "Mold Release Coating" products, and specify reactivity limits for these categories. Data show that the exemption is no longer needed.

Test Methods and Compliance Verification

Staff is proposing changes to the Test Methods section to specify the types of data to be reported upon receiving written notice, allow additional time for manufacturers to supply such information, require responsible parties to provide contact information as to whom the written notice is to be sent, and specify that failure to respond to such notice is a violation.

In addition a new table to specify MIR values for various hydrocarbon solvent fractions is proposed. The amendments would also specify that Method 310 results take precedence over manufacturer supplied formulation in such cases where there is a discrepancy.

Objectives of the Proposed Amendments to the Tables of MIR Values

Staff is proposing to amend the "Oxygenated Organics" section of the Tables of MIR Values to reorganize them by chemical class rather than by carbon number.

Objectives of the Proposed Amendments to Test Method 310

Staff is proposing to amend Test Method 310 to improve existing testing procedures and incorporate additional testing procedures to analyze consumer products and aerosol coating products for compliance.

Objectives of the Proposed Repeal of the Hair Spray Credit Program

Staff is proposing to repeal the Hairspray Credit Program in its entirety because its usefulness has expired.

Benefits of Proposed Amendments

Health and Welfare of California Residents:

The overall benefit of these proposed amendments is to provide an equivalent VOC emission reduction of just over four tons per day. Reducing VOC emissions and lowering the ozone forming potential of VOCs would improve air quality. This is because VOCs are ozone precursors. Emission reductions from consumer products (including aerosol coatings) is an important part of ARB's strategy toward attaining the ambient air quality standards.

In several categories, the proposed amendments would also prohibit use of compounds with higher GWPs and certain air toxic compounds. These proposals would ensure that the public is not exposed to these air toxic compounds and that greenhouse gas emissions from use of various products do not increase.

The provisions related to "Multi-purpose Solvent" and "Paint Thinner" products would ensure that the emission reductions predicted would be fully realized. The numerous proposed clarifications will help stakeholders better understand how to comply and improve enforceability. All of these proposals provide further protection of the public's health.

State's Environment:

Staff has concluded that the proposed amendments would not have a significant adverse impact on the following resource areas: aesthetics; agricultural and forestry resources; biological resources; cultural resources; geology and soils; hazardous materials; hydrology and water quality; land use planning; mineral resources; noise; population and housing; public services; or recreation. These areas would not be impacted because compliance with the proposed amendments to the regulations would not require any action that could affect these resources, either directly or indirectly.

No discussion of alternatives or mitigation measures is necessary because no significant adverse environmental impacts were identified.

CONSISTENCY AND COMPATIBILITY WITH EXISTING STATE REGULATIONS

During the process of developing these regulations and amendments, ARB staff has conducted a search of any similar regulations on this topic and has concluded that these regulations are neither inconsistent nor incompatible with existing State regulations.

COMPARABLE FEDERAL REGULATIONS

The United States Environmental Protection Agency (U.S. EPA) has promulgated a national consumer products rule under section 183(e) of the federal Clean Air Act (CAA) (40 CFR Part 59, subpart C, sections 59.201 *et seq.*). The rule specifies VOC limits for a number of consumer product categories and is similar in format to ARB's Consumer Products Regulation.

Although the national regulation is similar in many aspects to the California regulation, it does not include a number of product categories that are currently regulated under the ARB regulation. For the categories that are regulated under both rules, many of ARB's limits are more stringent than the U.S. EPA's limits. Because California has unique air quality problems, reducing VOC emissions from all categories, including consumer products, to the maximum extent feasible is necessary to attain the federal and State ambient air quality standards for ozone.

The U.S. EPA's rule also differs in that it applies nationwide to consumer product manufacturers, importers and distributors (but not retailers), while the ARB regulation applies to any person (including retailers) who "sells, supplies, offers for sale, or manufactures consumer products for use in the State of California." Finally, the U.S. EPA's rule has an unlimited "sell-through" period for noncomplying products manufactured before the effective date of the limits, whereas California law limits the sell-through period to three years.

U.S. EPA's consumer products rule does not prohibit the use of certain toxic air contaminants and there is no comparable federal regulation related to reducing greenhouse gas emissions from consumer products.

On March 24, 2008, U.S. EPA set national VOC emission standards for aerosol spray paints (aerosol coatings), (40 CFR Part 59, subpart E, National Volatile Organic Compound Emission Standards for Aerosol Coatings). This national regulation, modeled after ARB's Regulation for Reducing the Ozone Formed from Aerosol Coating Product Emissions, established a uniform reactivity-based standard for aerosol spray paints. On December 24, 2008, U.S. EPA published amendments to the rule to move the applicability and initial compliance dates for aerosol coatings from January 1, 2009, to July 1, 2009. The reactivity standards and product categories in the national rule mirror ARB's current aerosol coatings regulation, however, the national rule does not prohibit the use of certain toxic air contaminants.

STATE IMPLEMENTATION PLAN REVISION

If adopted by ARB, ARB plans to submit the proposed regulatory action to U.S. EPA for approval as a revision to the California State Implementation Plan (SIP) required by the CAA. The adopted regulatory action would be submitted as a SIP revision because it amends regulations intended to reduce emissions of air pollutants in order to attain and maintain the National Ambient Air Quality Standards promulgated by U.S. EPA pursuant to the CAA.

AVAILABILITY OF DOCUMENTS AND AGENCY CONTACT PERSONS

ARB staff has prepared a Staff Report: Initial Statement of Reasons (ISOR) for Rulemaking, which includes a summary of the economic and environmental impacts of the proposal. The report is entitled: Proposed Amendments to the Antiperspirants and Deodorants Regulation, the Consumer Products Regulation, the Aerosol Coating Products Regulation, the Tables of MIR Values, Test Method 310, and Proposed Repeal of the Hairspray Credit Program.

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 ARB'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, (916) 322-2990, on August 7, 2013.

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 ARB's website listed below.

Agency Contact Persons

Inquiries concerning the substance of the proposed amendments to the regulations may be directed to the designated agency contact persons, Mr. Jose Gomez, Manager, Technical Development Section, at (916) 324-8033, or Ms. Judy Yee, Manager, Implementation Section, at (916) 322-9148.

The agency representative to whom nonsubstantive inquiries concerning the proposed administrative action is Ms. Trini Balcazar, Regulations Coordinator, (916) 445-9564. 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.

Internet Access

This notice, the ISOR and all subsequent regulatory documents, including the FSOR, when completed, are available on ARB's website for this rulemaking at http://www.arb.ca.gov/regact/2013/cp2013/cp2013.htm

DISCLOSURES REGARDING THE PROPOSED REGULATION

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

Fiscal Impact / Local Mandate

Pursuant to Government Code sections 11346.5(a)(5) and 11346.5(a)(6), the Executive Officer has determined that the proposed regulatory action would not create costs to State Agencies 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 pursuant to Government Code, title 2, division 4, part 7 (commencing with section 17500), or other nondiscretionary cost or savings to State or local agencies.

Significant Statewide Adverse Economic Impact Directly Affecting Business, Including Ability to Compete

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. A detailed assessment of the economic impacts of the proposed regulatory action can be found in the ISOR.

Cost Impacts on Representative Private Persons or Businesses

In developing this regulatory proposal, ARB staff evaluated the potential economic impacts on representative private persons or businesses. As explained in the ISOR, the proposed amendments will have a cost impact on some individual businesses, but ARB is not aware of any significant cost impacts that a representative private person or business would necessarily incur in reasonable compliance with the proposed action. Staff has estimated that the overall cost to comply with the proposed amendments is about $5.3 million dollars per year for five years, or a total of $26.5 million. Initial representative costs for aerosol coatings and consumer products manufacturers are estimated to be about $198,000 and $34,600, respectively. Ongoing costs are estimated to be about $420 and $6,200 for consumer products and aerosol coatings manufacturers, respectively. If all assumed compliance costs are passed on to the consumer, without consideration of typical retail mark-up, we estimate the annual cost to a consumer to be about $0.12 to purchase an aerosol adhesive, Multi-purpose Solvent, or Paint Thinner, and about a $1.60, to purchase aerosol coatings.

Statement of the Results of the Economic Impact Assessment Prepared Pursuant to Government Code Section 11346.3(b)

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. A detailed assessment of the economic impacts of the proposed regulatory action can be found in the ISOR.

Benefits of the Proposed Regulation:

A detailed assessment of the economic impacts of the proposed regulatory action can be found in the Economic Impact Analysis in Chapter VII of the ISOR. The overall benefit of the proposed amendments is to reduce VOC emissions, which in turn improves air quality. The cost effectiveness of the proposed amendments is estimated to be $1.82 per pound of VOC reduced. This is comparable to other consumer products rulemakings. The benefits are further described in the "Benefits of Proposed Amendments" section on page 7 of this notice.

Effect on Small Business

The Executive Officer has also determined, pursuant to California Code of Regulations, title 1, section 4, that the proposed regulatory action would affect small businesses. Staff has estimated that 65 of the 134 business impacted by these proposed amendments are small businesses. Staff has also estimated that initial costs for a small business are $11,500 and $16,500 for consumer products and aerosol coatings manufacturers, respectively. Ongoing costs are estimated to be $140 and $520, for consumer products and aerosol coatings manufacturers, respectively.

Housing Costs

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

Business Reports

In accordance with Government Code sections 11346.3(c) and 11346.5(a)(11), the Executive Officer has found that the reporting requirements of the regulation which apply to businesses are necessary for the health, safety, and welfare of the people of the State of California.

Alternatives

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, or 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.

Environmental Analysis

In accordance with ARB's certified regulatory program, California Code of Regulations, title 17, sections 60006 through 60007, and the California Environmental Quality Act, Public Resources Code section 21080.5, ARB has conducted an analysis of the

potential for significant adverse and beneficial environmental impacts associated with the proposed regulatory action. ARB staff has determined that implementing the proposed amendments would result in a beneficial impact in that air quality would be improved. No significant adverse impacts were identified. The environmental analysis of the proposed regulatory action can be found in Chapter V of the ISOR.

WRITTEN COMMENT PERIOD AND SUBMITTAL OF COMMENTS

Interested members of the public may present comments orally or in writing at the meeting and may provide comments by postal mail or by electronic submittal before the meeting. The public comment period for this regulatory action will begin on August 12, 2013. To be considered by the Board, written comments not physically submitted at the meeting, must be submitted on or after August 12, 2013, and received no later than 12:00 noon on September 25, 2013, and must be addressed to the following:

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

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

You can sign up online in advance to speak at the Board meeting when you submit an electronic board item comment. For more information go to: http://www.arb.ca.gov/board/online-signup.htm.

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.

ARB requests that written and email statements on this item be filed at least 10 days prior to the hearing so that ARB staff and Board members have additional time to consider each comment. The Board 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.

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 Health and Safety Code, sections 38501, 38510, 38560, 38560.5, 38562, 38580, 39600, 39601, 39602, 39607, 41511, and 41712. This action is proposed to implement, interpret, and make specific sections 38501,38510, 38560, 38560.5, 38562, 38580, 39002, 39600, 39601, 39607, 40000, 41511, and 41712 of the Health and Safety Code.

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 adopt the regulatory language as originally proposed, or with nonsubstantial or grammatical modifications. The Board may also adopt 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; in such event, the full regulatory text, with the modifications clearly indicated, will be made available to the public, for written comment, at least 15-days before it is adopted.

The public may request a copy of the modified regulatory text from ARB's Public Information Office, Air Resources Board, 1001 I Street, Visitors and Environmental Services Center, First Floor, Sacramento, California, 95814, (916) 322-2990.

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;
- 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
- 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 envié 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 Retransmisión de Mensajes de California.

CALIFORNIA AIR RESOURCES BOARD

/s/
Richard W. Corey
Executive Officer

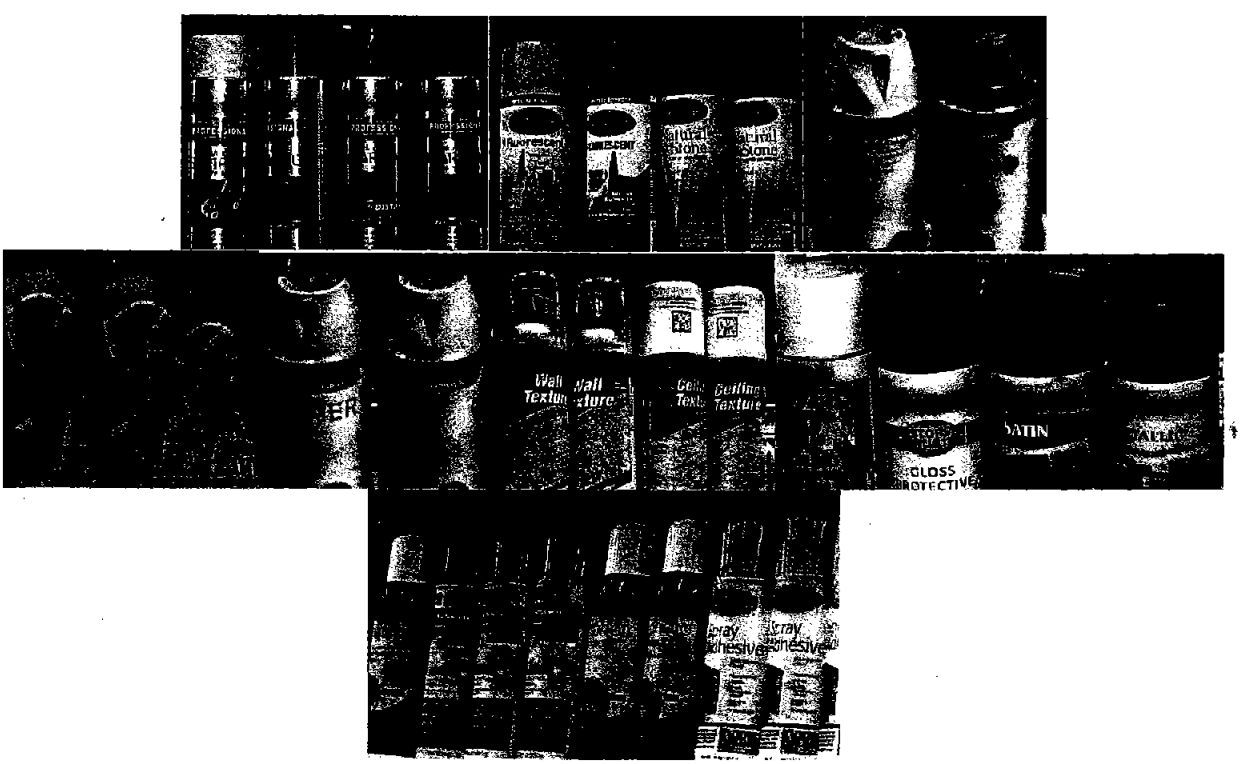
Date: July 30, 2013

The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our website at www.arb.ca.gov.

State of California
Air Resources Board

Staff Report: Initial Statement of Reasons for Proposed Rulemaking

Proposed Amendments to the Antiperspirants and Deodorants Regulation, the Consumer Products Regulation, the Aerosol Coating Products Regulation, the Tables of MIR Values, Test Method 310, and Proposed Repeal of the Hairspray Credit Program



Date of Release: August 7, 2013

State of California
Air Resources Board

Staff Report: Initial Statement of Reasons for Proposed Rulemaking

Proposed Amendments to the Antiperspirants and Deodorants Regulation, the Consumer Products Regulation, the Aerosol Coating Products Regulation, the Tables of MIR Values, Test Method 310, and Proposed Repeal of the Hairspray Credit Program

Date of Release: August 7, 2013
Scheduled for Consideration: September 26, 2013

Location:

California Air Resources Board
Byron Sher Auditorium
1001 I 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 Air Resources Board, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

Initial Statement of Reasons

Public Hearing to Consider Proposed Amendments to the Antiperspirants and Deodorants Regulation; Consumer Products Regulation; Aerosol Coating Products Regulation; the Tables of Maximum Incremental Reactivity Values; Test Method 310; and Proposed Repeal of the Hairspray Credit Program

Air Resources Board Meeting
September 26, 2013, at 9:00 a.m.
California Environmental Protection Agency
Air Resources Board
Byron Sher Auditorium
1001 I Street
Sacramento, California 95814

For those unable to attend the meeting in person, live video webcast will be available beginning at 9:00 a.m. on September 26, 2013, at http://www.calepa.ca.gov/broadcast

This staff report and related materials are available for download from the Air Resources Board's internet site at http://www.arb.ca.gov/regact/2013/cp2013/cp2013.htm.

In addition written copies may be obtained from the Board's Public Information Office, 1001 I Street, Visitors and Environmental Services Center, First Floor, Sacramento, California, 95814, (916) 322-2990.

If you have a disability-related accommodation need, please go to: http://www.arb.ca.gov/html/ada/ada.htm for assistance or contact the Reasonable Accommodation Coordinator at (916) 323-4916. If you are a person who needs assistance in a language other than English, please contact the Bilingual Coordinator at (916) 324-5049.

Questions

Inquiries concerning the substance of the proposed amendments to the regulations may be directed to the designated agency contact persons:

Mr. Jose Gomez
Manager
Technical Development Section
(916) 324-8033
Email: jgomez@arb.ca.gov

or

Ms. Judy Yee
Manager
Implementation Section
(916) 322-9148
Email: jyee@arb.ca.gov

Prepared by Staff of the:

Technical Development Section and
Implementation Section
Area Source and Emissions Inventory Programs Branch
Air Quality Planning and Science Division

Reviewed by:

Air Quality Planning and Science Division

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Appendix I:	Methodology to Determine Recurring Costs
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List of Acronyms

2010 Survey	2010 Consumer & Commercial Products Survey Update for Aerosol Coating and Adhesive Products
AB	Assembly Bill
ACP	Alternative Control Plan
APA	Administrative Procedure Act
ARB	[California] Air Resources Board
ASTM	American Society for Testing and Materials International
Board	California Air Resources Board
CA	California
CAA	[Federal] Clean Air Act
CCAA or Act	California Clean Air Act
CCR	California Code of Regulations
CE	Cost Effectiveness
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CO_2	Carbon Dioxide
CRF	Capital Recovery Factor
GHG	Greenhouse Gas
g/L	Grams per Liter
g O_3/g Product	Grams of Ozone per gram of product
GWP	Global Warming Potential
HCS	Hydrocarbon solvents
HERC	Hairspray Emission Reduction Credits
HFC	Hydrofluorocarbon
HFC-134a	hydrofluorocarbon-134a
HFC-152a	hydrofluorocarbon-152a
HFO-1234ze	Trans 1,3,3,3-Tetrafluoropropene
IPE	Innovative Product Exemption
ISOR	Initial Statement of Reasons
lb/Gal	Pounds Per Gallon
LVP-VOC	Low Vapor Pressure Volatile Organic Compound
MIR	Maximum Incremental Reactivity
MMT-CO2e	Million Metric Ton Carbon Dioxide Equivalent
NA	Not applicable
NAAQS	National Ambient Air Quality Standards
NAICS	North American Industry Classification System
OEHHA	Office of Environmental Health Hazard Assessment
OFP	Ozone Forming Potential
PCBTF	Parachlorobenzotrifluoride

ppm	Parts Per Million
PWMIR	Product-weighted Maximum Incremental Reactivity
REL	Reference Exposure Level
ROC	Reactive Organic Compound
ROE	Return on Owner's Equity
Rule 1143	SCAQMD "Consumer Paint Thinners and Multi-Purpose Solvents"
SCAQMD	South Coast Air Quality Management District
SIP	State Implementation Plan
SOP	Standard Operating Procedure
SWA-PWMIR	Sales Weighted Average Product-weighted Maximum Incremental Reactivity
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

Executive Summary

In this rulemaking, California Air Resources Board (ARB or Board) staff is proposing amendments to the Antiperspirants and Deodorants Regulation, the Consumer Products Regulation, the Aerosol Coating Products Regulation, the Tables of Maximum Incremental Reactivity (MIR) Values, and Method 310. Staff is also proposing to repeal the Hairspray Credit Program as its usefulness has expired. The primary purpose of the proposed amendments is to lower the impacts that volatile organic compound (VOC) emissions from use of consumer products and aerosol coatings have on formation of ground-level ozone. When fully implemented, VOC emissions would be reduced by about 4 tons per day statewide. Of this amount, about 1.8 tons per day reduction would occur in the South Coast Air Quality Management District (SCAQMD).

Staff is proposing to set new or lower VOC limits for aerosol adhesives and for aerosol "Multi-purpose Solvent" and "Paint Thinner" products. In these same categories staff is proposing to prohibit the use of several chlorinated toxic air contaminants (TAC) (except for "Mist Spray Adhesive" and "Web Spray Adhesive" categories where use is already prohibited) and preclude use of compounds with high global warming potentials (GWP). We are also proposing to set lower Reactivity Limits for aerosol coatings.

Staff is proposing other amendments to provide clarity to a number of definitions, provide reformulation flexibility by exempting a compound from the VOC definition, extend a compliance date for a VOC standard to address commercial and technological feasibility, strengthen the enforcement process, and repeal provisions that have expired. The purpose of other proposals is to stem the circumvention of provisions for "Multi-purpose Solvent" and "Paint Thinner" products, particularly for products sold in the SCAQMD. The purpose for proposing amendments to Method 310 is to establish procedures to test various products for compliance.

The sections proposed for amendment are codified in title 17, California Code of Regulations, (CCR) sections 94500-94506.5, 94507-94517, 94520-94528, 94560-94575, and 94700-94701.

This Executive Summary, together with the Staff Report, is the Initial Statement of Reasons for Proposed Rulemaking required by the California Administrative Procedure Act. Appendices A through F contain the regulations, Tables of MIR Values, and Method 310. The proposed changes are shown in <u>underline</u> and ~~strikeout~~ format.

A. Authority to Regulate Consumer Products

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

The Health and Safety Code sets forth ARB'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 ARB's climate change mitigation strategy. Authority to mitigate potential adverse impacts of proposed regulations is set forth in Public Resources Code section 21000 *et seq.*

B. Existing Regulations

This section provides a general overview of the regulations adopted to fulfill the legislative mandates. Also germane to this rulemaking is discussion of a SCAQMD rule pertaining to "Paint Thinner" and "Multi-Purpose Solvent" products.

1. ARB's Regulations

For more than twenty years, the Board has taken actions pertaining to the regulation of consumer products. Three regulations have set VOC limits for 129 consumer product categories. These three regulations, when fully effective, will reduce VOC emissions by about 50 percent compared to 1990 levels. By 2020, limits on the use of ingredients with higher GWP values will provide reductions of approximately 0.23 million metric tons of carbon dioxide equivalents (MMT CO_2e) per year.

Exposure to TACs has also been reduced by prohibiting use of certain chlorinated compounds in 83 categories. Total emissions of TACs have been reduced by over 13 tons per day.

In addition, two voluntary program regulations, the Alternative Control Plan (ACP) and the Hairspray Credit Program have been adopted to provide compliance flexibility to companies. The five consumer product regulations are codified in title 17, CCR sections 94500 to 94575.

Tables of MIR Values have also been adopted to implement the Aerosol Coating Products Regulation. These values are codified in title 17, CCR, sections 94700 and 94701.

2. South Coast Air Quality Management District Rule 1143

SCAQMD adopted Rule 1143, "Consumer Paint Thinners and Multi-purpose Solvents" (Rule 1143) on March 6, 2009. As allowed by State law, this rule established requirements specific to consumer "Paint Thinners" and "Multi-Purpose Solvents" sold, supplied, offered for sale, or manufactured for use in the SCAQMD. This rule established a 300 grams per liter (g/L) limit effective January 1, 2010, and a 25 g/L limit effective January 1, 2011. The categories were defined similarly to those in the Consumer Products Regulation.

C. Basis for the Proposed Amendments

The overarching problem is that the majority of California residents continue to be exposed to pollutant concentrations that exceed health based standards for ozone and particulate matter. Because VOCs are precursors to the formation of ground-level ozone and secondary particulate matter, VOC emission reductions are necessary to attain the ambient air quality standards.

Despite developing regulations to reduce consumer products' VOC emissions by over 209 tons per day, it is estimated that current VOC emissions are approximately 205 tons per day. This represents about 13 percent of the overall statewide VOC inventory. Moreover, without further action, consumer product VOC emissions are expected to grow, as California's population grows, to approximately 213 tons per day statewide in 2020. Thus, more needs to be done.

In addition to the need for further VOC reductions, the regulation of "Paint Thinner" and "Multi-purpose Solvent" products has not resulted in the full benefits expected, especially for those products sold in the SCAQMD. Unclear definitions and exemption criteria have led to noncompliance with the regulatory intent and expected emission reductions have not been fully achieved. These problems need to be addressed.

As a basis for developing the proposed amendments, staff conducted several surveys and assessments as shown below:

- 2010 Consumer & Commercial Products Survey Update for Aerosol Coating and Adhesive Products;
- Technical Assessment for "Multi-purpose Solvent" and "Paint Thinner" products; and
- Technical Assessment for "Multi-purpose Lubricants"

D. Proposed Amendments

This section summarizes the proposed amendments to the Antiperspirants and Deodorants Regulation, the Consumer Products Regulation, the Aerosol Coating Products Regulation, the Tables of MIR Values, and Method 310. The proposed

repeal of the Hairspray Credit Program is also explained. A more detailed description of each proposed amendment along with its rationale is presented in Chapter VIII of the Staff Report.

1. Proposal for Antiperspirants and Deodorants

Staff is proposing amendments to the section 94501 and 94506 of the Antiperspirants and Deodorants Regulation, which is codified in title 17, CCR, sections 94500-94506.5.

Staff is proposing to amend the VOC definition to provide an exemption for a new propellant, trans-1,3,3,3-tetrafluoropropene (HFO-1234ze). The Consumer Products Regulation would also be modified to exclude HFO-1234ze from the VOC definition in that regulation (see section 2.a below). Staff is also proposing to change the date Method 310 was last amended to reflect amendments proposed in this rulemaking.

2. Proposal for Consumer Products

Staff is proposing amendments to sections 94508, 94509, 94512, 94513, and 94515 of the Consumer Products Regulation. The regulation is codified in title 17, CCR, sections 94507-94517.

a. Definitions, section 94508

A number of definitions are proposed for modification, addition, or deletion. These proposals would streamline the regulation, clarify various provisions, provide consistency, and improve enforceability. The amendments would also reorganize several definitions to make them easier to find. Several of the definitions proposed for modification warrant a further description.

Staff is proposing to modify the definitions for four "Lubricant" subcategories. The definition for "Dry Lubricant" would be modified to explicitly state that any product meeting the definition of "Dry Lubricant," regardless of type of use, is a "Dry Lubricant" and not subject to any VOC standard for any other regulated "Lubricant." The "Multi-purpose Lubricant" and "Silicone-based Multi-purpose Lubricant" definitions would be modified to specify that products labeled solely for a single purpose are not "Multi-purpose Lubricants." The definition for "Gear, Chain, or Wire Lubricant" would be modified to specify that lubricants labeled solely for use on chains of chain-driven vehicles are not included.

Staff is proposing modifications to the definitions of "Multi-purpose Solvent" and "Paint Thinner." First we would indicate that these categories include any product form, rather than just liquids as they are currently defined. Staff is also proposing to strengthen the exemption criteria for specialty thinning products designed for use with "Industrial Maintenance Coatings," "Zinc-rich Primers," and "High Temperature Coatings."

Staff is proposing to define "No Rinse Shampoo" and "Thermal Protectant" to clarify that these products are not considered "Hair Styling Products." A "No Rinse Shampoo" would be defined as a product used solely to be applied to dry hair to clean, absorb oil, or eliminate odor, that is subsequently removed from the hair without the use of water (by combing, brushing, or toweling the hair). A "Thermal Protectant" would be defined as a product used solely to protect hair from heated appliances.

Staff is proposing new definitions for "Single Purpose Cleaner" and "Single Purpose Degreaser" to clarify that a product exclusively for use on a single object or its parts is not a "General Purpose Cleaner" or a "General Purpose Degreaser."

Staff is proposing to amend the VOC definition in the Consumer Products Regulation to provide an exemption for HFO-1234ze. Our proposal follows action by the United States Environmental Protection Agency (U.S. EPA) to add HFO-1234ze to the list of compounds excluded from the federal VOC definition (U.S. EPA, 2012). Staff conducted a multi-media impacts assessment and determined that HFO-1234ze has negligible impacts on ground-level ozone, a low GWP value of 6, and is nonozone depleting (U.S. EPA, 2013). Staff also evaluated the chemical to determine if any potential adverse health impacts could result from use of HFO-1234ze in various products and found none.

b. VOC limits, section 94509

Staff is proposing new or lower VOC limits for the categories shown in Table ES-1.

Table ES-1
Proposed VOC Standards, Emissions, and Reductions

Product Category	Proposed VOC Standard (percent by weight)	VOC Emissions* (tons per day)	Effective Date	VOC Reductions (tons per day)
Mist Spray Adhesive	30	0.49	1/1/2017	0.22
Screen Printing Adhesive	55	0.08	1/1/2017	0.01
Web Spray Adhesive	40	0.28	1/1/2017	0.07
Aerosol Multi-purpose Solvent and Paint Thinner	10	0.18	1/1/2016	0.10
Total Emissions	**1.0****			
Total VOC Reductions	**0.4****			

* Survey emissions adjusted for market coverage, except for aerosol "Multi-purpose Solvent" and "Paint Thinner."
** Numbers are rounded.

As shown in Table ES-1, the limits would become effective on January 1, 2016, and January 1, 2017, and would reduce VOC emissions by about 0.4 tons per day. In addition, a 1 percent by weight "Aromatic Compound" content limit, effective January 1, 2016, is proposed for aerosol "Multi-purpose Solvent" and "Paint Thinner" products.

In aerosol "Multi-purpose Solvent," aerosol "Paint Thinner" and "Screen Printing Adhesive" products, use of methylene chloride, perchloroethylene, trichloroethylene, and compounds with GWP of 150 or greater would be prohibited. This same GWP limit is proposed for "Mist Spray Adhesives" and "Web Spray Adhesives."

Related to the "Multi-purpose Lubricants," through results of a technical assessment we have determined that manufacturers are on track to meet the 25 percent by weight VOC limit at the end of this year. However, the resources expended have been greater than anticipated. As such, manufacturers are behind schedule for initiating their research and development efforts to meet the more challenging 10 percent by weight VOC limit, scheduled to become effective December 31, 2015. Because of this, staff is proposing to delay the effective date of the 10 percent VOC limit until December 31, 2018. This proposed change would result in delaying about 1.3 tons per day of VOC emission reductions for three years.

c. Provisions for Multi-purpose Solvent and Paint Thinner Products in SCAQMD

SCAQMD staff has also made us aware that their Rule 1143 is not fully achieving the expected benefits, and has asked for our assistance. This is primarily because manufacturers have taken advantage of an exclusion within their definition of "Multi-purpose Solvent." The language is shown below:

> "....Multi-purpose Solvents" also do not include any products making any representation that the product may be used as, or is suitable for use as a consumer product which qualifies under another definition in California Code of Regulations Title 17, § 94508 as of the date of adoption."

By including on the product label some reference to an ARB regulated Consumer Product category, manufacturers have skirted compliance with SCAQMD's rule. For example, a product labeled on the principal display panel as "Odorless Mineral Spirits" which is clearly a "Multi-purpose Solvent" would include a small reference to be suitable for use as a "General Purpose Degreaser" in small font on the back panel of the label. This labeling then excludes such a product from being subject to Rule 1143 because it is making a claim for a category regulated by the ARB. Examples of "Multi-purpose Solvent" and "Paint Thinner" labels are shown in Appendix H.

To stem this circumvention staff is proposing to incorporate the limit of 25 g/L VOC set forth in their Rule 1143 into ARB's regulation, along with consistent testing procedures. We are also proposing to add language to clarify that in SCAQMD nonaerosol "Multi-purpose Solvent" and "Paint Thinner" products, regardless of any additional claims

made on the label, remain "Multi-purpose Solvents" or "Paint Thinners." These modifications would become effective on January 1, 2015.

d. Labeling provisions for "Multi-purpose Solvent" and "Paint Thinner" products

Section 94512(e)(1) prohibits the sale of flammable or extremely flammable "Multi-purpose Solvent" or "Paint Thinner" unless certain labeling criteria are met. This provision is scheduled to sunset on December 31, 2015. At the time this provision was put in place, it applied to only liquid forms of "Multi-purpose Solvent" and "Paint Thinner" products. Because staff is now proposing to regulate aerosol forms of "Multi-purpose Solvent" and "Paint Thinner" products, staff is proposing to extend these safety labeling provisions until December 31, 2017, as a safety precaution and to address the ongoing concerns of stakeholders. This proposal is designed to ensure that, should aerosol "Multi-purpose Solvent" and "Paint Thinner" products be reformulated to increase the product's flammability the consumer would be warned that the product is different. This warning would be especially necessary for products containing large amounts of acetone. While most aerosol forms of these products are already labeled as 'flammable' because they are formulated with flammable propellants, extending the date where this warning label is required would provide additional protection. As proposed, the safety labeling provisions would apply to all forms (aerosol and nonaerosol) of "Multi-purpose Solvent" and "Paint Thinner" products until December 31, 2017.

3. Proposal for Aerosol Coating Products

Staff is proposing to amend the Aerosol Coating Products Regulation which is codified in title 17, CCR, sections 94520-94528.

a. Definitions, section 94521

The proposed amendments would define three new product categories, modify many existing definitions, and add 15 definitions. The proposed definitional changes would clarify various regulatory provisions, provide consistency between regulations, better define product categories, define terms necessary for interpreting regulatory provisions, and delete expired definitions to streamline the regulation. In particular, we are proposing to modify the definitions for "Flat Coating," "Metallic Coating," and "Nonflat Coating" to include in these categories products that function both as paint and primer, if certain labeling provisions are met.

b. Reactivity Limits and Requirements, section 94522

The proposed amendments would specify new or lower Reactivity Limits for 16 aerosol coating categories. The Reactivity Limit is expressed as the product weighted maximum incremental reactivity (PWMIR) and is grams of ozone per gram product (g O^3/g product). The proposed limits for 6 "General Coating" categories and 10 "Specialty Coating" categories are shown in Table ES-2. In combination, these categories represent over 95 percent of reported sales.

As shown in Table ES-2, reactive organic compound (ROC) emissions are about 26 tons per day, and the proposed limits would result in an equivalent VOC reduction of about 3.7 tons per day. The effective date for the limits would be January 1, 2017.

We are also proposing to "cap" the Reactivity Limits for 23 "Specialty Coating" categories. Staff has determined that further lowering the Reactivity Limits would provide negligible air quality benefits, and would not be cost effective or commercially and technologically feasible. However, most of the proposed "cap" limits are lower than the existing limits and are set as low as possible to prevent future increases. Because the limits do not require reformulation an earlier effective date of January 1, 2015, is proposed.

Table ES-2
Proposed Reactivity Limits for General Coatings and Specialty Coatings (A), Emissions, and Reductions

Coating Category	Proposed Reactivity Limit** (g O_3/g Product)	ROC Emissions* (tons per day)	Equivalent VOC Reductions*** (tons per day)
Clear Coating	0.85	2.1	0.4
Flat Coating	0.80	3.0	0.5
Fluorescent Coating	1.30	0.1	>0.0
Metallic Coating	1.25	1.8	0.2
Nonflat Coating	0.95	11.5	1.7
Primer	0.70	2.5	0.4
Auto Body Primer	0.95	0.75	0.10
Exact Match Finish, Engine	0.95	0.36	0.05
Exact Match Finish, Automotive	0.95	0.39	0.03
Exact Match Finish, Industrial	1.20	0.22	0.02
Ground Traffic/Marking Coating	0.85	2.90	0.35
Electrical/Electronic/ Conformal Coating+	2.00	0.03	>0.0
Flexible Coating++	1.60	0.08	>0.0
Mold Release Coating+	1.10	0.18	>0.0
Uniform Finish Coating++	1.30	0.00	>0.0
Two Component Coating++	1.20	0.00	>0.0
Total Emissions	**26*** **		
Total Equivalent VOC Reductions	**3.7*** **		

* Calendar year 2010 emissions adjusted for complete market coverage
** 2010 MIR Values
*** Numbers are rounded.
\+ Indicates previously exempt coating category
++ Indicates new coating category

Other proposed modifications would harmonize the sell-through provisions with those in the Consumer Products Regulation. The three year sell-through period would be unchanged, however, specific requirements for products sold in multi-unit packages would be added. If the aerosol coating is sold or supplied within the last 6 months of the sell-through period, provisions would also require that notice must be given to the purchaser that the sell-through is expiring.

A number of changes are proposed to the provisions pertaining to the assignment of MIR values including setting default MIR values for ingredients that are not listed in the Tables of MIR Values. The default MIR values proposed are designed to provide flexibility, but are set such that the reactivity of the ingredient is likely lower, and are, therefore, conservative.

4. Proposed Repeal of the Hairspray Credit Program

The Hairspray Credit Program is a voluntary program that was designed to encourage early and/or over compliance with the 55 percent by weight VOC hairspray standard by issuing credits that could be used to, among other things, obtain additional time to comply with VOC standards for other consumer products.

Because ability to use credits ended on January 1, 2010, staff is recommending that the Hairspray Credit Program be repealed in its entirety.

5. Proposal for Tables of MIR Values

Staff is proposing to reorganize the "Oxygenated Organics" section of the Tables of MIR Values. Rather than the current organization by carbon number, staff would list the compounds by chemical class to make them easier to find.

6. Proposal for Method 310

Staff is proposing changes to Method 310 to improve analysis of consumer products and aerosol coatings for compliance. Expired procedures would be deleted, protocols for analyzing for hydrocarbon solvents would be added, and modifications would be made to the procedures to analyze the VOC content of "Fabric Softener – Single Use Dryer Product."

E. Compliance with the Proposed Limits

Staff has proposed limits that are commercially and technologically feasible within the timeframes provided by identifying reformulation pathways or ensuring that products are already being sold that comply with the limits.

1. Consumer Products

The most likely reformulation pathways for manufacturers of noncomplying "Mist Spray Adhesive," "Screen Printing Adhesive," and "Web Spray Adhesive" products include use of exempt solvents, increasing product solids content, developing water-based technology, or formulating with a non-VOC propellant. Staff is also aware of new technologies that have become available since the survey was conducted.

We expect manufacturers of aerosol "Multi-purpose Solvent" and "Paint Thinner" products to employ the same reformulation options to meet the proposed 10 percent by weight VOC limit as those used to reformulate nonaerosol products to meet the 3 percent VOC limit coming into effect in December 2013, with the addition of a propellant. Manufacturers may comply with these requirements by formulating products using a non-VOC propellant, exempt solvents, or using emulsion technology using exempt VOCs.

A 25 g/L limit for nonaerosol "Multi-purpose Solvent" and "Paint Thinner" products has been in effect since January 1, 2011, in the SCAQMD. Products sold in the SCAQMD should already be in full compliance. Our proposal to duplicate these SCAQMD provisions in ARB's rule is designed to stem circumvention, and ensure that the expected benefits from SCAQMD's rule are fully realized.

To meet the proposed prohibition on the use of methylene chloride, perchloroethylene, trichloroethylene, or compounds with GWP limit above 150 will not require reformulation because no use of these compounds was reported. The proposals are designed to prevent future use of these compounds.

2. Aerosol Coatings

Our evaluation of the aerosol coating categories shows that there are complying products being sold and that a variety of reformulation options are available. Rather than elimination of ROCs, the limits require substitution of higher reactive solvents and propellants with lower reactive ingredients. Increased use of acetone or methyl acetate is a likely option. Depending upon the resin system used, reformulation options include use of n-butyl acetate, isobutyl acetate, n-propyl propionate, isobutyl butyrate and other esters, ketones, and glycol ethers. The reactivity of the coatings could also be lowered through the use of water-based formulations, such as water-soluble alkyd systems.

F. Environmental Impacts

Based on staff's analysis, we have determined that implementing the proposed amendments will have an overall beneficial impact on the environment because VOC emissions from consumer products and the ozone forming potential (OFP) of aerosol coatings will be reduced. No significant adverse environmental impacts were identified. No alternatives or mitigation measures were identified because no adverse

environmental impacts are expected. A complete analysis of the potential environmental impacts of the proposal is contained in Chapter V of the Staff Report.

The proposed amendments would reduce VOC emissions by about four tons per day Other proposals would ensure that use of compounds with higher GWPs, methylene chloride, perchloroethylene, and trichloroethylene does not begin in certain products.

The amendments to provide further clarity should also aid stakeholders in understanding how to comply, thereby improving overall compliance with the regulations. In addition, the provisions proposed for "Multi-purpose Solvent" and "Paint Thinner" products would result in fully realizing the expected air quality benefits.

Related to amendments to the Consumer Products Regulation, staff is proposing to delay from December 31, 2015, to December 31, 2018, a 10 percent by weight VOC limit for "Multi-purpose Lubricant" products to address commercial and technological feasibility. This proposed amendment would delay for three years an expected 1.3 tons per day VOC reductions.

Related to proposed amendments to the Aerosol Coatings Regulation staff has identified the potential for a very small increase in the OFP of "Hobby/Model/Craft" and "Shellac Sealer" coatings. To streamline the regulation, staff is proposing to delete the subcategories for these coatings and set a single limit effective January 1, 2015. In the interim, until the revised limits become effective, manufacturers of these coatings could reformulate their products to increase the OFP of their products. If all coatings were to reformulate we estimate that there would be an equivalent VOC increase of less than 0.1 ton per day for several months. Products reported in the 2010 Survey, in the "Hobby/Model/Craft" and "Shellac Sealer" coatings categories are already in full compliance with the lower limits proposed to become effective on January 1, 2015. Therefore, staff does not expect an increase to occur.

However, overall emissions from consumer products will continue to decline. We expect a reduction in VOC emissions of about 5 tons per day to occur beginning December 31, 2013, and a further reduction of about 0.2 tons per day to occur beginning December 31, 2014, from VOC limits proposed for adoption in 2009 and 2010 rulemakings. Additionally, beginning in 2017, an equivalent VOC reduction of about four tons per day will be realized from implementation of these proposed amendments.

Because of this, staff has determined that these proposals would not result in a significant adverse impact. No significant adverse impacts were identified.

G. Environmental Justice

Staff has determined that the amendments proposed in this rulemaking are consistent with our environmental justice policies. The proposed amendments would reduce VOC emissions by about 4 tons per day statewide. Of this amount, about 1.8 tons per day reduction would occur in the SCAQMD. Use of certain TACs and compounds with high

GWP would also be prohibited in several categories. Many of the proposals are also designed to improve compliance.

Generally, use of consumer products and aerosol coatings is fairly uniform across the State, tracking with housing units, and their emissions are spread over the course of a day, rather than concentrated at a particular time of day. For these reasons, we believe that reducing emissions from the use of consumer products and aerosol coatings would benefit all Californians. We do not expect any communities, especially those with low-income and minority populations, regardless of location, to be disproportionally impacted by adoption of the proposed amendments.

H. Economic Impacts

The economic impacts of the proposed amendments are summarized here. Our complete analysis of these impacts is contained in Chapter VII of the Staff Report.

1. Overall Cost

Staff has estimated that the overall cost to comply with the proposed limits is about $5,300,000 per year for five years, or about $26.5 million in total. The cost includes both recurring (*e.g.*, raw materials) and nonrecurring (*e.g.*, research and development) costs.

2. Cost Effectiveness

Staff also determined the "dollars to be spent per pound of VOC reduced," or cost effectiveness (CE). The CE of the proposed amendments has been calculated to be about $1.82 per pound of VOC equivalent emissions reduced. This cost effectiveness compares favorably with other recent consumer products rulemakings. The CE of rulemakings in 2006, 2008, 2009, and 2010 was about $2.35, $6.23, and $0.29, and $0.98 per pound of VOC reduced, respectively.

3. Return on Owners' Equity (ROE)

ROE is a calculation which compares a company's percentage reduction in profitability before and after incurring the costs associated with the proposed amendments. The analysis found that the overall reduction in profitability ranges from negligible to about 6.3 percent. While these percentages are not considered significant, the potential exists that some manufacturers may experience a significant impact in their profitability.

We have determined that overall, most affected businesses' profitability will not be adversely affected. If they are unable to absorb all or a portion of the compliance costs, these costs will be passed through to the consumer.

4. Impacts on California Businesses

Because we found that the proposed amendments would not significantly alter the profitability of most businesses, as shown in our ROE analysis, we do not expect a noticeable change in employment; business creation; elimination or expansion; and business competitiveness in California. However, the proposed amendments may impose economic hardship on businesses with very little or no margin of profitability.

5. Increased Cost to Consumers

As a result of this proposal, consumers may have to pay more for some products, depending upon the extent to which manufacturers pass along their compliance costs. If all assumed compliance costs are passed on to the consumer, we estimate the average price of aerosol adhesives and aerosol "Multi-purpose Solvent" and "Paint Thinner" would increase by no more than $0.12 to $0.42 per unit. For products representing over 95 percent of aerosol coating sales, we estimate the cost per unit increase would range from $0.05 to $0.53. For some specialized aerosol coting products, the cost to the consumer could be higher.

We also estimated that a household annually purchases less than one unit of aerosol adhesive or aerosol "Multi-purpose Solvent" or "Paint Thinner" product, and less than three units of aerosol coatings. The consumer's annual cost increase to purchase an aerosol adhesive product or aerosol "Multi-purpose Solvent" or "Paint Thinner" would be about $0.12 to $0.42. The consumer's annual cost increase to purchase three cans of Aerosol Coating Products would increase by about $0.15 to $1.59 per year.

6. Fiscal Impacts

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

I. Regulatory Development Process

Our process for development of these proposed amendments included a number of formal and informal opportunities for public participation. Consumer product manufacturers, chemical producers, marketers, trade associations, SCAQMD, U.S. EPA and various other stakeholders participated in the process.

The public process to develop the proposed amendments for aerosol adhesives and aerosol coating categories began in January 2011 with the release of the 2010 Consumer & Commercial Products Survey Update for Aerosol Coating and Adhesive

Products (2010 Survey). The 2010 Survey provides detailed information on sales and product formulations which allows for calculation of emissions. The data also serves as a basis for evaluating potential limits and reformulation strategies to ensure that the maximum feasible emission reductions are achieved. Summaries of the data were shared with stakeholders in late 2011 and early 2012.

Staff also held public workshops on September 12, 2012, February 26, 2013, and April 24, 2013, to discuss the amendments proposed in this rulemaking. The information discussed at the workshops was posted on our consumer products program webpage, and stakeholders were notified *via* a list server announcement. The workshop notices were distributed *via* the consumer products electronic list server, which has over 2,800 subscribers.

In addition to workshops, staff held discussions with individual stakeholders and associations representing manufacturers, and distributors, of consumer products. Staff also participated in two technical seminars conducted by the aerosol coating industry in our Sacramento offices. These seminars provided an opportunity for staff to gather technical information regarding the opportunities and challenges facing the industry in reformulating products.

In 2012, staff also conducted technical assessments to evaluate the technical feasibility of the 25 percent by weight VOC limit for "Multi-purpose Lubricant" products and the 3 percent by weight VOC limit for "Multi-purpose Solvent" and "Paint Thinner" products. These limits will become effective on December 31, 2013.

J. Recommendation

Staff recommends that the Board adopt the proposed amendments to the Antiperspirants and Deodorants Regulation, the California Consumer Products Regulation, the Aerosol Coating Products Regulation, and the Tables of MIR Values. The proposals would modify, clarify, streamline, and improve enforcement of the regulations. Proposed VOC limits for various consumer product categories would reduce VOC emissions by about 0.4 tons per day, and the Reactivity Limits for aerosol coatings would reduce equivalent VOC emissions by about 3.7 tons per day. The amendments would also ensure that the limits are commercially and technologically feasible within the timeframes provided. Staff also recommends that the Board repeal the Hairspray Credit Program as its usefulness has expired. Additionally, staff recommends that the proposed modifications to Method 310 be adopted as they are necessary to set forth testing procedures to determine compliance with various limits.

I. Introduction and Background

In this rulemaking, California Air Resources Board (ARB or Board) staff is proposing amendments to the Antiperspirants and Deodorants Regulation, the Consumer Products Regulation, the Aerosol Coating Products Regulation, the Tables of Maximum Incremental Reactivity (MIR) Values, and Method 310. We are also proposing to repeal the Hairspray Credit Program as its usefulness has expired.

This report is ARB 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 Antiperspirants and Deodorants Regulation, the California Consumer Products Regulation, the Aerosol Coating Products Regulation, the Tables of MIR Values, Method 310, and proposed repeal of the Hairspray Credit Program. The proposed amendments to the regulations, Tables of MIR Values, and Method 310 are found in Appendices A through F of this document.

Included in this report is the following information:

- the purpose for proposing the amendments;
- background information on the consumer products (including aerosol coatings) program;
- 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 description of categories for which requirements are proposed;
- an analysis of the expected environmental impacts;
- an assessment of how the proposed action aligns with the ARB's environmental justice policies;
- the economic impacts associated with complying with the proposed amendments;
- a summary and rationale for the regulatory proposals; and
- the public process staff used to develop the proposal.

A. Specific Purpose for the Adoption, Amendment, or Repeal

The primary purpose of the proposed amendments is to lower the impacts that volatile organic compound (VOC) emissions from use of aerosol coatings and consumer products have on the formation of ground-level ozone. VOCs are precursors to the formation of ground-level ozone and secondary particulate matter. Thus, the proposed

amendments are designed to work toward improving air quality in California. The purposes for proposing other amendments include providing clarity to a number of definitions, providing reformulation flexibility by exempting a compound from the VOC definition, extending a compliance date for a VOC standard to address commercial and technological feasibility, and repealing provisions that have expired. The purpose of other proposals is to stem circumvention of the intent of provisions for "Multi-purpose Solvent" and "Paint Thinner" products, particularly for products sold in the South Coast Air Quality Management District (SCAQMD). The purpose for proposing amendments to Method 310 is to establish provisions to test various products for compliance.

The sections proposed for amendment to fulfill these purposes are codified in title 17, California Code of Regulations, (CCR) sections 94500-94506.5, 94507-94517, 94520-94528, 94560-94575, and 94700-94701.

B. Background

To date, the Board has taken numerous actions to fulfill the legislative mandate pertaining to the regulation of consumer products. An overview of the ARB'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 ARB'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 ARB's climate change mitigation strategy. Authority to mitigate potential adverse 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.

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

a. Health and Safety Code section 41712

As part of the State's effort to reduce air pollutants, in 1988, the 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 ARB 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 ARB to develop regulations and consider market-based compliance mechanisms that will ultimately restore California's GHG emissions to the 1990 baseline year by 2020. Beyond the requirements of AB 32, a Governor's Executive Order EO-S-03-05 calls for an 80 percent GHG reduction from 1990 levels by 2050.

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 the legislative mandates pertaining to the regulation of consumer products. Three regulations have set VOC limits for 129 consumer product categories.

The three regulations that set VOC limits for consumer products, when fully effective, will result in reducing VOC emissions by about 50 percent compared to 1990 levels. By 2020, limits on the use of ingredients with higher global warming potential (GWP) values will provide reductions of approximately 0.23 million metric tons of carbon dioxide equivalents (MMT CO_2e) per year.

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

In addition, two voluntary regulations, the Alternative Control Plan (ACP) and the Hairspray Credit Program have been adopted to provide compliance flexibility to companies. The five consumer product regulations are codified in title 17, CCR, 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);
- Alternative Control Plan (Article 4, sections 94540-94555); and
- Hairspray Credit Program (Article 5, sections 94560-94575).

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 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 they 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 passing 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, 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, ARB 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 United States Environmental Protection Agency (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 ozone standard and will address SIP deadlines and other implementation issues. We are targeting 2015 to submit new SIPs for the 0.075 ppm ozone standard.

Up-to-date information on SIP activities can be found on ARB'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 (HFC) or carbon dioxide (CO_2). To a lesser extent some GHGs are used as solvents. As mentioned previously, a reduction of 0.23 MMT CO_2e has already been achieved. 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.*). 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 currently regulated under the ARB regulation. Of the categories that are regulated under both regulations, many of ARB's limits are more stringent than the national limits. Therefore, ARB'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.*) modeled on ARB'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.

While the limits in both rules are similar, ARB's regulation is more effective because it applies to all products sold, supplied, offered for sale, or manufactured for sale in California. U.S. EPA's rule exempts from compliance manufacturers whose national sales are less than 7,500 kilograms (16,500 pounds) per year. ARB's regulation also applies to commercial application of aerosol coatings.

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.

As of the date of this staff report, there are no national consumer products regulations related to reducing GHG emissions.

C. Regulatory History

This section summarizes the history of the regulation of consumer products with emphasis on the categories that are the subject of this rulemaking. A more detailed regulatory history is provided in Chapter IV.

1. Antiperspirants and Deodorants Regulation

Regulation of consumer products began in 1989 with adoption of the Antiperspirants and Deodorants Regulation. At that time, the Board established standards based on the vapor pressure of VOCs. The Antiperspirants and Deodorants Regulation has been amended several times, with the most recent amendments proposed for adoption in October 2000.

2. Consumer Products Regulation

The "general" Consumer Products Regulation was approved for adoption in 1990 and has been amended numerous times. The most recent amendments to the Consumer Products Regulation were approved for adoption on October 18, 2012. These amendments clarified the requirements for "Automotive Windshield Washer Fluid."

In the Consumer Products Regulation, we are proposing new or lower VOC limits for Aerosol Adhesives, and new VOC limits for aerosol "Multi-purpose Solvent" and "Paint Thinner" categories. Additional amendments to clarify existing regulatory provisions are also proposed. A summary of the regulatory history for these categories follows.

a. Aerosol Adhesives

Aerosol Adhesives were first regulated in 1992 as part of the "Phase II" amendments. Modifications to the original amendments to address commercial and technological feasibility were proposed for adoption in May 2000. These amendments also divided Aerosol Adhesives into "Mist Spray Adhesive," "Web Spray Adhesive," and "Special Purpose Spray Adhesive" categories. The "Special Purpose Spray Adhesive" category was further divided into seven subcategories. These amendments also prohibited the use of methylene chloride, perchloroethylene, and trichloroethylene in aerosol adhesives.

b. Multi-purpose Solvent and Paint Thinner Products

In 2009, the Board approved for adoption VOC limits for liquid "Multi-purpose Solvent" and "Paint Thinner" products. A VOC limit of 30 percent by weight became effective on December 31, 2010. A lower VOC limit of 3 percent by weight will become effective on December 31, 2013. The regulation also prohibited the use of methylene chloride, perchloroethylene, and trichloroethylene and limited the use of aromatic compounds to 1 percent by weight. These provisions became effective December 31, 2010.

Also relevant to the history of regulating "Paint Thinner" and "Multi-purpose Solvent" products, on March 6, 2009, SCAQMD adopted Rule 1143, "Consumer Paint Thinners and Multi-Purpose Solvents" (Rule 1143) which applies to consumer "Paint Thinner" and "Multi-purpose Solvent" products sold in the SCAQMD.

3. Aerosol Coating Products Regulation

The Aerosol Coating Products Regulation was adopted in 1995 and has been amended several times. In 1995, mass-based VOC limits were adopted for 6 "General Coating" categories and 29 "Specialty Coating" categories. Amendments in 1998 addressed the commercial and technological feasibility of some of the VOC limits. In 2000, the regulation was amended to establish Reactivity Limits based on the MIR scale. The Reactivity Limits for the general categories became effective June 1, 2002, and the limits for the specialty categories became effective January 1, 2003. Minor amendments in 2004 and 2006 clarified exemptions and test methods, respectively.

4. Hairspray Credit Program

In November 1997, the Board approved for adoption the Hairspray Credit Program. Under this voluntary program, manufacturers who complied with the second-tier 55 percent by weight VOC hairspray standard before the June 1, 1999, effective date could be awarded credits until the standard took effect. In addition, manufacturers who formulated hairsprays with VOC levels below 55 percent could be awarded credits for products manufactured up to January 1, 2005. These credits could be used to obtain additional time to comply with VOC standards for other consumer products, to mitigate excess emissions resulting from the granting of a variance from the hairspray standard, or to offset shortfalls under any ACP. Any accrued credits expired after five years or in 2005, whichever was later.

5. Tables of MIR Values

Tables of MIR Values were first proposed for adoption in 2000 along with amendments to the Aerosol Coating Products Regulation. The tables are used to determine the reactivity content of aerosol coatings. Amendments to these tables were adopted in 2004 and 2010 to reflect updated science.

6. 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 determine compliance with various regulatory provisions. In 2011, the method was amended to specify procedures for analyzing the aromatic compound content in "Multi-purpose Solvent" and "Paint Thinner" products and to specify the procedures for analyzing for the VOC content of "Fabric Softener-Single Use Dryer Product."

II. Statement of Reasons

In this chapter we describe the problems and issues that the proposed amendments are intended to address. The proposed solutions to the problems and issues, along with the rationale supporting the proposed solutions are described.

A. Description of Public Problem Proposal is Intended to Address

The overarching problem is that the majority of California residents continue to be exposed to pollutant concentrations that exceed health-based standards for ozone and particulate matter. Volatile organic compound emissions from consumer products (which include aerosol coatings) are known to contribute to the formation of ground-level ozone and particulate matter. Despite developing regulations to reduce consumer products' VOC emissions by over 209 tons per day, it is estimated that current VOC emissions are approximately 205 tons per day. This represents about 13 percent of the overall statewide VOC inventory. Moreover, without further action, consumer product VOC emissions are expected to grow, as California's population grows, to approximately 213 tons per day statewide in 2020. In fact, it is predicted that emissions from use of consumer products will be the largest source of VOC emissions in the SCAQMD, the region of California with the most severe pollution problem.

1. Problems Identified with the Consumer Products Regulation

Beyond the need for further emission reductions as mentioned above, stakeholders have also asked for guidance on interpreting a number of definitions. Specifically, within the Consumer Products Regulation they have asked for:

- a better distinction between "General Purpose" and "Single Purpose" as it applies to cleaning and degreasing products;
- clarification on the types of products that are regulated as "Hair Styling Products;"
- clarification on the applicability of the regulation to various lubricant products; and
- a VOC exemption to provide an additional reformulation option (this would be applicable for products regulated under the Antiperspirants and Deodorants Regulation as well).

In reviewing the Consumer Products Regulation staff also identified a number of additional definitions that could be better organized, improved by deleting expired portions, or could be more consistent with the Aerosol Coating Products Regulation.

In addition, staff has determined that the regulation of "Paint Thinner" and "Multi-purpose Solvent" products has not resulted in the full benefits expected, especially for those products sold in the SCAQMD. Unclear definitions and exemption criteria have led to noncompliance with the regulatory intent and expected emission reductions have not been fully achieved. Stakeholders have also expressed ongoing concerns related to flammability of "Multi-purpose Solvent" and "Paint Thinner" products.

Another issue that has come to light pertains to "Multi-purpose Lubricant" products. A technical assessment conducted as to the feasibility of a 25 percent VOC limit scheduled to become effective at the end of this year (2013) indicated that manufacturers were on track to comply. However, the assessment also revealed that the resources expended to reformulate to meet this limit exceeded predictions. Hence, manufacturers are behind schedule on the research and development that will be necessary to meet the more challenging 10 percent VOC limit scheduled to become effective at the end of 2015.

2. Problems Identified with the Aerosol Coating Products Regulation

The Aerosol Coating Products Regulation has not been substantively updated or amended since 2000. In light of this a number of regulatory improvements are deemed necessary, including:

- clarification of the applicability of the regulation;
- modification, addition, and deletion of definitions to improve clarity;
- providing additional clarity on calculating a product's reactivity;
- updating to use more recent MIR values that reflect the latest science;
- promoting consistency with the Consumer Products Regulation;
- clarifications on the enforcement process; and
- streamlining of the regulation by deleting expired provisions.

In addition, there is a need to further reduce the impacts of aerosol coating product emissions to work towards attaining ambient air quality standards. Lowering of Reactivity Limits would also ensure that the maximum feasible reductions continue to be achieved.

3. Problems Identified with Hairspray Credit Program

To promote regulatory streamlining the Hairspray Credit Program should be repealed as the ability to generate or use credits has expired.

4. Problems Identified with Method 310

Among other things, ARB Method 310 is used to verify compliance with the Consumer Products Regulation and the Aerosol Coating Products Regulation. To ensure that various consumer products and aerosol coating products can be fully analyzed to determine compliance with various regulatory provisions, updates, additions, and deletions to methods are necessary. In particular, the methods to analyze for "Fabric Softener – Single Use Dryer Product" and hydrocarbon solvents used in aerosol coating products need to be improved. Analytical procedures to determine compliance with the provisions for "Paint Thinner" and "Multi-purpose Solvent" products sold in the SCAQMD are also needed.

B. Proposed Solutions to the Problems

To rectify the problems described in Part A, staff has identified a number of solutions and is proposing amendments to implement the solutions. In this section, the proposed solutions are summarized. Chapter III has a summary of the proposed amendments.

1. Solutions to the Problems Identified with the Consumer Products Regulation

To address the need for additional VOC emission reductions, staff is proposing to set lower VOC limits for "Mist Spray Adhesive" and "Web Spray Adhesive" categories, and is proposing a new VOC limit for the "Screen Printing Adhesive" subcategory of "Special Purpose Spray Adhesive."

To ensure that the intended benefits from the regulation of "Paint Thinner" and "Multi-purpose Solvent" are achieved, a number of modifications are being proposed. First the definitions for these categories would be modified to make it clear that all product forms are regulated. Staff is also proposing to strengthen exemption criteria for "Industrial Maintenance Coating," "Zinc Rich Primer," and "High Temperature Coating" thinners such that *only* those products used to thin these specialty coatings qualify for the exemption.

At present, "Paint Thinner" and "Multi-purpose Solvent" products sold in the SCAQMD must comply with the provisions of both ARB's regulation and SCAQMD's Rule 1143. However, language in the definition of "Multi-purpose Solvent" in Rule 1143 has allowed products to circumvent complying with the rule through a labeling loophole. To correct this situation, staff is proposing that the provisions of Rule 1143 be duplicated in ARB's regulation to stem the circumvention.

In addition, VOC limits for aerosol forms of "Paint Thinner" and "Multi-purpose Solvent" products are proposed. Because these products may be reformulated in a manner that increases flammability, we are proposing to extend for an additional two years the

provision that prohibits the sale of flammable or extremely flammable "Multi-purpose Solvent" or "Paint Thinner" unless they are labeled to warn the consumer of this hazard.

To solve the problem with understanding the distinction between "General Purpose" and "Single Purpose" as it applies to cleaning and degreasing products, staff is proposing to amend the definitions of "General Purpose Cleaner" and "General Purpose Degreaser" to better describe the types of products that meet the definition. Additionally, definitions of "Single Purpose Cleaner" and "Single Purpose Degreaser" are proposed. These definitions would explicitly specify that these products are not "General Purpose Cleaner" or "General Purpose Degreaser" products. While no VOC limits are proposed for "Single Purpose Cleaner" or "Single Purpose Degreaser" products, a prohibition on the use of certain toxic compounds is proposed.

To clarify the types of products that are regulated as "Hair Styling Products," staff is proposing to define the products that do not meet the definition and explicitly exclude them from the definition. In particular, staff would clarify whether products designed solely to protect hair during the heat styling process and dry shampoo products are considered "Hair Styling Products." The "Hair Gel" definition is also proposed for deletion.

Related to feasibility of VOC limits for "Multi-purpose Lubricant" products, we are proposing to provide more time beyond 2015 to meet the 10 percent VOC limit. The extension until 2018 should allow manufacturers the necessary time to develop products that comply with the 10 percent VOC limit. The timeframe for conducting a further technical assessment of the VOC limit would also be extended.

We are proposing to amend the definition for "Dry Lubricant" to clarify that the intent of the regulation has always been that any "Dry Lubricant" product is exempt from compliance with VOC limits for various other lubricant product categories. We are also proposing to amend the definition for "Gear, Chain, or Wire Lubricant" to clarify that lubricants labeled solely for use on chains of chain-driven vehicles are not included.

To provide manufacturers with an additional formulation option to meet lower VOC limits, an exemption from the VOC definition is proposed for 1,3,3,3-Tetrafluoropropene (HFO-1234ze). The compound would be exempted from the VOC definition in both the Antiperspirants and Deodorants Regulation and the Consumer Products Regulation.

With the goal of further improving or clarifying regulatory provisions, staff is proposing to make a number of changes to definitions to better organize, delete or add language to clarify our intent, provide consistency with definitions in the Aerosol Coating Products Regulation, and streamline the regulation by deleting expired provisions.

2. Solutions to the Problems Identified with the Aerosol Coating Products Regulation

All Aerosol Coating Products have always been subject to the regulation. Staff is proposing an amendment to explicitly state this in section 94520, Applicability.

Staff is proposing to modify, add, or delete a number of definitions to assist stakeholders in their understanding of the regulation. Provisions related to sell-through and labeling are also being proposed for modification to provide consistency with the Consumer Products Regulation.

To further reduce the ozone forming potential (OFP) of Aerosol Coating Products, staff is proposing to set new or lower Reactivity Limits for aerosol coatings. The Reactivity Limit is expressed as the product weighted maximum incremental reactivity (PWMIR) and is grams of ozone per gram product (g O^3/g product).

To ensure that manufacturers understand how to calculate a product's PWMIR, staff is proposing a number of changes. The amendments would:

- establish a default MIR value to use if an MIR value does not exist in the Tables of MIR values;
- allow manufacturers to use the MIR value for an isomer of a compound if a value for the isomer exists in the Tables of MIR values;
- establish a default MIR value for fragrance compounds; and
- provide further clarity on ingredients that are considered nonreactive.

The proposed amendments would also establish that, as soon as the amendments become effective, manufacturers would be required to use the 2010 MIR values rather than the 2001 values.

As part of the compliance process manufacturers have been required to supply formulation data upon notification. Amendments are being proposed to further clarify what types of information need to be provided, but also allow more time to supply the information. The amendments would also specify that failure to provide the information, or supply incorrect information, is a violation. The proposal would also establish MIR values to be used to determine the weighted reactivity of hydrocarbon solvents.

The existing regulation contains both mass-based VOC and reactivity-based ROC provisions. The mass-based provisions have expired. To streamline the regulation, staff is proposing to delete the expired provisions.

3. Solutions to the Problem Identified with the Hairspray Credit Program Regulation

Because the ability to use credits ended on January 1, 2010, staff is proposing that the Hairspray Credit Program be repealed in its entirety, to streamline the suite of consumer product regulations.

4. Solutions to the Problems Identified with Method 310

We are proposing changes to Method 310 to improve analysis of consumer products and aerosol coatings for compliance. Amendments include additional procedures to analyze aerosol coatings, establish testing procedures for "Paint Thinner" and "Multi-purpose Solvent" products sold in the SCAQMD, and a modification of the equation for calculating the total grams of VOC per sheet for "Fabric Softener – Single Use Dryer Product." Expired test procedures are also proposed for deletion.

C. Rationale Supporting the Proposed Solutions

The proposed amendments are designed to improve air quality, assist stakeholders to better understand the regulations, and ensure that expected benefits from the regulations are fully achieved, while ensuring the proposed limits are commercially and technologically feasible within the timeframes provided.

Because the majority of California residents live in areas that exceed ambient air quality standards, emission reductions continue to be necessary. These proposed amendments would reduce VOC emissions from several consumer product categories and lower the OFP of Aerosol Coating Products. Therefore, these amendments represent further progress toward improving air quality.

Staff has also determined that the limits proposed are commercially and technologically feasible within the timeframes provided, by identifying reformulation pathways or ensuring that products are already being sold that comply with the limits. Further information on the categories for which new and lower limits are being proposed is contained in Chapter IV. Through an analysis, staff also determined that providing a VOC exemption for HFO-1234ze would provide reformulation flexibility and would not likely result in any potential adverse impacts on health or other media.

The other proposals would:

- streamline and provide additional clarity and consistency between regulations;
- strengthen the enforcement process;
- ensure the feasibility of the future effective VOC limit for "Multi-purpose Lubricant" products;

- stem circumvention of the regulatory intent pertaining to "Multi-purpose Solvent" and "Paint Thinner" products; and
- where necessary, ensure that certain toxic compounds and compounds with high global warming potential are not used.

Clarifying the regulations should lead to improved compliance, while strengthening of the enforcement process ensures a level playing field. Other proposals would ensure that expected emission reductions are fully achieved.

D. Alternatives Considered

Government Code section 11346.2 requires ARB to consider and evaluate reasonable alternatives to the proposed regulation and provide reasons for rejecting those alternatives. We identified two alternative approaches to the current proposal: "No action," and "set more stringent VOC and reactivity limits." Our rationale for rejecting these alternatives, in favor of the proposal chosen, follows.

1. Alternative One – No Action

A "no action" alternative would be to forego adopting the proposed amendments, or delay adoption of the proposed measures. The "no action" alternative would result in failing to make progress toward meeting the ambient air quality standards. In addition, the citizens of California would not benefit from the improved air quality that would result from the reduction of emissions being proposed. This alternative would have no cost to business.

2. Alternative Two – Set More Stringent VOC and Reactivity Limits

Staff thoroughly evaluated each category for which a limit is proposed. Limits were proposed based on low emitting technologies reported in the 2010 Survey. Stakeholders provided additional information pertinent to the categories and, in some cases, proposed alternative limits. We evaluated all comments and determined the most feasible limit and effective dates from all of the alternatives proposed or considered. The final proposal contains limits that were determined to obtain the maximum feasible emissions reduction, were commercially and technologically feasible, and preserved product forms.

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III. Summary of Proposed Action and Recommendation

This chapter summarizes the proposed amendments to the Antiperspirants and Deodorants Regulation, the Consumer Products Regulation, the Aerosol Coating Products Regulation, the Tables of MIR Values, and Method 310. The proposed repeal of the Hairspray Credit Program is also summarized. A more detailed description of each proposed amendment, along with its rationale, is presented in Chapter VIII.

A. Proposed Amendments to the Antiperspirants and Deodorants Regulation

Staff is proposing amendments to sections 94501 and 94506 of the Antiperspirants and Deodorants Regulation. The entire regulation is codified in title 17, CCR, sections 94500-94506.5.

In section 94501 staff is proposing to modify the VOC definition to provide an exemption for HFO-1234ze. The rationale for this proposal is set forth in section B.1 of this Chapter. Section 94506 would be amended to update the reference to Method 310.

B. Proposed Amendments to the Consumer Products Regulation

Staff is proposing amendments to sections 94508, 94509, 94512, 94513, and 94515 of the Consumer Products Regulation. The entire regulation is codified in title 17, CCR, sections 94507-94517.

1. Definitions, section 94508

A list of twenty-two definitions proposed for modification, six proposed for addition, and one proposed for deletion is provided in Table III-1. Definitions are contained in section 94508.

Table III-1
Proposed Definitional Amendments

Modified Definitions	
Adhesive	Hair Finishing Spray
Aerosol Adhesive	Hair Styling Product
Air Freshener	Insecticide
Artist's Solvent/Thinner	Lubricant
Construction, Panel or Floor Covering Adhesive	Multi-purpose Solvent
	Paint Thinner
Deodorant Body Spray	Rubber/Vinyl Protectant
Fabric Protectant	Temporary Hair Color
Footwear or Leather Care Product	Undercoating
General Purpose Cleaner	Volatile Organic Compound
General Purpose Degreaser	Waterproofer
Hair Shine	
New Definitions	
No Rinse Shampoo	Single Purpose Cleaner
Nonaerosol	Single Purpose Degreaser
Screen Printing Adhesive	Thermal Protectant
Deleted Definition	
Hair Styling Gel	

The proposed amendments to existing definitions would streamline the regulation, clarify various provisions, provide consistency, and improve enforceability. The amendments would also reorganize several definitions to make them easier to find. The newly proposed definitions would clarify applicability of existing and new category requirements. Deletion of the term "Hair Styling Gel" is proposed because it is no longer needed. Several of the definitions proposed for modification warrant a further description.

"Lubricant"

We are proposing to modify the definitions for four "Lubricant" subcategories. The definition for "Dry Lubricant" would be modified to explicitly state that any "Dry Lubricant," regardless of end-use function, is a "Dry Lubricant" and not subject to any VOC standard for any other regulated "Lubricant." The "Multi-purpose Lubricant" and "Silicone-based Multi-purpose Lubricant" definitions would be modified to specify that lubricants labeled solely for a single purpose are not "Multi-purpose Lubricants." The definition for "Gear, Chain, or Wire Lubricant" would be modified to specify that lubricants labeled solely for use on chains of chain-driven vehicles are not included.

"Multi-purpose Solvent" and "Paint Thinner"

Staff is proposing a number of modifications to the definitions of "Multi-purpose Solvent" and "Paint Thinner." First, we would indicate that these categories include any product form rather than just liquids as they are currently defined. We are also proposing to

strengthen the exemption criteria for specialty thinning products designed for use with "Industrial Maintenance Coatings," "Zinc-Rich Primers," and "High Temperature Coatings." Certain aerosol products perform a function to blend a spot repair to match the appearance of an adjacent area's existing coating. Products performing this function are sometimes referred to as "edge blenders" and may or may not contain a resin. Staff is proposing to define those "edge blenders" containing a resin as "Uniform Finish Coating," and is also proposing a Reactivity Limit for this category. However, to ensure that all such edge blending products are regulated, those containing no resins would be defined as "Paint Thinners" in the Consumer Products Regulation and would be subject to the proposed 10 percent by weight mass-based VOC limit proposed for aerosol "Paint Thinner" products. Additional clarifications are also proposed.

"No Rinse Shampoo" and "Thermal Protectant"

Staff is proposing to define "No Rinse Shampoo" and "Thermal Protectant" to clarify that these products are not "Hair Styling Products" as long as they are labeled solely as "No Rinse Shampoo" or "Thermal Protectant." A "No Rinse Shampoo" would be defined as a product exclusively used to be applied to hair that is dry to clean, absorb oil, or eliminate odor, that is subsequently removed from the hair without the use of water. A "Thermal Protectant" would be defined as a product used solely to protect hair from heated styling appliances.

"Screen Printing Adhesive"

A new definition for "Screen Printing Adhesive" is proposed to describe a new subcategory of "Special Purpose Aerosol Adhesive" product. Such a product is used to hold garments or fabric in place during the screen printing process.

"Single Purpose Cleaner" and "Single Purpose Degreaser"

Staff is proposing new definitions for "Single Purpose Cleaner" and "Single Purpose Degreaser" to clarify that such products designed for use on a single object or its parts are not "General Purpose Cleaner" or "General Purpose Degreaser," respectively.

"Volatile Organic Compound" (VOC)

HFO-1234ze is a compound that could be used as a consumer product aerosol propellant. It has the potential to replace VOC hydrocarbon propellants and exempt HFC propellants with high GWP values such as hydrofluorocarbon-134a (HFC-134a) and hydrofluorocarbon-152a (HFC-152a). On August 8, 2012, staff received a petition from Honeywell requesting that ARB provide an exemption for HFO-1234ze in the Consumer Products Regulation (Honeywell, 2012). This request followed action by the U.S. EPA on June 22, 2012, to add HFO-1234ze to the list of compounds excluded from the federal VOC definition. In providing the exemption, U.S. EPA determined that HFO-1234ze has negligible impacts on ground-level ozone (U.S. EPA, 2012).

In evaluating the petition, staff conducted a multi-media impacts assessment and concurred with U.S. EPA's findings that HFO-1234ze has negligible impacts on ground-level ozone formation. Information also indicates that HFO-1234ze has a low GWP value of 6, and is non-ozone depleting (U. S. EPA, 2013). Staff also evaluated the chemical to determine if any potential adverse health impacts could result from use of HFO-1234ze in various consumer products.

As a first step, staff requested that the Office of Environmental Health Hazard Assessment (OEHHA) review the available toxicological data to develop appropriate health values to be used in an exposure assessment. As a result, OEHHA developed acute and chronic screening reference exposure levels (REL) of 1,600 and 2 ppm (7,500 and 9 milligrams per cubic meter), respectively (OEHHA, 2012).

Based on comments from the petitioner, the most likely application would be use of HFO-1234ze in "Pressurized Gas Duster" products. Because "Pressurized Gas Duster" products would contain 100 percent HFO-1234ze, use of this product in the exposure analysis provided a realistic, but high end exposure.

Using "Pressurized Gas Duster" product survey data, staff calculated that a California household would, on average, use a "Pressurized Gas Duster" product about once a month with a typical use rate of about 10 grams. Based on the usage rate in a small room with a low air exchange rate, staff calculated an acute exposure concentration of 101 ppm, well below the screening REL of 1,600 ppm.

To evaluate potential worker exposure, staff again used survey data on "Pressurized Gas Duster" products. In a realistic but high end exposure scenario, staff assumed use of a "Pressurized Gas Duster" product in a small electronic repair business with a low air exchange rate. Staff further assumed that the shop would complete one repair per hour, and use 10 grams per repair, or 80 grams per day. Using an 8-hour time-weighted average model staff calculated a concentration of 2 ppm, equivalent to the screening chronic REL.

Based on the results of these exposure scenarios staff concludes that use of HFO-1234ze would not likely cause any potential adverse health impacts from use of this compound in consumer products. We also note that the exposure analysis assumed a product contained 100 percent HFO-1234ze. The amount of this compound in any other product in which it would be used, as a propellant (such as an antiperspirant or hair finishing spray) would be considerably less of the formulation, up to about 30 percent, so the analysis is conservative.

Based on our assessment staff is proposing to modify the definition of "Volatile Organic Compound" in the Consumer Products Regulation to exclude HFO-1234ze.

2. Proposed VOC limits and requirements, section 94509

To address the need for additional VOC emission reductions, staff is proposing lower VOC limits for the "Mist Spray Adhesive" and "Web Spray Adhesive" categories, and new VOC limits for the "Screen Printing Adhesive" subcategory of "Special Purpose Spray Adhesive," and aerosol "Multi-purpose Solvent" and "Paint Thinner" categories. These limits and proposed effective dates are shown in Table III-2 and would be set forth in section 94509.

Table III-2
Proposed VOC Standards, Emissions, and Reductions

Product Category	Proposed VOC Standard (percent by weight)	2010 VOC Emissions* (tons per day)	Effective Date	VOC Reductions (tons per day)
Mist Spray Adhesive	30	0.49	1/1/2017	0.22
Screen Printing Adhesive	55	0.08	1/1/2017	0.01
Web Spray Adhesive	40	0.28	1/1/2017	0.07
Aerosol Multi-purpose Solvent and Paint Thinner	10	<0.12**	1/1/2016	0.10
Total Emissions 2010	**1.0***			
Total VOC Reductions 2017	**0.40***			

* Survey emissions adjusted for market coverage. Numbers are rounded.
** The aerosol "Multi-purpose Solvent" and "Paint Thinner" data are for 2012 and are not adjusted for market coverage

As shown in Table III-2, the proposed amendments would reduce VOC emissions by about 0.4 tons per day. The proposed limits for aerosol "Multi-purpose Solvent" and "Paint Thinner" products are designed to level the playing field for all forms of "Multi-purpose Solvent" and "Paint Thinner" products.

In addition, to ensure that products are not reformulated to use compounds with higher GWP, staff is proposing to prohibit the use of compounds with a GWP value equal to or greater than 150 in "Mist Spray Adhesive," "Screen Printing Adhesive," "Web Spray Adhesive," and aerosol forms of "Multi-purpose Solvent," and "Paint Thinner." Staff is also proposing to prohibit use of chlorinated TACs in "Screen Printing Adhesive" and aerosol "Multi-purpose Solvent" and "Paint Thinner" products.

Although not shown in Table III-2, we are proposing to incorporate VOC limits of 25 grams per liter (g/L) for nonaerosol "Multi-purpose Solvents" and "Paint Thinners" sold in the SCAQMD, effective January 1, 2015. These limits would be consistent with those in SCAQMD Rule 1143 "Consumer Paint Thinners and Multi-purpose Solvents"

and are designed to address circumvention of some of their rule's provisions. Section 94515 would be amended to include testing procedures that are consistent with those specified in Rule 1143. Within the "Most Restrictive Limit" provision in section 94512 we would also specify that it does not apply to nonaerosol "Multi-purpose Solvent" and "Paint Thinner" products in SCAQMD. In addition, section 94512 would be amended to extend until December 31, 2017, the provision that prohibits the sale of flammable or extremely flammable products unless specifically labeled to warn the consumer of the potential hazard. This would address stakeholders' ongoing concerns related to flammability of "Multi-purpose Solvent" and "Paint Thinner" products.

3. Multi-purpose Lubricant

Through results of a technical assessment, we have learned that, while manufacturers are on track to meet the 25 percent VOC limit that becomes effective at the end of this year, the resources expended have been greater than anticipated. As such, manufacturers are behind schedule for initiating their research and development efforts to meet the more challenging 10 percent by weight VOC limit, scheduled to become effective December 31, 2015. Because of this, staff is proposing to delay the effective date of the 10 percent VOC limit until December 31, 2018. This proposed change would result in delaying about a 1.3 ton per day of VOC emission reduction for 3 years. Staff is also proposing to delay the feasibility assessment for the 10 percent by weight limit until March 31, 2017. The new reporting date would be set forth in section 94513.

C. Proposed Amendments to the Aerosol Coating Products Regulation

We are proposing to amend sections 94520-24528, the Aerosol Coating Products Regulation. The regulation is codified in title 17, CCR sections 94520-94528.

1. Applicability, section 94520

All Aerosol Coating Products sold in California have always been subject to the regulation. We are proposing to explicitly state this in section 94520.

2. Definitions, section 94521

The proposed amendments would define three new product categories, modify many existing definitions, and add 15 definitions. A list of these definitions is provided in Table III-3. In addition to the definitions shown in Table III-3, a number of minor nonsubstantive clarifying amendments are proposed to various definitions.

The proposed definitional changes would clarify various provisions, provide consistency between regulations, better define product categories, and streamline the regulation by deleting expired definitions. Several definitions warrant further discussion.

Table III-3
Proposed Amendments to Definitions

Modified Definitions	
Adhesive	Metallic Coating
Aerosol Coating Product	Mold Release Coating
Coating Solid	Nonflat Coating
Electrical/Electronic/Conformal Coating	Propellant
Exact match Finish, Automotive	Reactivity Limit
Exact match Finish, Engine	Reactive Organic Compound
Exact match Finish, Industrial	Rust Converter
Flat Coating	Slip Resistant/Nonslip Grip Coating
High Temperature Coating	Spatter/Multicolor/Stucco Coating
Lubricant	Vinyl/Fabric/Leather/Plastic Coating
Maskant	Wood Stain Coating
New Definitions	
Antimicrobial Compound	Pigment
Coating	Plasticizer
Exact Match Finish	Principle Display Panel or Panels
Extender	Resin
Flexible Coating	Specialty Coating
Fragrance	Two Component Coating
General Coating	Uniform Finish Coating
Label	
Deleted Definitions	
Automotive Underbody Coating	Percent VOC by Weight
Enamel	Stain
Lacquer	Volatile Organic Compound (VOC)

"Flat Coating," "Metallic Coating," and "Nonflat Coating"

We are proposing to modify the definitions for "Flat Coating," "Metallic Coating," and "Nonflat Coating" to indicate that such products include products that function both as paint and primer if certain labeling provisions are met. This would mean that products labeled in this way would not be subject to the primer limit under the Most Restrictive Limit provision.

"Flexible Coating"

We are proposing a new definition for "Flexible Coating," and define it as an aerosol coating product designed and labeled exclusively to provide a flexible coating to protect surfaces. The category would include rubberized, mastic, and asphaltic products, but would not include "Undercoatings" as defined in the Consumer Products Regulation.

To provide clear direction as to how these products are regulated, we would first clarify in the Consumer Products Regulation that "Undercoatings" are designed and labeled exclusively to impart a protective nonpoint layer to vehicle parts to prevent rust or

deaden sound. Such products would continue to be regulated within the Consumer Products Regulation. The definition would further clarify that an undercoating product making any additional claims would be a "Flexible Coating" as defined in the Aerosol Coatings Regulation.

"Rust Converter"

We are proposing to modify the definition of "Rust Converter" to specify that products must contain a minimum acid content of 1.0 percent by weight, and a maximum solids content of 6.0 percent by weight.

"Two Component Coating"

We are proposing a new definition for "Two Component Coating," and would define it as an aerosol coating product packaged in an aerosol container with a separate integrated chamber for the hardener or activator.

"Uniform Finish Coating"

We are proposing a new definition for "Uniform Finish Coating," and would define it as an aerosol coating product designed and labeled exclusively for application to the area adjacent to a spot repair for the purpose of blending the spot repair's color or clear coating to match the appearance of an adjacent area's existing coating. The definition would also indicate that "Spot Repair" means repair of an area of less than 1 square foot. This category would include products labeled as edge blenders that contain a pigment or resin. Edge blenders containing no pigment or resin would be defined as "Paint Thinner" in the Consumer Products Regulation.

3. Reactivity Limits and Requirements, section 94522

The proposed amendments would specify new or lower Reactivity Limits for 16 aerosol coating categories. The proposed limits for 6 "General Coating" categories and 10 "Specialty Coating" categories are shown in Tables III-4 and III-5.

As shown in Table III-4, ROC emissions from "General Coating" categories are about 21 tons per day and the proposed limits would result in an equivalent VOC reduction of about 3.1 tons per day. The proposed effective date for all limits is January 1, 2017.

As shown in Table III-5, ROC emissions from these "Specialty Coatings" are about five tons per day and the proposed limits would result in an equivalent VOC reduction of about 0.55 tons per day. Together the VOC limits for the 6 "General Coating" categories and the 10 "Specialty Coating" categories would result in equivalent VOC reductions of about 3.7 tons per day. As proposed, these limits would become effective on January 1, 2017.

Table III-4
Proposed Reactivity Limits for General Coatings, Emissions, and Reductions*

General Coating Category	Proposed Reactivity Limit** (g O_3/g Product)	ROC Emissions* (tons per day)	Equivalent VOC Reductions** (tons per day)
Clear Coating	0.85	2.1	0.4
Flat Coating	0.80	3.0	0.4
Fluorescent Coating	1.30	0.1	> 0.0
Metallic Coating	1.25	1.8	0.2
Nonflat Coating	0.95	11.5	1.7
Primer	0.70	2.5	0.4
Total Emissions	**21 tons per day***		
Total Equivalent VOC Reduction**	**3.1 tons per day***		

* Calendar year 2010 emissions adjusted for complete market coverage. Numbers are rounded.
** Based on 2010 MIR Values

Table III-5
Proposed Reactivity Limits for Specialty Coatings (A), Emissions, and Reductions*

Specialty Coatings (A) Category	Proposed Reactivity Limit (g O_3/g product)+	ROC Emissions (tons per day)	Equivalent VOC Reductions (tons per day)+
Auto Body Primer	0.95	0.75	0.10
Exact Match Finish: Engine	0.95	0.36	0.05
Exact Match Finish: Automotive	0.95	0.39	0.03
Exact Match Finish: Industrial	1.20	0.22	0.02
Ground Traffic/Marking Coating	0.85	2.90	0.35
Electrical/Electronic/ Conformal Coating**	2.00	0.03	>0.0
Flexible Coating***	1.60	0.08	>0.0
Mold Release Coating**	1.10	0.18	>0.0
Uniform Finish Coating***	1.30	0.00	>0.0
Two Component Coating***	1.20	0.00	>0.0
Total Emissions	**4.9***		
Total Equivalent VOC Reductions	**0.6***		

* Calendar year 2010 emissions adjusted for complete market coverage. Numbers are rounded.
** Previously exempt + Based on 2010 MIR Values *** Newly defined.

We are also proposing to "cap" the Reactivity Limits for 23 "Specialty Coating" categories. This would include setting a limit for the previously exempt "Rust Converter" products. Staff has determined that lowering the Reactivity Limits for these small categories would provide negligible air quality benefits, and would not be cost effective or commercially and technologically feasible. However, most of the proposed "cap" limits are lower than the existing limits and are set as low as possible to prevent future increases. Because the limits do not require reformulation, an earlier effective date of January 1, 2015 is proposed.

In an effort to streamline the regulation, we are proposing to combine all types of "Hobby/Model/Craft" coatings with a single limit of 2.7 g O_3/g product. Also, both "Shellac Sealer" coatings would be combined into a single category with a limit of 1.0 g O_3/g product. These proposals could result in a small increase in OFP of these products' emissions for several months until the lower limits become effective on January 1, 2015. If all products were to reformulate to the temporary higher limits, we estimate the potential equivalent emission increase would be about 0.1 tons per day. Any increase is unlikely, however, because all products in these categories already are complying with the proposed 2015 limits.

Other proposed modifications would harmonize the sell-through provisions with those in the Consumer Products Regulation. The three year sell-through period would be unchanged, however, specific requirements for products sold in multi-unit packages would be added. Provisions would also require that notice be given to the purchaser that the sell-through is expiring if the aerosol coating is sold or supplied to a distributor or retailer within the last 6 months of the sell-through period.

A number of changes are proposed to the provisions pertaining to the assignment of MIR values. Language is being proposed to further describe ingredients that are assigned MIR values of 0.0. This would include "Antimicrobial Compounds" and "Fragrance," provided they are present in amounts of no more than 0.25 percent by weight.

The current regulation does not allow use of ROCs that are not listed in the Tables of MIR Values, sections 94700-94701, title 17, CCR. To provide flexibility staff is proposing to set a default MIR value to be used for any compound not listed, allow use of the isomer for an ingredient if there is no MIR value, and set a default value to be used for any fragrance over 0.25 percent by weight. The default MIR values proposed for use are set such that the reactivity of the ingredient is likely lower, and are, therefore, conservative.

4. Exemptions, section 94523

The proposed amendments would eliminate the exemptions for "Electrical Coating," "Mold Release Coating," and "Rust Converter" products because staff has determined that they are no longer needed. In addition, the definition of "Electrical Coating" would

be expanded to include electronic and conformal coatings. As proposed, Reactivity Limits would be set for these previously exempt categories.

5. Administrative Requirements, section 94524

A number of amendments are proposed to the labeling requirements to harmonize with those in the Consumer Products Regulation. However, the amendments would not change the requirement that all aerosol coatings must be labeled to include the product category and limit. The provisions would establish specific instructions for indicating the date of manufacture for individual units and multi-unit packages. To provide flexibility, the amendments would also not require manufacturers to supply annually to ARB a description of any code used to represent the date of manufacture if a specific code is used.

Reporting requirements would also be modified to clarify the types of data to be reported.

6. Test Methods and Compliance Verification, section 94526

Staff is proposing a number of changes related to enforcing the regulation. The current enforcement process requires formulation data to be submitted within 10 working days of receiving written notice that products have been selected for compliance testing. We are proposing to increase the amount of time that manufacturers have to submit the data from 10 to 25 working days and are further clarifying the types of data to be reported. The proposed amendments would also require Responsible Parties to supply contact information as to whom is to receive the notifications, and specify that the information must be updated if it changes.

A new hydrocarbon solvent(s) analysis method is proposed for addition to Method 310 (Appendix F). To implement this testing procedure, staff is proposing MIR values for hydrocarbon groups (by carbon number) that would be used to determine the weighted MIR for each hydrocarbon solvent(s) fraction, if an aerosol coating product contains one or more hydrocarbon solvent(s).

To streamline the regulation, throughout the regulation, requirements and references to expired VOC mass-based limits and provisions are proposed for deletion.

D. Hairspray Credit Program

Because the ability to use credits ended on January 1, 2010, staff is recommending that the Hairspray Credit Program be repealed in its entirety, to streamline the group of consumer products regulations.

E. Tables of MIR Values

Staff is proposing to reorganize the "Oxygenated Organics" section of the Tables of MIR Values, contained in section 94700, MIR Values for Compounds, title 17, CCR. Rather than the current arrangement which organizes compounds by increasing carbon number, the compounds would be grouped by class of organic compound. For example, all "Aldehydes" would now be grouped together. These changes would make these MIR values easier to find.

F. Method 310

We are proposing changes to Method 310 "Determination of Volatile Organic Compounds (VOC) in Consumer Products and Reactive Organic Compounds in Aerosol Coating Products" to improve analysis of consumer products and aerosol coatings to determine compliance. Section 3.3.5, pertaining to exempt and prohibited compound analysis, would be modified to indicate that for nonaerosol "Multi-purpose Solvents" and "Paint Thinners" sold in the SCAQMD, analysis for methyl esters with 17 or more carbon atoms would be conducted, if present, effective January 1, 2015. These compounds are considered nonvolatile. Section 3.6 would be modified to explicitly state that, effective January 1, 2015, determination of low vapor pressure VOC (LVP-VOC) compounds does not apply to nonaerosol "Multi-purpose Solvents" and "Paint Thinners" sold in the SCAQMD because no such exemption exists. Additionally, we are proposing to delete both section 3.6.3 and Appendix B to Method 310, pertaining to determining LVP-VOC status using the isoteniscope, as this method is no longer used. We are also proposing to add a new subsection 4.2.4 to provide an equation for calculating final VOC content for nonaerosol "Multi-purpose Solvent" and "Paint Thinner" products in SCAQMD.

We are also proposing modification of the equation for calculating the Total Grams of VOC per sheet for "Fabric Softener – Single Use Dryer Product" to incorporate the inclusion of water content and exempt compound content.

Pertaining to analysis of aerosol coatings, we are proposing to modify Section 5.3.5 to indicate direct determination of ROCs and include a reference to modified ASTM D 5443-04. We are also proposing modification of corresponding Standard Operating Procedures (SOP) and are adding specific SOPs (based on modified method ASTM D 5443-04) which would allow for the analysis of hydrocarbons with 6 carbon atoms through C10+ aromatic compounds and hydrocarbons with 5 carbon atoms through C11+ aliphatic hydrocarbon compounds.

Other amendments would add and update test methods.

G. Recommendation

Staff recommends that the Board adopt the proposed amendments to the Antiperspirants and Deodorants Regulation, the Consumer Products Regulation, the Aerosol Coating Products Regulation, and the Tables of MIR values. The proposals would modify, clarify, streamline, and improve enforcement of the regulations. Proposed VOC limits for various consumer product categories would reduce VOC emissions by about 0.4 tons per day, and the Reactivity Limits for aerosol coatings would reduce equivalent VOC emissions by about 3.7 tons per day. The amendments would also ensure that the limits are commercially and technologically feasible within the timeframes provided. Staff also recommends that the Board repeal the Hairspray Credit Program as its usefulness has expired. Additionally, staff recommends that the proposed modifications to Method 310 be adopted as they are necessary to set forth testing procedures to determine compliance with various limits.

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IV. Description of Affected Product Categories

This chapter contains a brief regulatory history, a description of the consumer product categories for which we are proposing new or lower VOC standards, and the aerosol coating categories for which we are proposing new or lower Reactivity Limits.

A. Consumer Products

Among the amendments to the Consumer Products Regulation are proposals to lower emissions from "Aerosol Adhesive", "Multi-purpose Solvent," and "Paint Thinner" products. These proposals are described below.

1. Aerosol Adhesive

An "Aerosol Adhesive" product is currently defined as an aerosol product in which the spray mechanism is permanently housed in a nonrefillable can designed for hand-held application without the need for ancillary hoses or spray equipment. Aerosol adhesives include "Special Purpose Spray Adhesive," "Mist Spray Adhesive," and "Web Spray Adhesive."

a. Regulatory History

"Aerosol Adhesive" products were first regulated in a 1991 rulemaking, when a category of household adhesives was added to the regulation. Two tiers of VOC limits were adopted for aerosol forms of household adhesives to achieve an estimated emissions reduction of 0.2 tons per day:

- 75 percent by weight, effective January 1, 1995; and
- 25 percent by weight, effective January 1, 1997.

In a November 1996 rulemaking, ARB delayed implementation of the 25 percent by weight VOC standard until 2002, because at that time the Board found that the standard was neither technologically nor commercially feasible. Amendments also required manufacturers to submit data on their efforts to achieve the 25 percent VOC limit.

Based on staff's analysis of the research and development reports received in 1998, in a May 2000 rulemaking the Board rescinded the future 25 percent by weight VOC limit because it was determined to still be unfeasible. Instead the Board adopted amendments to divide aerosol adhesives into "Mist Spray Adhesive," with a VOC limit of

65 percent by weight; "Web Spray Adhesive," with a 55 percent by weight VOC limit; and seven categories of "Special Purpose Spray Adhesive" shown below:

- "Mounting Adhesive;"
- "Flexible Vinyl Adhesive;"
- "Polystyrene Foam Adhesive;"
- "Automobile Headliner Adhesive;"
- "Polyolefin Adhesive;"
- "Laminate Repair/Edgebanding Adhesive;" and
- "Automotive Engine Compartment Adhesive."

The VOC limits for "Special Purpose Spray Adhesive" categories range from 60 to 70 percent by weight. Together, these limits achieved an emissions reduction of 0.2 tons per day. In that same rulemaking, use of methylene chloride, perchloroethylene, and trichloroethylene was prohibited.

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

- Staff Report for Proposed Amendments to the Statewide Regulation to Reduce Volatile Organic Compound Emissions from Consumer Products, Phase II (ARB, 1991); and
- Staff Report: Initial Statement of Reasons for the Proposed Amendments to the California Consumer Products Regulation Relating to Aerosol Adhesives (ARB, 2000a).

b. Category Descriptions

"Mist Spray Adhesive" products are aerosol adhesives which do not meet the definitions of any of the "Special Purpose Spray Adhesive" categories. These products deliver a particle or mist spray, resulting in the formation of fine, discrete particles that yield a generally uniform and smooth application of adhesive to the substrate. "Mist Spray Adhesive" products are often formulated for use on lightweight materials for both repositionable and permanent bonding.

"Web Spray Adhesive" products are aerosol adhesives which are not a "Mist Spray Adhesive" or "Special Purpose Spray Adhesive." "Web Spray Adhesive" products produce a nonuniform lace-like or cobweb-type pattern and are often formulated to permanently bond porous substrates and provide gap-filling properties.

The categories comprising "Special Purpose Spray Adhesive" includes "Web Spray Adhesive" and "Mist Spray Adhesive" products that are formulated to perform under special conditions. A new subcategory for "Screen Printing Adhesive" products is proposed in this rulemaking.

In the screen printing process a woven mesh, stretched over a frame, is used to create an ink-blocking stencil for the purposes of printing an image on a fabric substrate. More than one color may be imprinted on the substrate material by letting the ink dry after the application and repeating the process with a different screen. This process can be automated or performed manually. The screen printing process is most commonly used on garments (such as t-shirts) and different fabrics (Wynn, 2013).

A "Screen Printing Adhesive" is sprayed onto what is commonly called a pallet (a surface onto which the substrate to be printed is placed) to hold the fabric in place during the printing process. The required aerosol adhesive properties include an ability to make short-term bonds, tack quickly, and remain repositionable for multiple applications without fabric transfer or wrinkling of the work while in use. For processes that use a flash/heat technique to cure the ink, good heat resistance and stability are also important (CSPA, 2013).

Table IV-1 below summarizes the sales and emissions from "Mist Spray Adhesive," "Web Spray Adhesive," and "Screen Printing Adhesive" products based on the results of the 2010 Survey (ARB, 2011). Sales and emissions from "Screen Printing Adhesive" products were reported as either "Mist Spray Adhesive" or "Web Spray Adhesive" products.

Table IV-1
Aerosol Adhesive Data

Aerosol Adhesive Category	Number of products	2010 Category Sales (tons per day)	2010 Market-Adjusted VOC Emissions (tons per day)*
Mist Spray Adhesive	77	0.93	0.49
Web Spray Adhesive	62	0.52	0.28
Screen Printing Adhesive	6	0.14	0.08
Total		**1.59**	**0.86**

*Survey emissions adjusted for complete market coverage. The numbers are rounded.

As shown in Table IV-1, sales of about 1.6 tons per day of these products resulted in VOC emissions of about 0.9 tons per day. Although not shown in the table, the sales weighted average VOC contents are about 53, 54, and 60 percent by weight for "Mist Spray Adhesive," "Web Spray Adhesive," and for "Screen Printing Adhesive," respectively.

It should be noted that since these products were last surveyed in 2003, emissions have declined.

Product Use and Marketing:

Aerosol adhesives are used for arts and crafts, automotive bodywork, construction, screen printing, packaging, upholstery and embroidery. Aerosol adhesives are sold in auto parts stores, mass-merchandisers, hardware stores, large home improvement centers and through industrial distributors.

Product Formulation:

Although aerosol adhesives are primarily solvent-based, in recent years water-based products have been introduced. Solvent-based adhesives consist primarily of propellants, a mixture of VOC and exempt solvents, and active ingredients (mainly resins).

The active ingredients are highly proprietary and consist of rubbers, tackifying resins and additives. Solvents are used to solubilize and carry the active ingredients. Typical VOC solvents reported in the 2010 Survey include pentane, hexane, heptane, toluene and cyclohexane. Exempt VOC solvents, such as acetone and methyl acetate, are widely used as well, ranging from 4 to 40 percent by weight of product formulations. Typical VOC propellants reported in the 2010 Survey include propane, butane, isobutane and dimethyl ether.

Proposed Amendments Pertaining to Aerosol Adhesive Products

Staff is proposing to modify the definition of "Aerosol Adhesive" to accommodate a process that allows products to be recycled and refilled. This would provide an environmental benefit.

The proposed definition would read as follows: "Aerosol Adhesive" means any adhesive packaged as an aerosol product in which the spray mechanism is permanently housed in a can designed for hand-held application without the need for ancillary hoses or spray equipment. "Aerosol Adhesive" includes "Special Purpose Spray Adhesive," "Mist Spray Adhesive," and "Web Spray Adhesive."

In addition, the proposed new definition for the new subcategory, "Screen Printing Adhesive," would read as follows: "Screen Printing Adhesive" means an aerosol adhesive designed and labeled exclusively to hold garments or fabric in place during the screen printing process.

Another proposal would reorganize all adhesive definitions, aerosols and nonaerosols, within the basic definition of "Adhesive."

The proposed VOC limits for "Mist Spray Adhesive," "Web Spray Adhesive," and "Screen Printing Adhesive" are shown in Table IV-2.

Table IV-2
Aerosol Adhesive Proposal

Aerosol Adhesive Category	Proposed VOC limit (weight percent)	Number of Complying Products	Complying Market Share (percent)	Emissions Reductions (tons per day)*
Mist Spray Adhesive	30	12	2.3	0.22
Web Spray Adhesive	40	4	3.5	0.07
Screen Printing Adhesive	55	0	0	0.01
Total				**0.30**

*2010 Survey data emissions adjusted for complete market coverage. Numbers are rounded.

As shown in Table IV-2, the proposed limits would result in a total estimated VOC emission reduction of about 0.3 tons per day effective January 1, 2017. Emission reductions were not grown to the effective date because 2010 Survey data indicate that category sales have declined since aerosol adhesives were previously surveyed in 2003. These limits are proposed based on staff's review of data collected from the 2010 Survey as well as the review of existing and newer technologies.

Table IV-2 also shows that in 2010, 12 "Mist Spray Adhesive," representing about 2 percent of the market, and 4 "Web Spray Adhesive," representing about 4 percent of the market, already were in compliance with the proposed limits. Staff has also learned that, since the 2010 Survey, a number of additional "Mist Spray Adhesive" and "Web Spray Adhesive" products are being sold that would comply with the proposed lower VOC standards. No "Screen Printing Adhesive" products were reported that would comply with the proposed 55 percent by weight VOC limit.

"Mist Spray Adhesive" and "Web Spray Adhesive" products differ in how the adhesive is delivered. Although "Web Spray Adhesive" products do not require a fine mist, characteristics of some high-performance products designed for particular applications require a higher VOC content than for "Mist Spray Adhesive" products, in order to maintain these properties. Therefore, the proposed VOC limit for "Web Spray Adhesive" products is higher than the proposed VOC limit for "Mist Spray Adhesive" products.

For "Screen Printing Adhesives," many polymers used cannot tolerate large amounts of exempt compounds, such as acetone and methyl acetate. Therefore, these products do not have as much flexibility to reformulate to lower VOC limits. Although there are no complying "Screen Printing Adhesive" products reported in the 2010 Survey, stakeholders indicated that these products could be reformulated to the proposed 55 percent by weight VOC limit and still continue to maintain the needed performance characteristics.

Reformulation options that can be used to meet the proposed limits include reducing the level of hydrocarbon propellant and replacing part of the VOC hydrocarbon solvent with exempt solvents, such as acetone or methyl acetate. We expect that manufacturers will meet the proposed limits by using formulation technologies similar to those used in the complying products that were reported in the 2010 Survey or new technologies that are now available.

No use of methylene chloride, perchloroethylene, or trichloroethylene was reported in "Screen Printing Adhesives" products. While ARB staff believes these TACs are not likely to be used in the future in reformulated products, ARB staff is proposing that use of methylene chloride, perchloroethylene, and trichloroethylene be prohibited in "Screen Printing Adhesive." This proposal is consistent with the prohibitions already in effect for "Mist Spray Adhesive" and "Web Spray Adhesive" products. This prohibition would ensure that manufacturers do not choose to reformulate with toxic chlorinated solvents in response to the lower VOC limit. The proposed prohibition would be contained in section 94509(m) of the regulation.

While some HFC-134a propellant was reported in the 2010 Survey, staff is aware that products containing it have reformulated such that it is no longer used. Other than HFC-134a, no compounds with GWP values at or above 150 were reported for the aerosol adhesive categories. To prevent the use of compounds with higher GWP values as products are reformulated to comply with the proposed VOC limits, we are proposing a GWP limit of 150 for any chemical compound used in "Mist Spray Adhesive," "Web Spray Adhesive," and "Screen Printing Adhesive" products, effective January 1, 2017. This proposal would allow use of the exempt propellant HFC-152a although other reformulation options are more likely. The proposed GWP limit would be contained in section 94509(n) of the regulation.

2. Multi-purpose Solvent and Paint Thinner

A "Multi-purpose Solvent" is currently defined as any liquid product designed or labeled to be used for dispersing, dissolving, or removing contaminants or other organic materials. This definition has been in effect since 2009. The "Multi-purpose Solvent" category includes:

- products that do not display specific use instructions on the product container or packaging;
- products that do not specify an end-use function or application on the product container or packaging;
- solvents used in institutional facilities, except for laboratory reagents used in analytical, educational, research, scientific or other laboratories;
- "Paint clean-up" products; and
- products labeled to prepare surfaces for painting.

The "Multi-purpose Solvent" category does not include:

- solvents used in cold cleaners, vapor degreasers, conveyorized degreasers or film cleaning machines;

- solvents labeled exclusively for the clean-up of application equipment used for polyaspartic and polyurea coatings;
- products that are labeled exclusively to clean a specific contaminant, on a single substrate, in specific situations; or
- any product making any representation that the product may be used as, or is suitable for use as a consumer product which meets another definition in section 94508(a).

A "Paint Thinner" is currently defined as any liquid product used for reducing the viscosity of coating compositions or components that prominently displays the term "Paint Thinner," "Lacquer Thinner," "Thinner," or "Reducer" on the front panel of its packaging. This definition has been in effect since 2009. The "Paint Thinner" category does not include:

- "Artist's Solvent/Thinner;"
- products that are sold in containers with a capacity of 5 gallons or more and labeled exclusively for the thinning of "Industrial Maintenance Coatings," "Zinc-Rich Primers," or "High Temperature Coatings;"
- products labeled and used exclusively as an ingredient in a specific coating or coating brand line, whereby the coating would not be complete or useable without the specific ingredient; or
- products that are labeled to be used exclusively to thin "Industrial Maintenance Coatings," "Zinc-Rich Primers," or "High Temperature Coatings," as long as certain criteria are met.

a. Regulatory History

The "Multi-Purpose Solvent" category was originally defined to exclude these products from the definition of "Spot Remover" in a July 1997 rulemaking. In a November 2006 rulemaking, the definition was modified to clearly exclude products that make multiple regulated claims on the label and clearly include packaged solvents without specific use claims (such as products labeled as mineral spirits or methyl ethyl ketone). The current definition was approved for adoption as part of a 2009 rulemaking.

The Board originally approved a definition for "Paint Thinner" in a June 2004 rulemaking. The current definition was approved for adoption as part of a 2009 rulemaking.

In the 2009 rulemaking VOC limits and various other requirements for liquid "Paint Thinner" and "Multi-purpose Solvent" products were proposed for adoption. Because it was determined that "Paint Thinners" and "Multi-purpose Solvent" products could be used interchangeably, most of the requirements were identical. A VOC limit of 30 percent by weight was adopted which became effective on December 31, 2010. The now adopted second tier limit of 3 percent VOC by weight will become effective on December 31, 2013. The first tier limits reduced emissions by about 8.4 tons per day and the second tier limits are expected to reduce emissions by almost 4 tons per day

outside SCAQMD. These reductions do not include emission reductions in the SCAQMD. Other amendments approved for adoption in the 2009 rulemaking included:

- a prohibition on use of methylene chloride, perchloroethylene, and trichloroethylene, effective December 31, 2010;
- an aromatic compound limit of 1 percent by weight, effective December 31, 2010;
- a prohibition on use of compounds with a GWP value equal to or greater than 150, effective December 31, 2010;
- safety labeling requirements to address flammability, which are scheduled to sunset in December 31, 2015;
- an exemption for "Paint Thinner" products sold in 8 fluid ounce containers, which is scheduled to sunset on December 31, 2013, and
- a requirement to provide information by June 30, 2012, on research and development efforts conducted to meet the 3 percent VOC limits.

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

- Final Statement of Reasons for Proposed Amendments to the California Consumer Products Regulation – Mid-Term Measures. July 1997. (ARB, 1997);
- Final Statement of Reasons for Proposed Amendments to the California Consumer Products Regulation. November 2006. (ARB, 2006); and
- Initial Statement of Reasons for Proposed Amendments to the California Consumer Products Regulations. August 2009. (ARB, 2009)

Also germane to the regulatory history pertaining to "Paint Thinner" and "Multi-Purpose Solvent" products, on March 6, 2009, the SCAQMD adopted Rule 1143. As allowed by State law, this rule established requirements specific to "Consumer Paint Thinner" and "Consumer Multi-Purpose Solvent" products sold, supplied, offered for sale, or manufactured for use in the SCAQMD. This rule established VOC limits of 300 g/L, effective January 1, 2010, and 25 g/L, effective January 1, 2011. The categories were defined similarly to those in the Consumer Products Regulation.

b. Technical Assessment on the Feasibility of the 3 Percent by Weight VOC Standard

As specified in section 94513(g), manufacturers of liquid "Multi-purpose Solvent" and "Paint Thinner" products were required to submit detailed written updates on their research and development efforts undertaken to comply with the 3 percent VOC limit. At the time of the rulemaking, staff determined that more time was needed to develop technology to meet this limit, and the feasibility as to whether products formulated solely with exempt solvents, such as acetone, could be used to thin solvent-borne paints had not been demonstrated. The reports were to include sales and formulation data for products sold in 2011, as well as detailed information on the raw materials evaluated for use; MIR values for any VOC or LVP-VOC used or evaluated; the function of the raw material evaluated; testing protocols used; the results of the testing; and the cost of reformulation efforts. These reports were received in September 2012.

As part of the assessment, manufacturers of "Multi-purpose Solvent" and "Paint Thinner" products were asked to submit sales and formulation data on products that would meet the definition for either "Multi-purpose Solvent" or "Paint Thinner" but were sold in the aerosol form.

The 2011 sales of over 200 products from 17 companies were reported. Results of the assessment showed that 35 percent of products sold in 2011 were already complying with the upcoming 3 percent VOC limit. Many "Paint Thinner" products were meeting the limit of 3 percent through the use of exempt compounds, mainly acetone. Because manufacturers introduced these complying formulations early, and they have now been successfully sold for over two years, staff has concluded that the 3 percent VOC limit is feasible. The data also support that contrary to concerns as to whether acetone could be used to thin paints, it has been successfully sold for this function for over two years.

c. Issues to be Addressed

The expected benefits from ARB's regulation of "Multi-purpose Solvent" and "Paint Thinner" products have not been fully achieved. This is primarily because some manufacturers of "Paint Thinner" products have used the current exemption provided for specialty thinners designed for use with "Industrial Maintenance Coatings," "Zinc-Rich Primers," or "High Temperature Coatings" to avoid compliance. Generic paint thinning products were simply relabeled as "Industrial Maintenance Coating" thinners and sold in locations where such specialty coatings were not sold.

Another concern is the introduction of aerosol forms of "Multi-purpose Solvent" and "Paint Thinner." Adopted limits for "Multi-purpose Solvent" and "Paint Thinner" categories apply only to liquid product forms, as by definition these products are "liquids." This means that aerosol forms are unregulated.

SCAQMD staff has also made us aware that their Rule 1143 is not fully achieving the expected benefits, and has asked for our assistance. This is primarily because manufacturers have taken advantage of an exclusion within their definition of "Multi-purpose Solvent." The language is shown below:

> "Multi-purpose Solvents" also do not include any products making any representation that the product may be used as, or is suitable for use as a consumer product which qualifies under another definition in California Code of Regulations title 17, § 94508 as of the date of adoption."

This one sentence has allowed some manufacturers to circumvent Rule 1143 by including on the product label reference to an ARB regulated consumer product category. Examples of "Multi-purpose Solvent" and "Paint Thinner" labels are shown in Appendix H.

This language was apparently placed in Rule 1143 to be consistent with ARB's definition of "Multi-purpose Solvent" in ARB's Consumer Products Regulation. ARB's definition contains the following language, which is very similar to the problematic language in Rule 1143:

> "... "Multi-purpose Solvent" does not include ... any product making any representation that the product may be used as, or is suitable for use as a consumer product which meets another definition in section 94508(a); such products are not "Multi-purpose Solvents" and are subject to the "Most Restrictive Limit" provisions of section 94512(a)."

However, the attempt to achieve consistency with ARB's Consumer Products Regulation has had unanticipated results because unlike Rule 1143, ARB's regulation includes a "Most Restrictive Limit" provision in section 94512(a). The relevant portions of section 94512(a) state:

> "... if anywhere on the container or packaging of any consumer product ... any representation is made that the product may be used as, or is suitable for use as a consumer product for which a lower VOC limit is specified in section 94509(a), then the lowest VOC limit shall apply."

The purpose of the "Most Restrictive Limit" provision is to prevent product manufacturers from circumventing ARB's regulation by re-labeling their products. For example, a nonaerosol "General Purpose Degreaser" is currently subject to a 0.5 percent VOC limit in ARB's Consumer Products Regulation, whereas a "Bug and Tar Remover" is subject to a much less stringent 40 percent VOC limit. If a manufacturer makes a degreasing product containing 30 percent VOC and does not want to incur the expense of reformulating the product to meet a 0.5 percent VOC limit, the manufacturer might attempt to avoid reformulation by simply re-labeling the product as a "Bug and Tar Remover" while simultaneously representing on the product label that the product is also suitable for use as a "General Purpose Degreaser." The "Most Restrictive Limit" provision is designed to prevent such attempted circumvention by ensuring that a product claiming it may be used as a "General Purpose Degreaser" is subject to the lower 0.5 percent VOC limit for "General Purpose Degreasers," instead of the less stringent 40 percent VOC limit for "Bug and Tar Removers."

However, Rule 1143 does not have a "Most Restrictive Limit" provision; it is not needed because unlike ARB, the SCAQMD does not have numerous VOC standards for multiple consumer product categories. The result is that language in ARB's regulation that is designed to prevent circumvention is actually being used to circumvent the requirements of Rule 1143. For example, a product labeled on the principal display panel as "Odorless Mineral Spirits" which is clearly a "Multi-purpose Solvent" would include a reference that it is suitable for use as a "General Purpose Degreaser" in small font on the back panel of the label. This labeling then excludes such a product from being subject to Rule 1143 because it is making a claim for a category regulated by ARB. In other words, the above language in Rule 1143 has created an unanticipated

loophole; instead of reformulating their products to comply with the Rule 1143's VOC standards, some manufacturers have simply re-labeled their products so that the products are not subject to Rule 1143.

SCAQMD Rule 1143 also contains an exemption for thinners to be used with "Industrial Maintenance Coatings," "Zinc-Rich Primers," or "High Temperature Coatings." Similar to one of ARB's concerns, products sold in the SCAQMD have also taken advantage of this exemption.

Another related issue is products labeled as 'Alcohol' or 'Denatured Alcohol' that are sold in the paint thinning aisle, but again make a small reference to a consumer products category, such as "Glass Cleaner," and provide a dilution ratio consistent with the VOC limit for these products. Glass cleaning products are not typically sold alongside paint thinning products.

d. Proposed Solutions

We are proposing to modify the definitions for "Multi-purpose Solvent" and "Paint Thinner" such that all product forms of "Multi-purpose Solvent" and "Paint Thinner" products would meet the definition. Also within the definitions, we are proposing to strengthen the exemption criteria for "Industrial Maintenance Coating," "Zinc-Rich Primer," or "High Temperature Coating" thinning products. As proposed, thinners for "Industrial Maintenance Coating," "Zinc-Rich Primer," or "High Temperature Coating" products would continue to be exempt if the Responsible Party for these thinners also manufactures "Industrial Maintenance Coating," "Zinc-Rich Primer," or "High Temperature Coating" products for sale in California and the name or brand of these specialty coatings is stated on the label of the thinning product. In addition, within the current "Multi-purpose Solvent" definition, staff is proposing to exclude nonaerosol products sold in the SCAQMD from that part of the definition stating that products meeting another definition in section 94508(a) are not "Multi-purpose Solvent" products and are subject to the "Most Restrictive Limit" provisions of section 94512(a). This would mean that nonaerosol "Multi-purpose Solvent" products sold, supplied, offered for sale, or manufactured for use in the SCAQMD do not meet any other definition and the Most Restrictive Limit would not apply.

To further address the concerns raised by SCAQMD staff, we are proposing to add a new provision in ARB's regulation [see proposed subsection 94509(p)(4)(A)] that would specify that products sold, supplied, offered for sale, or manufactured for use in the SCAQMD that meet either the definition of "Multi-purpose Solvent" or "Paint Thinner" do not meet the criteria for any other consumer product category and do not qualify under a definition of any other consumer product category that is defined in section 94508(a), regardless of any representation made that the product may be used as, or is suitable for use as another category of consumer product that is defined in section 94508(a). This would mean that products meeting either of these definitions would not fall under any other consumer products category defined in section 94508(a), regardless of any representations that may be made on the product label, packaging, or elsewhere. The net effect of this would be to keep these products subject to Rule 1143 and its

requirements. This should prevent language derived from ARB's regulation from being interpreted to allow circumvention of Rule 1143, and should thus help insure that the expected emission reduction benefits from Rule 1143 are fully achieved.

Another proposal would establish statewide VOC limits and other requirements for aerosol "Multi-purpose Solvent" and "Paint Thinner" products in the Table of Standards. We would also modify the Table of Standards to specify requirements for nonaerosol "Multi-purpose Solvent" and "Paint Thinner" products sold outside of SCAQMD and refer the reader to section 94509(p)(4) for requirements for products sold in the SCAQMD. Table IV-3 displays the proposed Table of Standards excerpted from section 94509(a). For clarity it is not shown in strikeout and underline text.

Table IV-3
Proposed Standards for Paint Thinner and Multi-purpose Solvent Products

Product Category	Effective Date	VOC Standard (Percent by Weight)
*****		
Multi-purpose Solvent* aerosol - standard for all areas of the State	1/1/2016	10
nonaerosol - standards for the South Coast Air Quality Management District - standards for all other areas of the State	See section 94509(p)(4) 12/31/2010 12/31/2013	 30 3
[*See sections 94509(b)(1), (m)(1), (n), and (p); 94512(a)(1), (a)(4) and (e); 94513(g); and 94515(j) for additional requirements that apply to Multi-purpose Solvent.] *****		
Paint Thinner* aerosol - standard for all areas of the State	1/1/2016	10
nonaerosol - standards for the South Coast Air Quality Management District - standards for all other areas of the State	See section 94509(p)(4) 12/31/2010 12/31/2013	 30 3
[*See sections 94509(b)(1), (m)(1), (n), and (p); 94512(a)(1), (a)(4) and (e); 94513(g); and 94515(j) for additional requirements that apply to Paint Thinner. See section 94510(m) for an exemption that applies to Paint Thinner.] *****		

Revisions in the Table of Standards and section 94509(p)(4)(B) would reinforce that nonaerosol "Multi-purpose Solvent" and "Paint Thinner" products sold in the SCAQMD are subject to both ARB's and SCAQMD's rules. In section 94509(p)(4)(B) we would specify VOC limits and analytical testing procedures to determine VOC content for nonaerosol "Multi-purpose Solvent" and "Paint Thinner" products sold in the SCAQMD that are consistent with the requirements in Rule 1143. Proposed sections 94509(p)(4)(B)(1) and (2) set forth the ARB's limits for nonaerosol "Multi-purpose Solvent" and "Paint Thinner." Compliance with these limits would be determined using procedures in Method 310. This means that the LVP-VOC exemption would apply. Section 94509(p)(4)(B)(3) would set forth the 25 g/L limit for nonaerosol "Multi-purpose Solvent" and "Paint Thinner" products available in the SCAQMD, effective January 1, 2015. In this case, the LVP-VOC exemption would not apply. Both the 25 g/L limit and the 3 percent by weight limit in section 94509(p)(4)(B)(2) will be applicable in the SCAQMD beginning January 1, 2015.

By including section 94509(p)(4), where the provisions for products sold in SCAQMD would be set forth, there would no advantage to label products in a manner to avoid compliance with Rule 1143 because the requirements in ARB's regulation would be the same (*i.e.*, both rules contain a 25 g/L limit). To reinforce the provision proposed in section 94509(p)(4)(A), staff is proposing to add within the "Most Restrictive Limit" provision [section 94512(a)(4)] language that states that nonaerosol "Multi-purpose Solvent" and "Paint Thinner" products sold in SCAQMD are not subject to the "Most Restrictive Limit."

Most of the definitional changes and requirements for nonaerosol "Multi-purpose Solvent" and "Paint Thinner" products sold in SCAQMD would become effective on the date the amended regulation becomes effective. This includes the proposal to modify the definition of "Multi-purpose Solvent" to exclude products sold in the SCAQMD from that part of the definition stating that products meeting another definition in section 94508(a) are not "Multi-purpose Solvent" products and are subject to the "Most Restrictive Limit" provisions of section 94512(a). The 25 g/l VOC limit, however, would become effective on January 1, 2015.

In addition, as a safety precaution, staff is proposing to extend until December 31, 2017, the existing safety labeling provisions that prohibit the sale of flammable or extremely flammable "Multi-purpose Solvent" and "Paint Thinner" products unless specifically labeled to warn the consumer of the potential hazard. The existing provision is scheduled to sunset on December 31, 2015. Extending this requirement would ensure that, should aerosol "Multi-purpose Solvent" and "Paint Thinner" products be reformulated to increase the product's flammability, consumers would be notified, for a period of time that they may be purchasing a more flammable product that should be handled more carefully than previous products.

Section 94515(j) is proposed to set forth analytical testing procedures to determine compliance with the 25 g/L VOC limit for nonaerosol "Multi-purpose Solvent" or "Paint Thinner" products sold, supplied, offered for sale, or manufactured for use in the

SCAQMD. The equation from Method 310 would be replicated to reinforce that in this case, the LVP-VOC exemption does not apply. However, to provide further consistency with SCAQMD analytical procedures, methyl esters with 17 or more carbon atoms would be considered exempt.

We are also proposing that the VOC limits for "Multi-purpose Solvent" and "Paint Thinner" would apply prior to any recommended dilution.

Specific to aerosol "Multi-purpose Solvent" and "Paint Thinner" products, the proposed amendments include:

- VOC limits of 10 percent by weight;
- prohibition on use of compounds with GWP values of 150 or greater;
- prohibition on use of methylene chloride, perchloroethylene, and trichloroethylene; and
- a 1 percent by weight "Aromatic Compound" content limit.

All of these provisions would become effective on January 1, 2016.

3. Category Description (aerosols)

Table IV-4 below summarizes the sales and emissions for aerosol "Multi-purpose Solvent" and aerosol "Paint Thinner" products based on data from the "Multi-purpose Solvent" and "Paint Thinner" Technical Assessment (ARB, 2012). Because of overlapping functionality of the products, the data for aerosol "Multi-purpose Solvent" and aerosol "Paint Thinner" products have been grouped.

Table IV-4
Multi-purpose Solvent and Paint Thinner Data

Product Form	Number of products	2012 Category Sales (tons per day)	2012 VOC Emissions (tons per day)*
Aerosol	10	0.18	<0.12

* Data are not adjusted for market coverage. Numbers are rounded.

Product Use and Marketing:

Aerosol "Multi-purpose Solvent" and aerosol "Paint Thinner" products are used for paint clean-up of brushes, equipment, and tools; clean-up of overspray and splatter; or to remove contaminants or organic materials. Typical uses of these products include automotive bodywork, construction, home projects, and arts and crafts. Aerosol "Multi-purpose Solvent" and aerosol "Paint Thinner" products are sold in auto parts stores, mass-merchandisers, hardware stores, and large home improvement centers.

Product Formulation:

Aerosol forms of "Multi-purpose Solvent" and "Paint Thinner" products are solvent mixtures packaged with propellant(s). These products do not contain solids or resins. Typical VOC solvents that were reported include xylenes, toluene, and various hydrocarbon solvents. Exempt VOC solvents including acetone and parachlorobenzotrifluoride (PCBTF) were also reported. Hydrocarbon or CO_2 propellants are used to expel the product.

Proposed VOC Limits and Compliance:

As shown in Table IV-5, the proposed VOC limit for both aerosol "Multi-purpose Solvent" and aerosol "Paint Thinner" products is 10 percent by weight, with an effective date of January 1, 2016. Products would also be limited to an "Aromatic Compound" content of 1 percent by weight.

Table IV-5
Multi-purpose Solvent and Paint Thinner

Product Form	Proposed VOC limit (weight percent)	Number of Complying Products	Complying Market Share (percent)	Emission Reductions (tons per day)*
Aerosol	10	0	0	0.10

*Numbers are rounded.

Table IV-5 also shows that no reported products currently comply with the proposed limit. However, we expect products to follow similar reformulation pathways identified for nonaerosol product forms in the 2009 rulemaking. The proposed limit is designed to be consistent with the 3 percent by weight VOC limits for nonaerosol "Multi-purpose Solvent" and "Paint Thinner" products, but with an allowance for use of a VOC propellant.

As these aerosol products are developed and emerge in the market, formulation options that can be used to meet the proposed limits include reducing the level of hydrocarbon propellant or using CO_2, replacing VOC solvents with exempt VOC solvents, or use of exempt VOC solvent emulsions or blends.

Based on the data collected, methylene chloride, perchloroethylene, or trichloroethylene is not currently used in these products. However, to prevent the use of methylene chloride, perchloroethylene, and trichloroethylene as products reformulate to comply with the proposed VOC limits, we are proposing to prohibit their use in aerosol "Multi-purpose Solvent" and aerosol "Paint Thinner" products. The proposed prohibition would be specified in section 94509(m).

No products reported use of compounds with GWP values of 150 or greater. However, to prevent the use of exempt compounds with higher GWP values as products reformulate to comply with the proposed VOC limits, we are proposing a GWP limit of

150 for any chemical compound used in aerosol "Multi-purpose Solvent" and aerosol "Paint Thinner" products. The proposed GWP limit would be specified in section 94509(n).

The proposals to prohibit use of compounds with GWP values of 150 or greater; prohibit use of methylene chloride, perchloroethylene, and trichloroethylene; and limit "Aromatic Compound" content to no more than 1 percent by weight are consistent with the provisions for nonaerosol forms of "Multi-purpose Solvent" and "Paint Thinner" products.

Another modification is proposed for the definition of "Paint Thinner." As proposed the definition would include aerosol products that provide a seamless transition between finishes, except for "Uniform Finish Coating" products as would be defined in the Aerosol Coating Products Regulation. This means that "edge blending" products used in automotive finishing spot repairs that do not contain a pigment or resin would be a "Paint Thinner." Similar functioning products containing a pigment or resin would be regulated as "Uniform Finish Coatings" within the Aerosol Coating Products Regulation.

Proposal to Address Product Flammability Concerns:

During the development of the "Multi-purpose Solvent" and "Paint Thinner" regulation proposal, stakeholders expressed their ongoing concerns regarding the flammability of low-VOC products such as those containing acetone. The current regulation contains a prohibition on sale of flammable or extremely flammable "Multi-purpose Solvent" and "Paint Thinner" products unless specifically labeled to warn the consumer of the potential hazard. However, this provision is scheduled to sunset on December 31, 2015, a year prior to the date when the proposed limits for aerosol "Multi-purpose Solvent" and "Paint Thinner" products would become effective. As described earlier, we believe one of the pathways manufacturers may take to meet the proposed VOC limits would be by replacing VOC solvents with exempt VOC solvents, or using exempt VOC solvent emulsions or blends. As a safety precaution, should aerosol "Multi-purpose Solvent" and "Paint Thinner" products be reformulated to increase the product's flammability, we are proposing to extend until December 31, 2017, these safety labeling provisions. This proposal is designed to ensure the consumer is alerted of a potential change in formulation of these products which could present a fire hazard if used improperly.

B. Aerosol Coating Products

As part of this rulemaking ARB staff is proposing new and lower Reactivity Limits for Aerosol Coating Products. This section provides a brief history of the State's regulation of aerosol coatings, describes the products, and sets forth our proposed amendments pertaining to this category.

1. Regulatory History

Amendments to the CCAA in 1993 specified that standards affecting the formulation and emissions of VOCs from aerosol paints be set solely by ARB. The statute further provided that ARB adopt limits that would result in a 60 percent reduction in VOC emissions by establishing interim and final limits. However, prior to the final limits becoming effective, ARB was to conduct an assessment on the commercial and technological feasibility of those limits.

In response to the statute, aerosol coatings were first regulated in 1995. Two tiers of VOC limits were adopted for six "General Coating" categories and 29 "Specialty Coating" categories. The regulation was designed such that all Aerosol Coating Products are regulated, including coatings used in industrial and commercial applications. Aerosol coatings are subject to the applicable "General Coating" category requirements unless the product meets all the criteria for a "Specialty Coating" category.

The first tier limits became effective January 1, 1996, and achieved a VOC reduction of three tons per day. The final limits were designed to achieve the required 60 percent emission reduction and were to become effective December 31, 1999. With the implementation of the second tier limits the regulation was expected to achieve a total VOC reduction of 18 tons per day.

In a 1998 rulemaking, the Board determined that the 60 percent reduction in emissions was not achievable and revised some of the VOC limits to address commercial and technological feasibility. As a result, VOC limits for 12 product categories were increased. The revised limits resulted in total VOC reductions of 12.6 tons per day, an overall 42 percent reduction. As part of that rulemaking, the Board directed staff to work with industry to evaluate a reactivity-based strategy to provide industry flexibility in meeting the VOC limits.

In 2000, the regulation was amended to establish Reactivity Limits based on the MIR scale. In that rulemaking, the Reactivity Limits were designed to achieve an equivalent emission reduction as would have been achieved if the VOC limits approved for adoption in 1998 had been fully implemented. The Reactivity Limits for the "General Coating" categories became effective June 1, 2002, and the limits for the "Specialty Coating" categories became effective January 1, 2003. The use of methylene chloride, perchloroethylene, and trichloroethylene in aerosol coatings was also prohibited. As part of this rulemaking, a new category for "Polyolefin Adhesion Promoter" was established and Tables of MIR Values were adopted (sections 94700-94701).

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

- "Initial Statement of Reasons for a Proposed Statewide Regulation to Reduce Volatile Organic Compound Emissions from Aerosol Coating Products and Amendments to the Alternative Control Plan for Consumer Products." (ARB, 1995);

- "Initial Statement of Reasons for the Proposed Amendments to the Regulations for Reducing Volatile Organic Compound Emissions from Aerosol Coatings, Antiperspirants and Deodorants, and Consumer Products." (ARB, 1998); and
- "Initial Statement of Reasons for the Proposed Amendments to the Regulation for Reducing Volatile Organic Compound Emissions from Aerosol Coating Products and Proposed Tables of Maximum Incremental Reactivity (MIR) Values, and Proposed Amendments to Method 310, "Determination of Volatile Organic Compounds in Consumer Products." (ARB, 2000)

2. Aerosol Coating Categories Description

Aerosol coating products are defined as pressurized coating products containing pigments or resins that are dispensed with a propellant. They are packaged in hand-held containers, or for use in equipment for ground traffic and/or marking applications.

In recognition of the various applications, solvent and resin needs, there are currently 36 types of products for which Reactivity Limits have been specified. Despite this there are many similarities among the various products.

a. Use and Marketing of Aerosol Coatings

Aerosol coatings are used by both professional and by do-it-yourself consumers. They are used for a number of applications, such as coating repairs, small coating jobs, field and construction site marking, and touch-up of marks and scratches in paintwork of automobiles, appliances, and machinery. Aerosol coatings are sold in a variety of retail outlets, including automotive supply stores, discount stores, paint stores, home improvement centers, hardware stores, arts and crafts stores, department stores and by catalogue. A brief description of the categories follows.

b. General Coating Categories

Clear Coatings

A "Clear Coating" product is defined as a coating which is colorless, contains resins but no pigments except flatting agents, and is designed and labeled to form a transparent or translucent solid film. Flatting agents (also called flatting pigments) may be included in the formulation to decrease the gloss without adding color to the film. Such flatting agents produce a flat or "satin" clear finish. The existing Reactivity Limit for "Clear Coatings" is 1.5 g O_3/g product.

Flat Coatings

A "Flat Coating" is an aerosol coating which has no gloss or is labeled as a flat paint. "Flat Coating" products (previously referred to as "Flat Paint Products") are defined as "an "Aerosol Coating Product" which, when fully dry, registers specular gloss less than

or equal to 15 on an 85° gloss meter, or less than or equal to 5 on a 60° gloss meter, or which is labeled as a flat coating." Specular gloss is a measure of the light reflected by the surface of a material (Intertek PTL, 2013). We are proposing to include in this category products that are dual function paint and primers. The existing Reactivity Limit for "Flat Coatings" is 1.2 g O_3/g product.

Fluorescent Coatings

A "Fluorescent Coating" is defined as a coating which converts absorbed incident light energy into emitted light of a different hue. These coatings are generally used when greater visibility is desired. They are used for craft and decorative applications and for marking hazards in the home and at the workplace. It should be noted that coatings packaged in containers designed to be used in an inverted or "upside-down" position for marking the ground are categorized as "Ground Traffic/Marking Coating" products. The existing Reactivity Limit for "Fluorescent Coatings" is 1.75 g O_3/g product.

Metallic Coatings

A "Metallic Coating" is defined as an aerosol coating which contains at least 0.5 percent by weight metallic pigment and is labeled as metallic, or with the name of a specific metallic finish such as gold, silver, or bronze.

There are two forms of "Metallic Coating" products. One form, the "leafing" "Metallic Coating" products, contains metal as the sole pigment in the coating. Leafing refers to the distribution of the metallic pigment within the coating. In leafing pigments, the metallic pigment is carried to the surface of the paint film during drying and gives the appearance of an almost continuous film of metal. These coatings are designed to create the impression that the object coated is composed of gold, silver, brass, copper, or aluminum.

The second form of "Metallic Coating" products is known as "nonleafing." In nonleafing paints the metallic pigments do not form a continuous metallic layer on the surface of the coating. Rather, they are distributed within the paint film and produce a polychrome effect, when used in conjunction with semi-transparent colored pigments. The metallic pigment contained within the semi-transparent color causes the coating to sparkle. These colored metallic coatings are often formulated to exactly match automobile finishes, and therefore fall into the "Exact Match Finish, Automotive" category. However, there are some nonleafing metallic coatings that are not formulated as "Exact Match Finish" coatings. If these coatings have a metallic pigment content greater than 0.5 percent by weight, and are labeled metallic, or with the name of a specific metallic finish such as gold, silver, or bronze, then they are categorized as "Metallic Coating." Otherwise, they are "Flat Coating" or "Nonflat Coating" products. Nonleafing "Metallic Coating" products generally have lower reactivity than leafing products. The existing Reactivity Limit for "Metallic Coating" is 1.90 g O_3/g product.

"Zinc-Rich Primers" (also called "galvanizing coatings") may contain greater than 0.5 percent by weight metallic pigment, but are not classified as "Metallic Coating" products because they are not labeled metallic, or labeled with the name of a specific metallic finish. These coatings are used for rust prevention and are very different from the decorative topcoats in the "Metallic Coating" category.

We are proposing to include in this category products that are dual function paint and primer in one product.

Nonflat Coatings

A "Nonflat Coating" is a nonflat (or glossy) aerosol coating product which register a specular gloss level greater than 15 on an 85° meter, or greater than 5 on a 60° meter or which are labeled as "Nonflat Coating." Aerosol paints labeled as "high gloss" paints do not qualify as a "Nonflat Coating" unless the specular gloss criteria indicated above are met. The existing Reactivity Limit for the aerosol "Nonflat Coating" category is 1.40 g O_3/g product. We are proposing to include in this category products that are dual function paint and primers.

Primers

A "Primer" is a coating, labeled as such, which is designed to be applied to a surface to provide a bond between that surface and subsequent coats. "Primer" products bond the substrate to subsequent coatings by providing a rough, slightly porous surface which adheres to both slick surfaces and glossy topcoats. The existing Reactivity Limit for "Primers" is 1.20 g O_3/g product.

"General Coatings" data are presented in Table IV-6. As shown in Table IV-6, sales of 27.4 tons per day of "General Coating" products resulted in 21 tons per day of ROC emissions with total OFP of 30.4 tons per day. Although not shown here, VOC emissions are 13.8 tons per day. Sales of "General Coating" products represent about 72 percent of total aerosol coating sales. Also, shown is the sales weighted average PWMIR (SWA-PWMIR) for each category.

c. Specialty Coating Categories

Among the proposed amendments are revised limits for "Specialty Coating" categories. Reactivity Limits for some categories are designed to provide additional reductions in OFP while others are designed to "cap" the OFP. We are further subdividing these coatings based on the effective dates of the limits. Those categories where reformulation would be required or where a previous Reactivity Limit did not exist are referred to as "Specialty Coating (A)," while those being "capped" are "Specialty Coating (B)."

Table IV-6
General Coatings Data Summary

Coating Category	Number of Products	Category Sales (tons per day)	ROC Emissions* (tons per day)	SWA-PWMIR** (g O_3/g product)	Total Ozone Forming Potential** (tons per day)
Clear Coating	304	2.53	2.09	1.03	2.60
Flat Coating	221	4.77	3.03	0.85	4.16
Fluorescent Coating	30	0.08	0.06	1.40	0.12
Metallic Coating	244	2.19	1.77	1.36	2.97
Nonflat Coating	880	14.25	11.51	1.20	17.13
Primer	237	3.61	2.52	0.93	3.37
Total		**27.4**	**21**		**30.4**

* Calendar year 2010 emissions adjusted for complete market coverage.
** 2010 MIR values

1. Specialty Coating Categories (A)

A brief description of "Specialty Coating (A)" categories is presented below. Part of the proposal would set forth definitions and requirements for several previously undefined categories, and other proposals would rescind the exemptions for several categories and establish Reactivity Limits. Descriptions of these categories are included here.

Auto Body Primers

An "Auto Body Primer" is an automotive primer or primer surface coating designed and labeled exclusively to be applied to a vehicle body substrate for the purposes of corrosion resistance and building a repair area to a condition in which, after drying, it can be sanded to a smooth surface. "Auto Body Primer" products also provide a protective coat over the substrate and help to prepare the surface for subsequent coats. They can fill in nicks, scrapes, scratches, etc., to the original level of the surface; prevent rust; be sanded or recoated; and are compatible with lacquer, acrylic, enamel, and other topcoats. These automotive products are generally labeled as sandable primers, spot filler and primers, primer surfacers, primer sealers, sanding primers, spray primers, and truck and van primers. The existing Reactivity Limit for "Auto Body Primer" is 1.55 g O_3/g product.

Exact Match Finish Coatings

Aerosol "Exact Match Finish" coatings are "Specialty Coating" products that are colored or colorless and are defined as follows:

"Exact Match Finish" is a coating which meets all of the following criteria: (A) the product is labeled with the manufacturer's name for which they were formulated; and (B) the product is labeled with one of the following: (1.) the original equipment manufacturer's (O.E.M.) color code number; (2.) the color name; or (3.) other designation identifying the specific O.E.M. color to the purchaser.

"Exact Match Finish" coatings include "Exact Match Finish, Automotive," "Exact Match Finish, Engine," and "Exact Match Finish, Industrial." Each of these three categories must meet the definition of "Exact Match Finish" in addition to the applicable individual category definitions.

"Exact Match Finish, Automotive" is an "Aerosol Coating Product" which meets the definition of "Exact Match Finish" and is designed and labeled exclusively to exactly match the color of an original, factory-applied automotive coating during the touch-up of automobile finishes. However, automotive clear coatings designed and labeled exclusively for use over automotive exact match finishes to replicate the original factory applied finish are considered "Exact Match Finish, Automotive." The existing Reactivity Limit for "Exact Match Finish, Automotive" is 1.50 g O_3/g product.

"Exact Match Finish, Engine" is an "Aerosol Coating Product" which meets the definition of "Exact Match Finish" and is designed and labeled exclusively to exactly match the color of an original, factory-applied engine paint. The existing Reactivity Limit for "Exact Match Finish, Engine" is 1.70 g O_3/g product.

"Exact Match Finish, Industrial" is an "Aerosol Coating Product" which meets the definition of "Exact Match Finish" and is designed and labeled exclusively to exactly match the color of an original, factory-applied industrial coating during the touch-up of manufactured products. The existing Reactivity Limit for "Exact Match Finish, Industrial" is 2.05 g O_3/g product.

Ground Traffic/Marking Coatings

"Ground Traffic/Marking Coating" products are used to apply striping or marking to outdoor surfaces such as streets, golf courses, parking lots, athletic fields, and construction sites. Paints included in this category are often labeled as traffic paints, marking paints, athletic paints, and marking chalk. The various labels refer to specific applications for which the products were designed. As an example, traffic paint is designed for durable marking of traffic lanes or parking lots, whereas athletic paint is primarily for temporary use at recreational sites such as golf courses or soccer fields. All of these paints are commonly referred to as "upside-down" paints because they are applied in an inverted spray position. These products are packaged with a valve and

actuator combination designed to be dispensed in an inverted position. All upside-down paints can be applied either by hand or with a striping device. A striping device typically is a wheeled dispenser into which the inverted aerosol can is mounted allowing the product to be held close to the substrate and easily actuated by a trigger or button on the handle of the device. "Ground Traffic/Marking Coating" products come in many different colors, including fluorescent colors, and are available as water- and solvent-based formulations. The existing Reactivity Limit for "Ground Traffic/Marking Coating" is 1.20 g O_3/g product.

Electrical/Electronic/Conformal Coatings

An "Electrical Coating" is defined as a coating designed and labeled exclusively as such, which is used exclusively to coat electrical components such as wire windings on electric motors to provide insulation and protection from corrosion. "Electrical Coating" products are currently exempt.

We are proposing to rescind the exemption and modify the definition to include electronic and conformal coatings such as terminal protectors, insulating materials, electrical wire coatings, and insulator varnishes. These products are similar to electrical coatings. These definitional changes expand the scope of the category and the variety of uses for these products. We are also proposing to set a Reactivity Limit for the "Electrical/Electronic/Conformal Coating" category.

Flexible Coatings

"Flexible Coating" products are not currently defined. As such, these products would most likely be subject to either the requirements for "Flat Coating" or "Nonflat Coating" product categories. However, because these products were not considered when the original limits were set, we have not enforced these requirements. We are now proposing to define these products and establish a Reactivity Limit for this category.

As proposed, "Flexible Coating" would be defined as a flexible coating to protect surfaces. The category includes rubberized, mastic, and asphaltic products. Some of these products can provide the function of an "Undercoating" to provide corrosion protection or deaden sound on vehicular substrates. "Undercoating" products are defined and regulated in the Consumer Products Regulation. To distinguish the two categories, "Flexible Coating" products would include products that claim to be suitable for use as an "Undercoating," but make claims for additional uses. In the Consumer Products Regulation, the definition for "Undercoating" would be amended to specify that these products are designed solely for use on vehicles to prevent rust or deaden sound.

Mold Release Coatings

"Mold Release Coating" is currently defined as a coating applied to molds to prevent products from sticking to the surfaces of the mold. Currently, these products are

exempt. Staff has determined that an exemption is no longer needed and is proposing a Reactivity Limit for the "Mold Release Coating" category.

Two Component Coatings

"Two Component Coating" products have not been previously defined in the Aerosol Coating Products Regulation. These coatings include two parts-a base and a hardener, catalyst or activator. "Two Component Coating" products are packaged in an aerosol container with a separate integrated chamber for the hardener or activator. "Two Component Coating" products can be clear, colored coatings, or primers that contain resins, pigments, fillers or flatting agents. Flatting agents (also called flatting pigments), may be included in the formulation to decrease the gloss of these coatings to produce a flat, or satin finish.

Staff is proposing to set a Reactivity Limit for this category.

Uniform Finish Coatings

"Uniform Finish Coating" products have not been previously defined in the Aerosol Coating Products Regulation. Staff is proposing a new definition to clarify that a "Uniform Finish Coating" is an "Aerosol Coating Product."

"Uniform Finish Coating" products are used to blend or conceal a paint repair. Sometimes referred to as edge blenders, the product is used where spot repairs to a painted finish are being performed. Typically a coating repair results in an interface between the existing cured coating and the freshly applied coating. If this interface is not treated, a dry edge will be visible after the fresh coating cures. A "Uniform Finish Coating" dissolves the edges of previous coatings, *e.g.*, primer, sealer, color coat or clear coat to provide a blended or soft edge to a coating repair.

Some products currently labeled as 'edge blenders' do not contain resins. Such products would not meet the definition of "Uniform Finish Coating" and we are proposing that these products be regulated under the Consumer Products Regulation "Paint Thinner" category.

"Specialty Coating (A)" data are presented in Table IV-7 below. As shown in Table IV-7, sales of 7.8 tons per day of the "Specialty Coatings (A)" categories resulted in 4.9 tons per day of ROC emissions with total OFP of 8.2 tons per day. Although not shown here, VOC emissions are 3.9 tons per day. Sales of "Specialty Coatings (A)" represent about 20 percent of total aerosol coating sales. Also, shown is the SWA-PWMIR for each category.

2. Specialty Coating Categories (B)

"Specialty Coating (B)" categories are small categories of coatings. In these categories staff has determined that reductions are not cost effective, and is proposing to "cap" the

Table IV-7
Specialty Coatings (A) Data Summary

Coating Category	Number of Products	Category Sales (tons per day)	ROC Emissions* (tons per day)	SWA-PWMIR** (g O_3/g product)	Total Ozone Forming Potential** (tons per day)
Auto Body Primer	70	1.0	0.75	1.16	1.16
Exact Match Finish: Automotive	227	0.44	0.39	1.12	0.49
Exact Match Finish: Engine	63	0.43	0.36	1.12	0.48
Exact Match Finish: Industrial	179	0.28	0.22	1.13	0.31
Ground Traffic/ Marking	237	5.27	2.90	1.05	5.54
Electrical/ Electronic/ Conformal	33	0.03	0.03	0.89	0.03
Flexible	18	0.13	0.08	1.13	0.15
Mold Release	51	0.19	0.18	0.42	0.08
Two Component	21	0.00	0.00	0.72	0.00
Uniform Finish	<5	<0.1	<0.1	1.30	<0.05
Total		**7.8**	**4.9**		**8.2**

* Calendar year 2010 emissions adjusted for complete market coverage. Numbers are rounded.
** 2010 MIR values

OFP. Table IV-8 summarizes the combined sales and emissions from the "Specialty Coating (B)" categories based on the results of the data collected from the 2010 Survey (ARB, 2011).

As shown in Table IV-8, the "Specialty Coating (B)" categories contain 905 products with sales of 2.9 tons per day. These products have estimated ROC emissions of about 2.4 tons per day with total OFP of 3.4 tons per day. Although not shown here, VOC emissions are 1.6 tons per day. Sales of "Specialty Coating (B)" categories represent about 8 percent of total aerosol coating sales.

Table IV-8
Specialty Coatings (B) Data Summary

Coating Category	Total # of Companies	Total # of Products	Sales (tons per day)	Total ROC Emissions* (tons per day)	Total Ozone Forming Potential** (tons per day)
Specialty Coating (B) Categories	64	905	2.9	2.4	3.4

* Calendar year 2010 emissions adjusted for complete market coverage. Numbers are rounded.
** 2010 MIR values

d. Formulation of Aerosol Coatings

Aerosol coating products are formulated as both solvent-based and water-based formulations with sales of solvent-based formulations dominating the market. The solvents and propellants used in general and specialty coating categories are generally similar. Aerosol coating products consist of pigments, resins, solvents, propellants, and other additives that are used to achieve specific properties. Hydrocarbon propellants consisting of a liquefied mixture of propane, normal butane, and isobutane are the most commonly used propellants. Water-based coating formulations typically contain dimethyl ether as a propellant.

Typical solvents in solvent-based products include petroleum distillates; aromatic hydrocarbons, primarily toluene and mixed xylenes; ketones (*e.g.* acetone, methyl ethyl ketone, methyl isobutyl ketone); esters (*e.g.* ethyl acetate, butyl acetates); alcohols (*e.g.* ethanol, isopropanol); glycol ethers (*e.g.* propylene glycol monomethyl ether acetate) and others. Typical solvents in water-based products include water, alcohols, glycol ethers, and other water miscible solvents. The selection of the appropriate solvent depends on the resin system type, particular pigments and additives, final use of the coating, application technique, and curing processes.

For proper film formation, aerosol coatings are formulated with a combination of fast, medium, and slower evaporating solvents. The evaporation rate of a solvent is compared relative to a standard, commonly n-butyl acetate, with the evaporation rate of n-butyl acetate set equal to 1.0. ROCs with evaporation rates less than 0.8, such as water (0.3) or xylenes (0.6) are classified as slow evaporating. Medium and fast evaporating ROCs are categorized by having evaporation rates of >0.8 to 3.0; and >3.1, respectively. Acetone and methyl acetate are examples of fast evaporating solvents and are used in high/low solvent systems where fast solvent release and quick dry-to-touch time are needed. Toluene and isopropyl alcohol are examples of medium evaporating solvents. Glycol ethers are classified as medium to slow evaporating solvents with evaporation rates from 0.7 to <0.001. They are typically the last components out of a curing film.

Aromatic hydrocarbon solvents are typically used to assist in dissolving a wide variety of resins and prevent cracking of the finished coating film. Some coating systems need

higher amounts of aromatic solvent due to the high viscosity of the aerosol paint formulation, for example, coatings using acrylic, nitrocellulose, or asphaltic resins.

The nonreactive portion of an aerosol coating product consists of the film forming ingredients such as pigments, resins, extenders, and other nonvolatile ingredients. Together, they are referred to as "Coating Solids" in aerosol coating formulations. The primary purpose of pigments is to provide the aesthetic properties of aerosol paint such as color, sheen, and opacity. Pigments also help to impart durability and in some cases, add special properties to the coating, for example, resistance to ultraviolet light exposure or corrosion resistance. Examples of more common pigments include titanium dioxide, carbon black, and iron oxides.

Forming a solid film, protecting substrates through chemical and physical action, and binding the pigments to the substrate are functions of a group of various naturally occurring or synthetic compounds referred to as "Resin." A variety of resin types are used, including alkyds, polyurethanes, acrylic and nitrocellulose lacquers. Although coating properties vary with individual formulations, certain resin types generally yield particular coating characteristics. For example, polyurethane resins generally yield coatings that are hard and resistant to scratches and abrasion, while acrylic lacquers are known for their resistance to "yellowing." In addition, extenders are added to increase the coating solids content.

Various additives are also included in aerosol coating formulations to address specific problems or enhance coating properties. Additives are usually present in small quantities. Some of the commonly used additives in aerosol coatings include anti-settling agents to prevent the settling of pigments during product storage, driers to speed up the chemical reaction occurring during the drying of the coating, and plasticizers to improve the flexibility and adhesion of the coating film. To prevent microbial growth and product spoilage, which is especially important for water-based formulations, antimicrobial compounds are added. Surfactants are used to enable suitable mixing of oil and water phases, disperse solids, or enable wetting of surfaces.

e. Proposed Reactivity Limits

The proposed Reactivity Limits for the "General Coating" categories along with relevant data are presented in Table IV-9. As proposed, the limits for the "General Coating" categories would be effective January 1, 2017. The proposed Reactivity Limits are based on staff's review of the data collected in the 2010 Survey as well as review of existing coating technologies.

Table IV-9
General Coatings Proposals[+]

Coating Category	Proposed PWMIR Limit	Number of Complying Products	Complying Market Share (percent)	Equivalent VOC Reduction* (tons per day)
Clear Coating	0.85	69	33	0.4
Flat Coating	0.80	57	28	0.4
Fluorescent Coating	1.30	9	22	>0
Metallic Coating	1.25	95	47	0.2
Nonflat Coating	0.95	118	12	1.7
Primer	0.70	34	33	0.4
Total				**3.1**

[+] 2010 MIR values
* Calendar year 2010 emissions adjusted for complete market coverage. Numbers are rounded

As shown in Table IV-9, the complying market share ranges from 12 percent for the "Nonflat Coating" category to 47 percent for the "Metallic Coating" category. These market shares, along with the numbers of complying products, provide a clear indication that the proposed limits are technically and commercially feasible. The proposed Reactivity Limits for the "General Coating" categories would result in about 3.1 tons per day of equivalent VOC reductions.

The proposed Reactivity Limits for the "Specialty Coating (A)" categories along with relevant data are presented in Table IV-10. As proposed, the limits for the "Specialty Coating (A)" categories would be effective January 1, 2017. As shown in Table IV-10, the "Exact Match Finish, Automotive" and "Exact Match Finish, Engine" have low complying market shares. However, industry has concurred that the proposed limits are feasible. The complying market share for the "Auto Body Primer" is also relatively low, but as with the "Exact Match Finish, Automotive" and "Exact Match Finish, Engine" industry concurs that the proposed limit is feasible. The proposed limits for the other categories have relatively high complying market shares, which indicate that the limits are feasible. The proposed limits for the "Specialty Coatings (A)" categories would result in about 0.6 tons per day of equivalent VOC reductions.

Table IV-10
Specialty Coatings (A) Proposals[+]

Coating Category	Proposed PWMIR Limit	Number of Complying Products	Complying Market Share (percent)	Equivalent VOC Reduction* (tons per day)
Auto Body Primer	0.95	17	9	0.10
Electrical/ Electronic/Conformal	2.00	27	95	>0
Exact Match Finish, Automotive	0.95	<5	~0	0.03
Exact Match Finish, Engine	0.95	<5	20	0.05
Exact Match Finish, Industrial	1.20	94	42	0.02
Flexible Coating	1.60	17	99	0
Ground Traffic/ Marking Coating	0.85	73	35	0.35
Mold Release Coating	1.10	51	100	0
Two Component Coating	1.20	21	100	0
Uniform Finish Coating	1.30	<5	100	0
Total				**0.6**

[+] 2010 MIR values
* Calendar year 2010 emissions adjusted for complete market coverage. Numbers are rounded

For the 23 Specialty Coating categories listed in Table IV-11 we are proposing to set the limit as low as possible without requiring reformulation. In general, this results in lower limits that those currently in effect. These "cap" limits are proposed because most of these categories have emissions of less than 0.1 ton per day. Only very minimal reductions could be achieved by requiring these categories to reformulate, and it would not be cost effective. More information on these categories is provided in the staff report for the 1995 rulemaking (ARB, 1995).

In an effort to streamline the Aerosol Coating Products Regulation and to better describe the types of products regulated in several categories, several name changes and category consolidations are proposed. The "Slip-resistant" category would be modified to include non-slip grip coatings, the "Spatter/Multicolor Coating" category would be modified to include stucco coatings, and the "Vinyl/Fabric/Leather/ Polycarbonate Coating" category would be modified to include all plastic coatings, not just polycarbonate plastic coatings. Name changes are reflected in the Table IV-11. The definitions would also be modified to describe the expanded categories. The proposed modified definitions are shown below:

"Slip resistant/Non-slip Grip Coating" means an "Aerosol Coating Product" (A) designed and labeled exclusively as a slip-resistant coating, which is formulated with grit and used as a safety coating; or (B) labeled exclusively as a non-slip grip coating designed to reduce or prevent slipping.

"Spatter/Multicolor/Stucco Coating" means an "Aerosol Coating Product" (A) labeled exclusively as a spatter coating which produces spots, globules, or spatters of individual or contrasting colors on or within the surface of a contrasting or similar background; or (B) labeled exclusively as a multicolor coating; or (C) labeled exclusively as a stucco coating that is made from a mixture of Portland cement, sand, and lime.

"Vinyl/Fabric/Leather/Plastic Coating" means an "Aerosol Coating Product" (A) designed and labeled exclusively to coat vinyl, fabric, leather, or plastic substrates; or (B) designed and labeled exclusively to repel water from fabric or leather substrates. "Vinyl/Fabric/Leather/Plastic Coating" does not include "Fabric Protectant" as defined in section 94508(a).

Note that our proposal for "Vinyl/Fabric/Leather/Plastic Coatings" would expand the category by including aerosol forms of waterproofing products.

The proposed "cap" Reactivity Limits for these "Specialty Coating (B)" categories are listed in Table IV-11. They are in a separate table to indicate an earlier proposed effective date of January 1, 2015.

As shown in Table IV-11, "Shellac Sealer" and "Hobby/Model/Craft Coating" subcategories would be consolidated with one limit proposed for each category. This streamlining would apply to both the existing 2003 limits and the future 2015 limit. The existing limits would be changed to the highest subcategory limits for "Hobby/Model/Craft Coating" and "Shellac Sealer" coatings of 2.70 g O_3/g product and 1.00 g O_3/g product, respectively.

This proposal, if all of the products in these categories were to reformulate, would result in no more than an equivalent VOC increase of 0.1 tons per day for the several months from the date the amendments would be approved until January 1, 2015. However, this is unlikely to occur as all of the products reported are already in compliance with the proposed 2015 Reactivity Limit.

Table IV-11
Proposed Reactivity Limits for Specialty Coatings (B)

Aerosol Coating Category	PWMIR* (g O_3/g Product)	PWMIR+ (g O_3/g Product)
Specialty Coatings (B)	**01/01/2003**	**01/01/2015**
Art Fixative or Sealant	1.80	1.75
Automotive Bumper and Trim Product	1.75	1.70
Aviation or Marine Primer	2.00	1.25
Aviation Propeller Coating	2.50	1.40
Corrosion Resistant Brass, Bronze, or Copper Coating	1.80	1.80
Floral Coating	1.70	0.85
Glass Coating	1.40	1.35
High Temperature Coating	1.85	1.85
Hobby/Model/Craft Coating:	2.7	1.60
Enamel	1.45	
Lacquer	2.70	
Clear or Metallic	1.60	
Marine Spar Varnish	0.90	0.90
Photograph Coating	1.00	0.75
Pleasure Craft Finish Primer/ Surfacer/ Undercoater	1.05	0.90
Pleasure Craft Topcoat	0.60	0.60
Polyolefin Adhesion Promoter	2.50	2.50
Rust Converter		1.10
Shellac Sealer:	1.00	1.00
Clear	1.00	
Pigmented	0.95	
Slip-Resistant/Non-Slip Grip Coating	2.45	2.10
Spatter/Multicolor/Stucco Coating	1.05	1.05
Vinyl/Fabric/Leather/Plastic Coating	1.55	1.45
Webbing/Veiling Coating	0.85	0.75
Weld-Through Primer	1.00	1.00
Wood Stain Coating	1.40	0.90
Wood Touch-Up/Repair/Restoration Coating	1.50	1.45

* Based on 2001 MIR Values
\+ Based on 2010 MIR Values

f. Reformulation Strategies

Aerosol coating manufacturers would have to conduct research and develop formulations that meet the proposed Reactivity Limits, while ensuring that the reformulated coatings have the acceptable performance characteristics consumers expect. Our evaluation of the coating categories shows that in general there are complying products being sold and that a variety of reformulation options are available.

Thus, we believe that the proposed Reactivity Limits are commercially and technologically feasible.

Reformulation options that can be used by manufacturers to meet the proposed Reactivity Limits include the substitution of higher-reactive solvents and propellants currently used in noncomplying products with lower-reactive solvents and propellants. The currently used hydrocarbon propellant blends are moderately reactive. However, because the propane MIR value of 0.49 g O_3/g VOC is considerably lower than that of normal butane (1.15 g O_3/g VOC) or isobutane (1.23 g O_3/g VOC), using a propellant blend with higher propane content remains an effective option to reduce the product's overall reactivity.

Coating film integrity and application are affected by the types of solvents used. In substituting solvents with lower MIR values for those with higher MIR values formulations must maintain the proper balance of slower and faster evaporating solvents. The solvent system also needs to dissolve the resin and hold it in solution.

A literature review shows that various reformulation options are available. Depending upon the resin system used, reformulation options include use of n-butyl acetate, isobutyl acetate, n-propyl propionate, isobutyl butyrate and other esters; ketones; and glycol ethers. These solvents most likely would not be used on a one-to-one by mass substitution for the highly reactive solvents, but rather would be used in various combinations to provide the required balance of solvency and evaporation rate (Eastman, 2006, 2006a, 2009; Thermo Scientific, 2009; Exxon Mobil, 2010; Total Special Fluids, 2010). Some examples are discussed below.

Increased use of acetone was advocated as a likely reformulation option to meet the existing Reactivity Limits. Because of its low reactivity (MIR 0.36 g O_3/g VOC), acetone continues to be a possible reformulation option. However, there is a limit to the amount of acetone that can be used in a formulation because its fast evaporation rate can cause defects such as bubbles, pinholes, or "blushing" (a surface haze caused by condensation of moisture.) Methyl acetate is another fast evaporating solvent with properties similar to acetone and could be used for a broad range of coating resins. Because its reactivity (MIR 0.07 g O_3/g VOC) is significantly lower than that of acetone, using this solvent or substituting part of the acetone content with methyl acetate will effectively reduce the product's overall reactivity.

However, to efficiently reduce the overall reactivity of the aerosol coating product, lower reactive substitutes would be needed for the medium and slower evaporating solvents such as toluene and mixed xylenes. These aromatic ROCs are also among the most reactive ingredients used in aerosol coatings. The existing limits resulted in reducing the amounts of toluene and xylenes used, and we expect the proposed limits will require further reductions of these solvents.

One of the possible replacements for commonly used aromatic hydrocarbon solvents is n-propyl propionate. This medium evaporating solvent dissolves a wide range of

polymers and provides good flow and leveling in air dry and thermoset coatings. A replacement blend can be developed by substituting n-propyl propionate for xylenes and adjusting the overall blend composition to obtain the desired evaporation rate. Other examples are n-butyl acetate and isobutyl acetate which have lower evaporation rates and could be also used to reformulate the coating solvent blend. Medium evaporating cycloaliphatic solvents could be substituted for toluene. While acetone has a very different volatility and solvency power than toluene, a solvent such as methyl cyclohexane has similar properties as toluene. Literature also suggests that xylenes can be effectively replaced by a blend of methyl cyclohexane, n-butyl acetate, and methyl ethyl ketone. Methyl n-propyl ketone is an alternative for use alone or in combination with other solvents such as methyl acetate to replace methyl ethyl ketone.

Hydrocarbon solvents (HCS) are complex mixtures of alkanes, branched alkanes, cycloalkanes, and aromatic compounds that are used in aerosol coatings. The composition of HCS varies widely and determines their reactivity. The amount of aromatic compounds in these solvents ranges from near zero to 100 percent. Typical blends of HCS have aromatic compound contents of 2 to 8 percent or 8 to 22 percent. Therefore, it may be feasible to substitute HCS with lower aromatic compound content for those with higher aromatic content.

The reactivity of aerosol coatings could also be lowered through the use of water-based formulations, such as water-soluble alkyd systems, or acrylic lacquers.

The reformulation options discussed here have been used in developing the example complying product formulations. Through evaluation of formulations of complying and noncomplying products reported in the 2010 Survey, staff has determined that complying products contain less of the aromatic compounds toluene and xylenes. These complying products also support that further reducing toluene and xylenes is a feasible approach to complying with the proposed limits. Appendix I contains "generic" complying and noncomplying formulations for each category proposed for regulation.

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V. Environmental Impacts Analysis

A. Introduction

This chapter provides an environmental analysis for the proposed amendments to the Antiperspirants and Deodorants Regulation, the Consumer Products Regulation, the Aerosol Coating Products Regulation, the Tables of MIR Values, Method 310, and proposed repeal of the Hair Spray Credit Program. Based on ARB's review, staff has determined that implementing the proposed amendments to these regulations would not result in any potentially significant adverse impacts on the environment. This analysis provides the basis for reaching this conclusion. This chapter of the Staff Report also discusses environmental benefits expected from implementing the proposed amendments.

B. Environmental Review Process

The Air Resources Board is the lead agency for the proposed amendments 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 60005-60007). In accordance with Public Resources Code section 21080.5 of the 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). ARB has prepared this environmental analysis to assess the potential for significant adverse and beneficial environmental impacts associated with the proposed amendments, as required by ARB'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 prepared for the proposed amendments to the regulations. If the amendments are adopted, a Notice of Decision will be posted on ARB's website and filed with the Secretary of the Natural Resources Agency for public inspection (17 CCR 60007(b)).

C. Prior Environmental Analysis

The Antiperspirants and Deodorants, Consumer Products and Aerosol Coating Products Regulations were first approved for adoption in 1989, 1990 and 1995, respectively. The regulations have been amended numerous times resulting in adoption of VOC limits for 129 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. VOC emissions have been reduced by about 209 tons per day, an approximate 50 percent reduction. Toxic emissions of chlorinated compounds have been reduced by over 13 tons per day by prohibiting their use in 83 categories. Other measures have prohibited the use of compounds with higher GWP values in a number of categories. Aromatic compound use has been limited to no more than 1 percent by weight in "Paint Thinner" and "Multi-purpose Solvent" products. Alkylphenol ethoxylate surfactant use has also been prohibited in several cleaning product categories. The most recent environmental analyses conducted for the 2010 and 2012 rulemakings did not identify any adverse impacts and determined that consumer product VOC emissions would continue to decline.

Specific to nonaerosol "Multi-purpose Solvent" and "Paint Thinner" products, an environmental analysis conducted in 2009 identified a potential flammability hazard as products are reformulated to comply with the VOC limits. To address this potential hazard, the sale of flammable or extremely flammable products was prohibited unless the products were properly labeled to warn the consumer of the increased flammability hazard. This prohibition was developed along with, and endorsed by, the Office of the State Fire Marshal. This provision is scheduled to sunset on December 31, 2015. For more information related to this provision refer to the "Initial Statement of Reasons for Proposed Amendments to the California Consumer Products Regulation, August 7, 2009" (ARB, 2009).

The Hairspray Credit Program was approved for adoption in 1997. The primary purpose of this voluntary program was to set forth a process to encourage early and/or over compliance with the VOC standard for Hairspray products. An environmental assessment determined there were no adverse environmental impacts associated with this program and that it would likely have an environmental benefit.

The Tables of MIR Values were first approved for adoption in 2000 and have been amended several times, most recently in 2010. ARB Method 310 was first approved for adoption in 1996 and has also been amended numerous times, most recently in 2011. Environmental assessments conducted as part of these rulemakings determined that the amendments would not result in any adverse environmental impacts because the requirements would not lead to a physical change in the environment.

D. Proposed Amendments

1. Description

The consumer products program has been and continues to be an important part of California's overall efforts to reduce the amount of smog-forming VOCs, TACs, and GHGs that are emitted from the use of chemically formulated consumer products. In this proposed rulemaking, further amendments are intended to lower the impacts of consumer products' VOC emissions, improve clarity, aid in implementation, and streamline current procedures.

ARB staff is proposing to amend the Antiperspirants and Deodorants Regulation, the Consumer Products Regulation and the Aerosol Coating Products Regulation, repeal the Hairspray Credit Program, and revise the Tables of MIR Values and Method 310. A brief summary of each amendment is provided below. Please refer to Chapter VIII of this Staff Report for a more detailed description of each of the proposed amendments and rationale.

a. Antiperspirants and Deodorants

ARB staff is proposing to exempt HFO-1234ze from the definition of VOC in the Antiperspirants and Deodorants Regulation. This would provide an additional reformulation option to manufacturers of antiperspirants and deodorants.

b. Consumer Products

ARB staff is proposing to amend the Consumer Products Regulation primarily to clarify regulatory requirements to improve its implementation and enforcement. A further reduction in VOC emissions from several categories is also proposed. Other amendments would streamline the regulation. The proposed amendments would:

- specify new or lower VOC limits for "Mist Spray Adhesive," "Screen Printing Adhesive," and "Web Spray Adhesive" categories to provide 0.3 tons per day of VOC emission reductions and prohibit the use of compounds with GWP values of 150 or greater in these aerosol adhesive categories;
- modify provisions for "Multi-purpose Solvent" and "Paint Thinner" that would:
  - modify existing definitions to include the aerosol form of products in these categories;
  - strengthen requirements for products to qualify as "Industrial Maintenance Coating," "Zinc-Rich Primer," and "High Temperature Coating" thinners;
  - specify new statewide mass-based VOC limits, along with the limit for total aromatic compound content, for the aerosol form of "Multi-purpose Solvent" and "Paint Thinner" products to provide a 0.1 tons per day VOC emission reduction in these categories;

    - specify new mass-based VOC limits for the nonaerosol form of "Multi-purpose Solvent" and "Paint Thinner" products sold specifically in the SCAQMD;
    - extend until December 31, 2017, provisions related to prohibition of sale of flammable or extremely flammable products unless specifically labeled to warn the consumer of the potential hazard [the extension is primarily due to the proposal to regulate aerosol forms]; and
    - specify a GWP limit of 150 for aerosol "Multi-purpose Solvent" and "Paint Thinner."
- modify existing definitions and add new definitions to help clarify the regulation and improve its enforceability;
- delete expired definitions and other expired provisions;
- extend the 10 percent by weight VOC limit effective date from December 31, 2015 to December 31, 2018 for "Multi-purpose Lubricants;"
- exempt HFO-1234ze from the definition of VOC; and
- prohibit the use of the TACs methylene chloride, perchloroethylene, and trichloroethylene in "Single Purpose Cleaner," "Single Purpose Degreaser," "Screen Printing Adhesive," and aerosol "Multi-purpose Solvent" and "Paint Thinner" categories.

c. Aerosol Coatings

The proposed amendments to the Aerosol Coating Products Regulation are primarily designed to lower the OFP of aerosol coating emissions. Ozone forms when emissions of VOCs and nitrogen oxides react in the presence of sunlight; therefore, less reactive VOCs help reduce ozone formation. The term "reactivity" here refers to a substance's tendency to undergo a chemical change -- in this case, a VOC's potential to form ground-level ozone. Other provisions would provide clarity and improve various regulatory requirements. Proposals to delete expired provisions would also streamline the regulation. The proposed amendments would:

- specify lower Reactivity Limits to provide a 3.7 tons per day VOC equivalent emission reduction;
- align product dating and reporting requirements with the Consumer Products Regulation;
- add, clarify, or align definitions with the Consumer Products Regulation;
- clarify assignment of MIR values;
- add a provision to clarify the analytical/compliance process; and
- delete mass-based VOC requirements and other expired provisions.

d. Hairspray Credit Program

ARB staff is proposing to repeal the expired Hairspray Credit Program. The ability to generate Hairspray Emission Reduction Credits (HERC) ended on January 1, 2005, and the ability to use HERCs ended on January 1, 2010. Therefore, this regulation is no longer needed.

e. Method 310

ARB staff is proposing procedural changes to Method 310 that would improve analysis of consumer products and aerosol coatings for compliance. Specific testing procedures to analyze for "Multi-purpose Solvent" and "Paint Thinner" products sold in the SCAQMD are also being proposed.

f. Tables of MIR Values

Proposed amendments to the Tables of MIR Values would reorganize the oxygenated solvents section of the tables by placing them into chemical classes, as opposed to the current organization which is by carbon number.

2. Methods of Compliance

Many of the proposed amendments to the regulations consist of administrative and procedural changes that will clarify existing definitions, modify provisions to facilitate implementation and compliance, and streamline the regulations by deleting expired provisions. The proposed amendments that will reduce VOC emissions from several consumer product categories or lower the OFP of aerosol coatings will require a compliance response (*i.e.*, noncomplying products will need to be reformulated), and are discussed further below.

a. Antiperspirants and Deodorants

Proposing to exempt HFO-1234ze from the definition of VOC in the Antiperspirants and Deodorants Regulation is procedural in nature and would provide an additional reformulation option to manufacturers of antiperspirants and deodorants. There would be no additional compliance response expected from the regulated community.

b. Consumer Products

Noncomplying "Mist Spray Adhesive," "Screen Printing Adhesive," and "Web Spray Adhesive" products will need to be reformulated to comply with new or lower VOC limits. Manufacturers have the flexibility to choose the most cost-effective reformulation option for their products. However, the most likely reformulation pathways will be to replace, or partially replace, VOC solvents or propellants with non-VOC ingredients. This may require using one or more exempt solvents, increasing product solids, developing water-based technology, or formulating with a non-VOC propellant.

A VOC limit of 10 percent by weight, along with a 1 percent aromatic compound limit, is being proposed for aerosol "Multi-purpose Solvent" and "Paint Thinner" products. Manufacturers are expected to employ the same reformulation options as those used to reformulate nonaerosol products to meet the 3 percent VOC limit coming into effect in December 2013, with the addition of a propellant. To comply with these requirements, manufacturers may formulate products by using either a non-VOC propellant, exempt solvents, or by using emulsion technology using exempt VOCs.

A 25 g/L limit for nonaerosol "Multi-purpose Solvent" and "Paint Thinner" products has been in effect since January 1, 2011, in the SCAQMD. Products sold in the SCAQMD should already be in full compliance. Our proposal to duplicate these SCAQMD provisions in ARB's rule is designed to stem circumvention and ensure that the expected benefits from SCAQMD's rule are fully realized. Manufacturers will need to make a business decision as to whether they intend to sell "Multi-purpose Solvent" and "Paint Thinner" products in the SCAQMD.

To meet the proposed GWP limit of 150, no reformulation of "Mist Spray Adhesive," "Screen Printing Adhesive," "Web Spray Adhesive," aerosol "Multi-purpose Solvent" or aerosol "Paint Thinner" products will be needed because no use of compounds with GWP values greater than 150 were reported. The proposal is designed to prevent future use of higher GWP compounds.

The proposed amendments would prohibit the use of methylene chloride, perchloroethylene, or trichloroethylene in aerosol "Multi-purpose Solvent," aerosol "Paint Thinner," and "Screen Printing Adhesive" products. This prohibition, however, should not require reformulation because, based on the survey data reported, these products do not currently use these solvents in the formulation. We also note that the "Screen Printing Adhesive" products had previously been categorized as "Mist Spray Adhesive" products. A prohibition on use of chlorinated solvents is already in place for all aerosol adhesives.

Manufacturers may also comply with the proposed amendments through the use of either the Innovative Products Exemption (IPE) or the ACP. The IPE allows manufacturers of "innovative products" to comply with the Consumer Products Regulation if they demonstrate through clear and convincing evidence that their product will result in less VOC emissions than a complying product that meets the applicable VOC limit. Less VOC emissions from the innovative product may be realized as a result of some characteristic of the product formulation, design, delivery system, or other factors.

The ACP allows manufacturers to average the emissions from products above and below the applicable VOC limits, as long as the overall emissions are less than or equal to the emissions that would have occurred had all the products complied with the VOC limits. Manufacturers must submit an application which includes the VOC content of the products in the plan, a method of verifying the sales of each product in the plan, and other information necessary to track overall emissions.

c. Aerosol Coatings

The proposed amendments set new or lower Reactivity Limits for all aerosol coating categories. Noncomplying products will need to be reformulated by lowering the reactivity of their products. Manufacturers will comply with the proposed limits by substituting lower reactive ingredients for higher reactive ingredients.

d. Hairspray Credit Program, Tables of MIR Values, and Method 310

The proposed amendments to eliminate the Hairspray Credit Program, reorganize the oxygenated solvents by classification within the Tables of MIR Values, and revise analytical test procedures of Method 310 are administrative and procedural in nature in that they will clarify existing definitions, modify provisions to facilitate implementation and compliance, or streamline the regulations by deleting expired provisions. These proposals do not require a compliance response.

E. Environmental Impacts

1. Beneficial Impacts

The proposed amendments are expected to provide an air quality benefit. When taken together, the VOC limits for aerosol adhesives, aerosol "Multi-purpose Solvent" and "Paint Thinner" products, and aerosol coatings would result in a total VOC emission reduction of about 4 tons per day statewide. Of this amount, about 1.8 tons per day reduction would occur in the SCAQMD. Specifically, the proposed amendments would reduce VOC emissions from aerosol adhesive products and aerosol "Multi-purpose Solvent" and "Paint Thinner" products by about 0.4 ton per day. Proposed limits for aerosol "Multi-purpose Solvent" and "Paint Thinner" would become effective in 2016. Reducing the OFP of Aerosol Coating Products would result in an equivalent VOC reduction of about 3.7 tons per day. The proposed limits for aerosol coatings and aerosol adhesives would become effective in 2017.

In addition, strengthening exemption criteria for "Industrial Maintenance Coating" thinners and addressing circumvention of provisions for "Multi-purpose Solvent" and "Paint Thinner" products will result in fully realizing the expected air quality benefits.

The proposals would also ensure that use of compounds with higher GWP values does not begin in "Mist Spray Adhesive," "Web Spray Adhesive" and "Screen Printing Adhesive" and aerosol "Multi-purpose Solvent" and "Paint Thinner" products.

Use of chlorinated TAC solvents would be precluded from use in aerosol "Screen Printing Adhesive," "Multi-purpose Solvent" and "Paint Thinner" products as well as "Single Purpose Cleaner" and "Single Purpose Degreaser." Use of methylene chloride, perchloroethylene, and trichloroethylene has already been prohibited from use in other aerosol adhesives, nonaerosol "Multi-purpose Solvent" and "Paint Thinner" products, and aerosol coatings.

The proposed exemption of HFO-1234ze from the definition of VOC could result in additional VOC reductions to the extent that manufacturers are able to substitute use of this compound for currently used VOC propellants.

The amendments to provide further clarity should also aid stakeholders in understanding how to comply, thereby improving overall compliance with the regulations.

2. Resource Areas with No Impacts

Staff has evaluated the proposed amendments to determine whether their implementation would have the potential to adversely impact the environment. Based on staff's review, it has been determined that the proposed amendments would not result in any significant adverse impacts on the environment. The rationale for making this determination is further explained below.

As previously discussed, many of the amendments proposed in this rulemaking consist of administrative and procedural changes that affect only program administration, modifications to definitions, and facilitate implementation of the regulation and its enforceability. Therefore, compliance with these aspects of the proposed amendments could not possibly result in any physical change to the existing environment. These administrative changes are necessary to describe or clarify the types of products that are subject to VOC limits.

In the proposed amendments to the Consumer Products Regulation, staff is proposing to delay from December 31, 2015, to December 31, 2018, a 10 percent by weight VOC limit for "Multi-purpose Lubricant" products because the limit is not commercially and technologically feasible in the timeframe required in the current regulation. This proposed amendment would delay for 3 years a previously expected air quality benefit of 1.3 tons per day VOC reduction.

The proposed amendments to the Consumer Products Regulation specify provisions, include regulation of aerosol "Multi-purpose Solvent" and Paint Thinner" products. The aerosol forms of these products would have the same flammability issues as the nonaerosol forms which were discussed in the environmental analysis of the 2009 regulatory amendments. The regulation currently contains a prohibition on sale of flammable or extremely flammable nonaerosol "Multi-purpose Solvent" and "Paint Thinner" products unless specifically labeled to warn the consumer of the potential hazard. This provision is scheduled to sunset on December 31, 2015. At the time this provision was put in place, it applied only to liquid forms of "Multi-purpose Solvent" and "Paint Thinner" products. Because staff is now proposing to regulate the aerosol form of "Multi-purpose Solvent" and "Paint Thinner" products, as a safety precaution, staff is proposing to extend these safety labeling provisions until December 1, 2017. This proposal is designed to ensure that in the event aerosol "Multi-purpose Solvent" and "Paint Thinner" products are reformulated to increase the product's flammability, the consumer would be warned that the product is different. This warning would be especially necessary for products containing large amounts of acetone. While most aerosol forms of these products are already labeled as 'flammable' because they are formulated with flammable propellants, extending the date for requiring this warning label would provide additional protection.

For the proposed amendments to the Aerosol Coatings Regulation, there is the potential for a short-term very small increase in the OFP of "Hobby/Model/Craft" and "Shellac Sealer" coatings. In the existing regulation, the categories of "Hobby/Model/Craft" and "Shellac Sealer" coatings are further subdivided with separate limits. To streamline the regulation, staff is proposing to delete the subcategories and set a single limit effective January 1, 2015. Until the revised limits become effective, manufacturers of "Hobby/Model/Craft" and "Shellac Sealer" coatings could potentially reformulate their products to increase the OFP of their products. If all "Hobby/Model/Craft" and "Shellac Sealer" coatings were reformulated to the higher interim limit, staff estimates there would be an equivalent VOC increase of less than 0.1 ton per day for several months. Staff, however, does not expect this increase to occur. First, based on survey data for the 2010 calendar year, all "Hobby/Model/Craft" and "Shellac Sealer" coatings are already in full compliance with the lower limits proposed to become effective on January 1, 2015. Second, the interim limit that would allow "Hobby/Model/Craft" and "Shellac Sealer" coatings to be reformulated to increase OFP would likely become legally effective in late summer/early fall of 2014. Therefore, it is highly unlikely that manufacturers would opt to reformulate their complying products for the interim few months because that would not be cost effective. Therefore, staff determined there is a less than significant potential impact to air quality as a result of the proposed amendments to the Aerosol Coating Products Regulation.

Overall, emissions from consumer products will continue to decline. Staff expects a reduction in VOC emissions of about 5 tons per day to occur beginning December 31, 2013, and a further reduction of about 0.2 tons per day to occur beginning December 31, 2014, from VOC limits adopted in 2009 and 2010 rulemakings. Additionally, beginning in 2017, an equivalent VOC reduction of about 4 tons per day would be realized from implementation of these proposed amendments. Of this amount, about 1.8 tons per day reduction would occur in the SCAQMD.

Staff has concluded that the proposed amendments would result in no significant adverse impacts to aesthetics, agricultural and forestry resources, biological resources, cultural resources, geology and soils, greenhouse gas emissions, hazardous materials, hydrology and water quality, land use planning, mineral resources, noise, population and housing, public services, recreation, transportation/traffic, and utilities and service systems. These resources will not be impacted because compliance with the proposed amendments will not require any action that could affect these resources, either directly or indirectly. Based on staff's analysis, we have determined that implementing the proposed amendments will result in an overall beneficial impact on the environment because VOC emissions from consumer products and OFP of aerosol coatings will be reduced.

No discussion of alternatives or mitigation measures is necessary because no significant adverse environmental impacts were identified.

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VI. 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. ARB is committed to making environmental justice an integral part of its activities. The Board approved its Environmental Justice Policies and Actions on December 13, 2001, to establish a framework for incorporating environmental justice into ARB's programs consistent with the directives of State law (ARB 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 reduce VOC emissions from several consumer product categories and lower the OFP of aerosol coatings, thereby improving air quality. Use of certain toxic compounds and compounds with higher GWPs would also be prohibited in several categories. Many of the proposals are also designed to improve compliance.

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 and aerosol coatings is fairly uniform across the State, tracking with housing units, and their emissions are spread over the course of a day, rather than concentrated at a particular time of day. For these reasons, we believe that reducing emissions from the use of consumer products and aerosol coatings would benefit all Californians. We do not expect any communities, especially those with low-income and minority populations, regardless of location, to be disproportionally impacted by adoption of the proposed amendments.

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VII. Economic Impacts

This Chapter describes the economic impacts that would be expected from implementation of the proposed amendments to the Antiperspirants and Deodorants Regulation, the Consumer Products Regulation, the Aerosol Coating Products Regulation, Method 310, Tables of MIR Values and proposed repeal of the Hairspray Credit Program. Among other things, the proposed amendments would require a reduction in VOC emissions from consumer products ("Aerosol Adhesive," "Multi-purpose Solvent," and "Paint Thinner" products) and a reduction in the OFP of aerosol coating product emissions. We evaluated the cost impacts on manufacturers of these products, other industries associated with the consumer products and aerosol coatings industries, and consumers. Our analysis also estimates the cost effectiveness of the proposed amendments. Because cost effectiveness is traditionally based on cost per pound of VOC reduced, we are presenting our analysis in this metric.

This analysis focuses on the costs incurred by manufacturers to meet the proposed VOC standards and Reactivity Limits. There are no costs associated with the proposed amendments to the Antiperspirants and Deodorants Regulation, the Tables of MIR Values, Method 310, and the proposed repeal of the Hairspray Credit Program because these modifications are administrative in nature.

The analysis also provides an estimate of the fiscal impacts of the proposed amendments on State and local agencies. Potential fiscal impacts would be costs incurred by State agencies to administer, enforce, or comply with the proposal. Local agencies would have no costs associated with the proposed amendments.

Economic impact analyses are inherently imprecise, given the unpredictable behavior of companies in a highly competitive market such as consumer products. While staff has quantified the economic impacts to the extent feasible, some projections are necessarily qualitative, and based on general observations and facts known about the consumer products industry. This analysis, therefore, serves to provide a general picture of the economic impacts typical businesses might encounter. Individual companies may experience different impacts than projected.

This chapter provides the following information:

- Summary of Economic Impacts;
- Determination that this is not a Major Regulation;
- Costs of Compliance;
- Reasonable Alternatives;
- Return on Owners' Equity;

- Impacts on California Businesses, Consumers, and State and Local Agencies;
- Other Possible Economic Impacts of Regulatory Changes; and
- Mitigation of Potential Impacts.

This economic impacts analysis was conducted in accordance with the current legal requirements under the Administrative Procedures Act (APA). Similar methodologies and assumptions were used in recent consumer products rulemakings (ARB, 2009 and ARB, 2010a).

A. Summary of Economic Impacts

In this section, we describe the economic impacts that would be expected from implementation of the proposed amendments to the Consumer Products Regulation and the Aerosol Coating Products Regulation. Our analysis pertains to costs associated with complying with the proposed VOC standards or Reactivity Limits. We expect the other proposed amendments to these regulations, which are of an administrative nature, to result in negligible or no costs.

Businesses that manufacture consumer products and aerosol coatings that do not comply with the proposed limits would incur costs to reformulate their products.

Staff has estimated that the cost to comply with the proposed limits is about $5,300,000 per year. The total cost to comply with the proposed limits is approximately $26.5 million over five years. The cost includes both recurring (*e.g.*, raw materials) and nonrecurring (*e.g.*, research and development) costs and is estimated based on assumptions specific to each category.

Another measure of the economic impacts of the proposal is to determine the "dollars to be spent per pound of VOC reduced," or cost effectiveness (CE). The CE of the proposed amendments has been calculated to be about $1.82 per pound of VOC equivalent emissions reduced.

The "return on owner's equity" (ROE) compares a company's percentage reduction in profitability before and after incurring the costs associated with the proposed amendments. The analysis found that the overall reduction in profitability of a typical company in an affected industry ranges from negligible to about 6.3 percent. While a reduction in profitability of six percent is not considered significant, the potential exists that some manufacturers with low profit margin may experience a significant impact in their profitability.

Our analysis of ROE assumes that all compliance costs will be absorbed by the affected industry. However, it is most likely that affected businesses will be able to pass on at least part of the cost increase to consumers.

If all assumed compliance costs are passed on to the consumer, without consideration of typical retail mark-up, we estimate the cost per unit increase would range from $0.12 to $0.42 for consumer products. The cost per unit increase for over 95 percent of the Aerosol Coating Products sold would range from $0.05 to $0.53. For a few low volume, specialized-use products the increase in cost per unit may be higher. By apportioning annual sales to the 12.6 million households in California (U.S. Census, 2010), we estimated that a household purchases less than one unit of "Aerosol Adhesive" or aerosol "Multi-purpose Solvent" and "Paint Thinner" per year, and less than three units of aerosol coatings per year. Thus, the consumer's cost increase to purchase an "Aerosol Adhesive" or aerosol "Multi-purpose Solvent and "Paint Thinner" would increase by about $0.12 to $0.42 per year. For most aerosol coatings, the increased cost to the consumer would be about $0.15 to $1.59 per year.

Based on our ROE calculations, we believe that overall, most affected businesses will be able to absorb the costs, or will pass through some of the costs to the consumer, such that there will be no significant adverse impacts on their profitability. Therefore, we do not expect a noticeable change in employment; business creation, elimination or expansion; or business competitiveness in California. However, the proposed amendments may impose economic hardship on some businesses with very little or no margin of profitability.

We determined that there would be no significant adverse fiscal impacts to any local or State agency. Details of our cost analysis are in the following sections. Additional information as to how recurring and nonrecurring costs were estimated is contained in Appendices I and J.

B. Major Regulations

For purposes of this section, "major regulation" means any regulation that will have an economic impact on the state's business enterprises in an amount exceeding $10 million dollars ($10,000,000) per year, as estimated by the board, department, or office within the agency proposing to adopt the regulation in the assessment required by subdivision of section 11346.3 of the Government Code.

This proposal is not considered a major regulation because staff does not expect the cost of compliance to exceed $10 million in any year.

C. Reasonable Alternatives to the Regulation and the Agency's Reason for Rejecting those Alternatives

Staff evaluated two alternatives: no action and setting more stringent limits (see Chapter II). No alternative considered by the agency would be more effective in carrying out the purpose for which the regulation is proposed or would be as effective or less burdensome to affected private persons than the proposed regulation.

D. Costs of Compliance

The total cost to comply with the proposal requires an estimation of the recurring and nonrecurring costs that would be expended to reformulate and bring a product to market. Recurring costs for this analysis are those associated with the cost of the raw materials. Nonrecurring costs are assumed to be one-time costs and are those associated with research, development, and plant changes that may be necessary to develop a reformulated complying product. Our analysis further assumes that nonrecurring costs will be amortized over a project horizon of five years. Summing the recurring and amortized nonrecurring costs represents the total cost to reformulate a product. We then use the total cost to estimate the potential cost per unit increase to the consumer, the CE of the proposed amendments, and the ROE.

There are many variables in producing a product for market, and assumptions about those variables will greatly affect the outcome of any cost analysis. For each assumption, staff applied a test of "reasonableness" to determine if this was a likely approach to take, or if the event had a high probability of occurring. The following section presents the estimated cost to comply with the proposed amendments to the Consumer Products Regulation and the Aerosol Coating Products Regulation.

1. Recurring Costs

As part of the economic impact analysis, we evaluated the expected cost impacts from complying with the proposed VOC and Reactivity Limits on raw material costs. The change in the cost of raw material costs are expected to be ongoing, *i.e.*, they are recurring costs.

a. Methodology

The following data sets were used to determine the formulations which most closely reflect the "typical" compliant and noncompliant product contents:

- 2008 Paint Thinner and Multi-purpose Solvent Survey Update (ARB, 2008);
- 2010 Consumer and Commercial Products Survey Update for Aerosol Coating and Aerosol Adhesive Products (ARB, 2011); and
- 2012 Technical Assessment for Aerosol Multi-purpose Solvents and Paint Thinners (ARB, 2012).

For each category staff estimated a "low cost" and "high cost" by varying costs for ingredients. Information on how raw material costs were estimated, as well as formulations evaluated (with individual weight fractions and unit prices per pound), are shown in Appendix I. While these formulations may not reflect the exact composition of existing noncompliant products and compliant products that will be marketed, we believe they are reasonably representative for the purposes of this analysis.

Except for ingredient costs, we assumed changes in packaging, delivery systems, labeling, distribution and other recurring costs would be negligible relative to baseline levels of these costs. We believe this assumption is valid because the proposed limits should not require significant packaging or delivery system modifications. We also believe distribution costs would be the same because we do not expect manufacturers to sell and distribute "California only products." The most likely pathway for reformulation was assumed for noncompliant products. Despite this assumption, alternative formulations may allow lower-cost compliant products than shown in our analysis.

For the "Uniform Finish Coating," "Mold Release Coating" and "Two Component Coating" categories of aerosol coatings, the proposed amendments include new Reactivity Limits, however, the survey data indicates that all reported products meet the proposed limits. Even though these Reactivity Limits do not achieve reductions, they would insure that the OFP of these products does not increase from current levels. Because these products already comply with the proposed limits, there is no cost and thus, no cost analyses were conducted for these categories.

b. Results

The estimated costs of typical noncompliant and compliant formulations for each consumer product and aerosol coating category, and calculated total recurring costs are described below.

The estimated cost of typical noncompliant and compliant formulations for each category is displayed in Tables VII-1a and VII-1b. The values are taken from Appendix I.

Table VII-1a
Estimated Change in Formula Cost per Unit for Consumer Products*+

	Formula Cost per Unit				Cost Increase to Comply per Unit		
	Noncompliant		Compliant				
	Low	High	Low	High	Low	High	Average
Category	A_1	A_2	B_1	B_2	$C_1 = B_1 - A_1$	$C_2 = B_2 - A_2$	$C_3 = (C_1+C_2)/2$
Mist Spray Adhesive	$0.48	$0.59	$0.47	$0.58	$0.00	$0.00	$0.00
Screen Printing Adhesive	$0.62	$0.75	$0.61	$0.75	$0.00	$0.00	$0.00
Web Spray Adhesive	$0.52	$0.65	$0.52	$0.64	$0.00	$0.00	$0.00
Aerosol Multi-purpose Solvent & Paint Thinner	$0.45	$0.58	$0.46	$0.77	$0.01	$0.19	$0.10

* Raw material costs are assumed to be $0.00 when staff estimates that materials used to reformulate are comparably priced to current materials or are less expensive than currently used.
\+ Numbers are rounded in tables, however, unrounded numbers are used in calculations.

Table VII-1b
Estimated Change in Formula Cost per Unit for Aerosol Coatings*+

Category	Formula Cost per Unit				Cost Increase to Comply per Unit	
	Noncompliant		Compliant			
	Low	High	Low	High	Low	High
	A_1	A_2	B_1	B_2	$C_1 = B_1 - A_1$	$C_2 = B_2 - A_2$
Clear Coating	$0.54	$0.66	$0.58	$0.70	$0.04	$0.04
Flat Coating	$0.51	$0.64	$0.53	$0.67	$0.02	$0.03
Fluorescent Coating	$0.64	$0.74	$0.64	$0.74	$0.00	$0.00
Metallic Coating	$0.50	$0.61	$0.50	$0.62	$0.00	$0.01
Nonflat Coating	$0.53	$0.65	$0.55	$0.69	$0.03	$0.04
Primer	$0.81	$0.95	$0.81	$0.95	$0.00	$0.00
Auto Body Primer	$0.76	$0.90	$0.76	$0.90	$0.00	$0.00
Electrical /Electronic/ Conformal Coating	$0.54	$0.65	$0.63	$0.81	$0.09	$0.17
Exact Match Finish: Automotive	$0.36	$0.46	$0.37	$0.47	$0.00	$0.01
Exact Match Finish: Engine	$0.46	$0.59	$0.47	$0.60	$0.01	$0.01
Exact Match Finish: Industrial	$0.53	$0.64	$0.54	$0.67	$0.01	$0.03
Flexible Coating	$0.58	$0.68	$0.59	$0.70	$0.01	$0.01
Ground Traffic/Marking Coating	$0.49	$0.60	$0.53	$0.64	$0.04	$0.04

* Raw material costs are assumed to be $0.00 when staff estimates that materials used to reformulate are comparably priced to current materials or are less expensive than currently used.
\+ Numbers are rounded in tables, however, unrounded numbers are used in calculations.

As shown in Tables VII-1a and VII-1b, the expected change in cost of the raw materials is low because the ingredients predicted to be used in reformulations have similar costs to those in current use. The difference between high and low cost noncompliant and compliant formulations yields the change in ingredient costs. As shown in Columns C_1 and C_2, the anticipated raw materials cost change ranges from no cost (net savings or no cost) to about $0.20 increase per unit. Note that when the cost for raw materials in the predicted reformulated product are comparable or slightly cheaper to those currently used, rather than assigning a negative cost, we assume there will be no change in the cost of raw materials.

Using the change in the cost per unit from Tables VII-1a and VII-1b, the total recurring costs per category are calculated as shown in Tables VII-2a and VII-2b. To arrive at the total cost per category, estimated noncompliant unit sales (Column D) are multiplied by the recurring costs per unit taken from Tables VII-1a and VII-1b.

Table VII-2a
Total Estimated Recurring Costs for Consumer Products

Category	Annual California Non-complying Unit Sales*	Total Annual Recurring Cost per Category+		
		Low Cost	High Cost	Average Cost
	D	E_1 = D X C_1	E_2 = D X C_2	E_3 = (E_1 + E_2)/2
Mist Spray Adhesive	960,579	$0.00	$0.00	$0.00
Screen Printing Adhesive	116,855	$0.00	$0.00	$0.00
Web Spray Adhesive	490,025	$0.00	$0.00	$0.00
Aerosol Multi-Purpose Solvent & Paint Thinner**	200,000	$2,000	$38,000	$20,000

* Assumes "typical" unit size as shown in Appendix I.
+ Numbers are rounded in tables, however, unrounded numbers are used in calculations.
** Annual California sales rounded to protect confidentiality.

As shown in Table VII-2a, Column E_3 the average total recurring cost per category ranges from no cost to about $20,000 for the aerosol "Multi-purpose Solvent" and "Paint Thinner" products reformulated to comply with the proposed VOC limits.

As shown in Table VII-2b, Column E_3 the average total recurring cost per category ranges from $6 to about $350,000 for the "Fluorescent Coating" and "Nonflat Coating" products, respectively, reformulated to comply with the proposed reactivity limit.

2. Nonrecurring Costs

In this portion of the analysis, we evaluated the impacts of nonrecurring costs likely to be expended to comply with the proposed limits. These are assumed to be costs incurred once to conduct the necessary research and development and make any necessary modifications to manufacturing facilities needed to produce a complying product or product line. Technical literature and industry trade journals provide little information to estimate nonrecurring costs directly. This is not surprising because the industry is very competitive, and production cost data specific to a company are closely guarded trade secrets. Stakeholders have generally concurred that our assumptions for nonrecurring costs are reasonable. Appendix J displays the various phases of product development and the costs that are assigned to each phase.

Table VII-2b
Total Estimated Recurring Costs for Aerosol Coatings

Category	Annual California Non-complying Unit Sales*	Total Annual Recurring Cost per Category+		
		Low Cost	High Cost	Average Cost
	D	E_1 = D X C_1	E_2 = D X C_2	E_3 = (E_1 + E_2)/2
Clear Coating	1,489,678	$58,334	$58,777	$58,556
Flat Coating	2,570,431	$45,441	$86,395	$65,918
Fluorescent Coating	57,329	$0	$13	$6
Metallic Coating	1,023,713	$0	$11,693	$5,846
Nonflat Coating	11,031,676	$286,860	$420,427	$353,644
Primer	2,116,444	$0	$1,905	$952
Auto Body Primer	803,428	$0	$648	$324
Electrical/Electronic/ Conformal Coating	814	$72	$135	$103
Exact Match Finish: Automotive	558,255	$2,667	$5,501	$4,084
Exact Match Finish: Engine	303,795	$3,812	$4,129	$3,970
Exact Match Finish: Industrial	139,225	$966	$3,885	$2,425
Flexible Coating	1,344	$11	$16	$13
Ground Traffic/Marking Coating	2,135,732	$83,789	$92,849	$88,319

* Assumes "typical" unit size as shown in Appendix I.
+ Numbers are rounded in tables, however, unrounded numbers are used in calculations.

a. Methodology

To estimate nonrecurring costs, we used a low and high cost approach for each product category of consumer products. The consumer product categories proposed for regulation fall under either "household care" or "adhesive" type of products. To estimate nonrecurring costs for aerosol coatings, we used a single cost approach for each category. The aerosol coatings categories are considered "household care" products. Appendix J displays how nonrecurring costs were apportioned. For each category only new or additional costs were considered. Costs were not considered that would have been expected in the normal course of business if the regulation had not been in effect.

Because most of the data for aerosol coatings reported in the 2010 Survey represented aerosol coating product groups, we estimated the cost to reformulate an aerosol coating product line. In most cases aerosol coating product groups are color variants of the same product. The number of products grouped in the reported data ranged from a single product to as many as 40 products. While some product lines have a relatively large number of colors, the survey data show that, on average, the number of products grouped is five.

Amortizing Nonrecurring Costs

In the next part of our analysis, we amortized nonrecurring costs over five years using the Capital Recovery Method. This is a standard methodology and it is recommended under guidelines issued by the California Environmental Protection Agency.

The equation below shows the derivation for the Capital Recovery Factor (CRF) which was used to calculate the amortized cost.

Annualized nonrecurring costs = (Nonrecurring Costs) X $[i(1 + i)^n /((1 + i)^n-1)]$

Where:	$i(1 + i)^n /((1 + i)^n-1)$	=	Capital Recovery Factor (CRF)
	i	=	discount interest rate over project horizon, %
	n	=	number of years in project horizon
	Nonrecurring Costs	=	total nonrecurring cost per product

We assumed a project horizon of five years, a commonly cited period for an investment's useful lifetime in the chemical processing industry. We also assumed a fixed interest rate of 5 percent throughout the project horizon. These assumptions are conservative. Based on these assumptions, the CRF, as shown below, is 0.23097.

$$\begin{aligned} CRF &= 0.05(1+0.05)^5/((1+0.05)^5-1) \\ &= 0.05(1.28)/0.28 \\ &= 0.064/0.28 \\ &= 0.231 \text{ (rounded)} \end{aligned}$$

The equation below shows that for a given category the estimated total nonrecurring costs per product is multiplied by the CRF to convert these costs into equal annual payments over a project horizon (i.e., the projected useful life of the investment) at a discount rate.

Using the low cost estimate for "Mist Spray Adhesive" from Table VII-3, Column A_1, the amortized cost is:

Amortized Cost: $162 X 0.23097 = $37

b. Results

The results of our assessment of the nonrecurring costs to be incurred for each consumer product or aerosol coating category are explained below. The methodology to estimate nonrecurring costs for consumer products and aerosol coatings are somewhat different, so they are discussed separately.

Table VII-3, Column A displays the results of our assessment of the nonrecurring costs to be incurred for each consumer product category. These costs are taken from Appendix J. Estimated amortized nonrecurring costs for the low cost scenario range from $37 to about $3,000 per category. Note also that nonrecurring costs for the high cost scenario range from about $4,600 to $11,000 per category.

Table VII-3
Estimated Nonrecurring per Product Costs to Comply with the Proposed Limits

	Cost Per Product		Amortized Cost Per Product	
	Low	High	Low	High
Category	A_1	A_2	B_1 = A_1 X CRF*	B_2 = A_2 X CRF*
Mist Spray Adhesive	$162	$20,064	$37	$4,634
Screen Print Adhesive	$162	$20,064	$37	$4,634
Web Spray Adhesive	$162	$20,064	$37	$4,634
Aerosol Multi-purpose Solvent & Paint Thinner	$12,783	$47,571	$2,952	$10,987

* CRF = Capital Recovery Factor of 0.23097

Next, nonrecurring costs for all noncompliant products per category are calculated by using the low and high amortized costs. In the low cost scenario, we assume that manufacturers will conduct research and other product development once for a given product category, and use these efforts as a basis to reformulate all their other non-complying products in the same product category. As shown in Table VII-4, the low cost incurred by all businesses is multiplied by the low product cost (Column C_1) and number of companies (Column B) that have noncomplying products within the given category.

In the total nonrecurring high cost scenario, we assume that reformulation costs would be incurred per product. This means that companies that have multiple noncomplying products in a given category would conduct separate research and development efforts for each product in their respective product lines. Thus in this case, the high amortized cost (Column C_2) is multiplied by the number of noncomplying products (Column A).

Table VII-4
Estimated Total Nonrecurring Costs per Category for Consumer Products

Category	# Non-complying Products*	# Non-complying Companies	Estimated Cost Per Product		Annualized Nonrecurring Cost per Category+		
	A	B	C_1 low	C_2 high	D_1 low = C_1 x B	D_2 high = C_2 x A	D3 avg = (D1+D2)/2
Mist Spray Adhesive	68	28	$37	$4,634	$1,036	$315,112	$158,074
Screen Printing Adhesive	6	3	$37	$4,634	$111	$27,804	$13,958
Web Spray Adhesive	58	29	$37	$4,634	$1,073	$268,772	$134,922
Aerosol Multi-Purpose Solvent & Paint Thinner**	10	6	$2,952	$10,987	$17,714	$109,874	$63,794
Total:	142	41++	NA	NA	$19,957	$721,579	$370,768

* Adjusted for market covered in survey. Assume 90% for all categories.
+ Numbers are rounded in tables, however, unrounded numbers are used in calculations.
++ The total is less than the sum since the same companies appear in multiple categories.
** Number of noncomplying companies and products rounded to protect confidentiality.

As shown in Table VII-4, total category annualized nonrecurring costs for the low cost scenario range from about $100 to about $18,000. For the high cost scenario, costs range from about $28,000 to about $300,000. Also as shown in Table VII-4, the total average nonrecurring cost to industry is projected to range from about $14,000 to about $160,000 dollars per year for five years.

In order to comply with the proposed Reactivity Limits for aerosol coatings, substitution of lower reactive solvents for higher reactive solvents will be necessary. Major retooling of manufacturing equipment would not be required, technical data changes would be minor, and the change in marketing costs would be small. Based on these assumptions, the estimated nonrecurring costs for each aerosol coating category are $16,504 per product line. These costs are detailed in Appendix J. This cost multiplied by the CRF of 0.23097 yields an amortized cost of $3,811.94. We expect this nonrecurring cost to be the same for each of the aerosol coating categories.

Next, nonrecurring costs for all noncompliant products per category are calculated by using the amortized costs. We assume that manufacturers will conduct research and other product development once for a given product line, and use these efforts as a basis to reformulate all their other noncomplying products in the same product line.

As shown in Table VII-5, the cost incurred by all businesses is the product of the cost (Column C) and number of noncomplying product lines within the given category (Column A).

Table VII-5
Estimated Total Nonrecurring Costs per Category for Aerosol Coatings

Category	# Non-complying Products*	Estimated Cost Per Product*	Total Nonrecurring Cost per Category++
	A	C	D =C X A
Clear Coating	190	$3,812	$724,269
Flat Coating	89	$3,812	$339,263
Fluorescent Coating	3	$3,812	$11,436
Metallic Coating	59	$3,812	$224,905
Nonflat Coating	278	$3,812	$1,059,721
Primer	145	$3,812	$552,732
Auto Body Primer	50	$3,812	$190,597
Electrical/Electronic/Conformal Coating	6	$3,812	$22,872
Exact Match Finish: Automotive	226	$3,812	$861,500
Exact Match Finish: Engine	12	$3,812	$45,743
Exact Match Finish: Industrial	68	$3,812	$259,212
Flexible Coating	1	$3,812	$3,812
Ground Traffic/Marking Coating	7	$3,812	$26,684
Total:	1,133	NA	$4,322,745

* Number of noncomplying product lines rather than individual products. Adjusted for market coverage.
++ Numbers are rounded in tables, however, unrounded numbers are used in calculations.

As shown in Table VII-5, total category annualized nonrecurring costs range from about $3,812 to about $1,100,000. Also as shown in Table VII-5, the total nonrecurring cost to industry is projected to be about $4.3 million dollars per year for five years.

3. Total Costs

As shown below, for each consumer product and aerosol coating category, the total cost of reformulation is estimated by summing recurring costs (see Tables VII-2a and VII-2b, respectively) with nonrecurring amortized costs (see Tables VII-4 and VII-5, respectively). Tables VII-6a and VII-6b below display the total cost to reformulate all

noncomplying products for each consumer product and aerosol coating category, respectively.

Table VII-6a
Estimated Total Costs to Comply with the Proposed VOC Limits for Consumer Products

	Nonrecurring Costs		Recurring Costs*	
	Low	High	Low	High
	A_1	A_2	B_1	B_2
Mist Spray Adhesive	$1,046	$315,121	$0.00	$0.00
Screen Print. Adhesive	$112	$27,805	$0.00	$0.00
Web Spray Adhesive	$1,084	$268,779	$0.00	$0.00
Aerosol Multi-Purpose Solvent & Paint Thinner**	$17,714	$109,874	$2,000	$38,000
	Nonrecurring and Recurring Costs+			
	Low	High	Average	
	C_1=	C_2=	C_3=	
	A_1+ B_1	A_2+ B_2	$(C_1+ C_2)/2$	
Mist Spray Adhesive	$1,046	$315,121	$158,084	
Screen Print. Adhesive	$112	$27,805	$13,958	
Web Spray Adhesive	$1,084	$268,779	$134,932	
Aerosol Multi-Purpose Solvent & Paint Thinner	$19,714	$147,874	$83,794	
TOTAL:	NA	NA	$390,768	

* A cost of $0 may indicate a per unit cost of less than one-half of one cent.
\+ Numbers are rounded in tables, however, unrounded numbers are used for calculations.

Table VII-6a (Column C_3) shows the average cost estimate for consumer products to range from about $14,000 to about $160,000. As shown in Column C_3, the overall average cost to reformulate all noncompliant products for all consumer product categories is about $391,000.

For aerosol coatings products, as shown in Table VII-6b, we estimate the industry compliance costs to range from $4,000 to about $1.4 million per year for "Flexible Coating" and "Nonflat Coating" categories, respectively.

Table VII-6b
Estimated Total Costs to Comply with the Proposed MIR Limits for Aerosol Coatings

	Nonrecurring Costs*	Recurring Costs*	Total+
	A	B	C = A + B
Clear Coating	$724,269	$58,556	$782,825
Flat Coating	$339,263	$65,918	$405,181
Fluorescent Coating	$11,436	$6	$11,442
Metallic Coating	$224,905	$5,846	$230,751
Nonflat Coating	$1,059,721	$353,644	$1,413,364
Primer	$552,732	$952	$553,684
Auto Body Primer	$190,597	$324	$190,921
Electrical /Electronic/ Conformal Coating	$22,872	$103	$22,975
Exact Match Finish: Automotive	$861,500	$4,084	$865,583
Exact Match Finish: Engine	$45,743	$3,970	$49,714
Exact Match Finish: Industrial	$259,212	$2,425	$261,638
Flexible Coating	$3,812	$13	$3,825
Ground Traffic/Marking Coating	$26,684	$88,319	$115,002
TOTAL:	$4,322,745	$584,161	$4,906,906

* A cost of $0 may indicate a per unit cost of less than one-half of one cent.
\+ Numbers are rounded in tables, however, unrounded numbers are used in calculations.

As shown in Column C, the overall annual cost to reformulate all noncompliant products for all categories is about $4.9 million.

4. Cost per Unit

We also evaluated the potential increased cost the consumer would pay if all costs of compliance were passed onto the consumer (not including retail mark-up). For this estimate, we assumed that all recurring and nonrecurring costs are assessed only to the number of noncomplying units in each category. We also assumed products reformulated to meet the proposed limits will be marketed in California only.

From our experience, we know that businesses generally formulate and distribute to the entire nation products that comply with California regulations, rather than incurring the additional cost of setting up a California specific product distribution system. Therefore,

we anticipate that the costs of compliance will not be assessed only to products sold in California, but will be spread over products sold across the country. If the costs are spread over products sold across the country, the cost per unit would be about 8 times lower than the results in Tables VII-7 and VII-8 by the California-apportionment factor (*i.e.*, the current ratio of California to U.S. population, or 12.1 percent (US Census, 2013)). It is also conservative to assume that only the cost of noncomplying products would increase because of competition in the market.

The details of our analysis of estimating the average cost per unit increase to the California consumer for the consumer products and aerosol coatings are explained below.

Tables VII-7 and VII-8 display the results of our analysis for consumer products and aerosol coatings. The nonrecurring costs from Tables VII-4 and VII-5 are divided by the number of noncomplying units sold in California per year (see column D of Tables VII-2a and 2b). The resulting nonrecurring cost per unit is then added to the recurring average cost per unit (taken from Tables VII-2a and 2b) to arrive at the total increase in cost per unit to the consumer. To illustrate, the nonrecurring portion of cost that would be passed onto the consumer is estimated by dividing the nonrecurring cost for "Mist Spray Adhesive" products of $158,084 by the unit sales per year, or 960,579. The resulting cost passed onto the consumer for "Mist Spray Adhesive" products would be about $0.16 per unit.

Table VII-7
Estimated Per-Unit Cost Increases to the Consumer for Consumer Products

Category	Estimated Noncompliant Unit Sales Per Year in CA	Nonrecurring Cost/Unit	Recurring Cost/Unit	Total Increase Cost/Unit
	A	B	C	D = B + C
Mist Spray Adhesive	960,579	$0.16	$0.00	$0.16
Screen Printing Adhesive	116,855	$0.12	$0.00	$0.12
Web Spray Adhesive	490,025	$0.27	$0.00	$0.27
Aerosol Multi-purpose Solvent and Paint thinner	200,000	$0.32	$0.10	$0.42

As shown in Table VII-7, we estimate the average cost per unit increase to the California consumer to range from $0.12 to about $0.42. Because of unpredictable factors, such as the highly competitive nature of the consumer products market, it is not possible to accurately predict the final retail price of products that will comply with the proposed limits when they become effective. To the extent the cost impacts are passed on to consumers, the final retail prices may be lower or higher than suggested by this analysis.

Table VII-8 displays the results of our analysis for the Aerosol Coating Products. The nonrecurring costs (Table VII-5) are divided by the number of noncomplying units sold in California per year (see column A of Table VII-8). Likewise total recurring costs (Table VII-2b) are divided by the number of noncomplying units. The resulting nonrecurring cost per unit is then added to the recurring cost per unit (see column C of Table VII-8) to arrive at the total increase in cost per unit to the consumer.

Table VII-8
Estimated Per-Unit Cost Increases to the Consumer for Aerosol Coatings

Category	Estimated Noncompliant Unit Sales Per Year in CA A	Nonrecurring Cost/Unit B	Recurring Cost/Unit C	Total Increase Cost/Unit D = B + C
Clear Coating	1,489,678	$0.49	$0.04	$0.53
Flat Coating	2,570,431	$0.13	$0.03	$0.16
Fluorescent Coating	57,329	$0.20	$0.00	$0.20
Metallic Coating	1,023,713	$0.22	$0.01	$0.23
Nonflat Coating	11,031,676	$0.10	$0.03	$0.13
Primer	2,116,444	$0.26	$0.00	$0.26
Auto Body Primer	803,428	$0.24	$0.00	$0.24
Electrical/Electronic/Conformal Coating	814	$28.10	$0.13	$28.22
Exact Match Finish: Automotive	558,255	$1.54	$0.01	$1.55
Exact Match Finish: Engine	303,795	$0.15	$0.01	$0.16
Exact Match Finish: Industrial	139,225	$1.86	$0.02	$1.88
Flexible Coating	1,344	$2.84	$0.01	$2.85
Ground Traffic/Marking Coating	2,135,732	$0.01	$0.04	$0.05

As shown in Table VII-8, we estimate the average cost per unit increase to the California consumer to range from $0.05 for Ground Traffic/Marking Coating to $28.22 for the "Electrical/Electronic/Conformal Coating." Electrical/Electronic/Conformal Coating" products are predominately for commercial and industrial use and the costs associated with these coatings are not typical of the other aerosol coating categories. The typical aerosol coating product ranges in cost from about $5 to $10, while the cost range for "Electrical/Electronic/Conformal Coating" products is about $24 to $50. We also note that there is a very high complying market share (95 percent) in this category

so reformulation technologies are readily available that could be used. This would result in a lower cost than estimated here. Because of unpredictable factors such as the highly competitive nature of the aerosol coatings products market, it is not possible to accurately predict the final retail price of products that will comply with the proposed limits when they become effective. To the extent the cost impacts are passed on to consumers, the final retail prices may be lower or higher than suggested by this analysis.

5. Cost-Effectiveness (CE)

Using the total costs displayed in Tables VII-6a and VII-6b, we evaluated the anticipated CE of the proposed new limits for consumer products and aerosol coatings. Such an evaluation allows us to compare the efficiency of the proposed limits in reducing a pound of VOC relative to other existing regulatory programs.

The CE of a reduction strategy is generally defined as the ratio of total dollars to be spent to comply with the strategy (as an annual cost) to the mass reduction of the pollutant(s) to be achieved by complying with that strategy (in annual pounds). The CE is calculated as shown by the following general equation:

$$\text{Cost Effectiveness} = \frac{\text{Total Cost to Comply}}{\text{Annual Mass Reduction in VOC}}$$

We estimate that, when fully effective, the proposed limits will result in VOC equivalent emission reductions of about 4 tons per day, or 2,920,000 pounds per year from consumer products and aerosol coatings. In this chapter, we have calculated that the average total cost to comply with the proposed limits is $5.3 million per year.

The CE of the proposed amendments is about $1.82 per pound of VOC reduced, as shown by the following equation:

$$\frac{\$5{,}300{,}000}{2{,}920{,}000 \text{ pounds}} = \$1.82 \text{ per pound}$$

Table VII-9 shows a comparison of the CE for the proposed limits relative to other ARB consumer product regulations and control measures. As shown in Table VII-9, the CE is comparable to several other rulemakings.

Table VII-9
Comparison of Cost-Effectiveness for ARB Consumer Product Regulations/Measures

Regulation/Control Measure	Cost-Effectiveness (Dollars per Pound VOC Reduced)
2013 Amendments	**$1.82**
2010 Amendments (ARB, 2010a)	$0.98
2009 Amendments (ARB, 2009)	$0.29
2008 Amendments (ARB, 2008a)	$6.23
2006 Amendments (ARB, 2006a)	$2.35
Aerosol Adhesives (ARB, 2000a)	$6.00
Architectural and Industrial Maintenance Coatings (ARB, 2007)	$1.12

E. Return on Owners' Equity

Typical California businesses are affected by the proposed new limits to the extent that the implementation of these requirements would change their profitability. To estimate reduction in profitability, this portion of the economic impacts analysis compares the ROE for affected businesses before and after inclusion of the cost to comply with the proposed amendments. The data used in this analysis are obtained from annual financial reports of affected companies and online financial sources, the ARB's 2010 Aerosol Coating and Adhesive Products Survey (ARB, 2010), and the Technical Assessment for "Multi-purpose Solvent" and "Paint Thinner" products.

1. Affected Businesses

Any business which manufactures or markets consumer products subject to the proposed new limits and requirements can be directly affected by this regulation. Also potentially affected are businesses which supply raw materials or equipment to manufacturers or marketers, and those that distribute or sell consumer products and aerosol coatings in California.

For consumer products, the focus of this analysis will be on manufacturers, marketers and distributors that are most affected by the proposed measures. Of the companies manufacturing the affected consumer products, six are located in California, and one of the six companies is a small business. Altogether, there are about 150 products (based on reported figures in the 2010 Survey).

For aerosol coatings, although other entities such as distributors, retailers, end users and raw material suppliers may be impacted, aerosol coating manufacturers will be the

primary entities affected. Of all the manufacturers, 8 of the 93 companies affected by the proposed amendments represent about 90 percent of the market share of sales for Aerosol Coating Products. Staff estimates these manufacturers will absorb most of the cost impacts associated with meeting the proposed limits. The focus of this analysis will be on these large manufacturers. Thirteen of these companies are located in California and eight of the thirteen companies are small businesses. Altogether, there are 1,133 product lines (Table VII-5, column A).

2. Analysis Approach

The approach used in evaluating the potential economic impact of the proposed measures on these businesses is as follows:

- a typical business from each product category was selected from the Surveys' respondents;
- a range of compliance costs were estimated for each affected product category. The average cost for consumer products (see Table VII-6a), and the cost for aerosol coatings (Table VII-6b) for each category was used in this analysis;
- compliance cost to a typical business was then estimated based on a weighted average of all product category costs in the affected industry;
- estimated cost was adjusted for federal and State taxes;
- the ROE was calculated for each of these businesses by dividing the net profit by the net worth. The adjusted cost was then subtracted from net profit data. The results were used to calculate an adjusted ROE; and
- the adjusted ROE was then compared with the ROE before the subtraction of the cost to determine the potential impact on the profitability of the business.

An ROE reduction of more than 10 percent in profitability, assuming that all costs are absorbed by the affected company and not passed on to the consumer, is considered to indicate a potential for significant adverse economic impacts. This threshold has been used consistently by ARB staff to determine impact severity and is consistent with that used by the U.S. EPA.

3. Assumptions

The 2010-2012 actual financial data for eight of the largest aerosol coating companies in the Paint and Coatings Manufacturing (North American Industry Classification System (NAICS) code 325510), seven largest adhesive companies in the Adhesive Manufacturing (NAICS code 325520), and one multi-purpose solvent and paint thinner company (NAICS code 325510) were used to calculate the ROEs before and after the subtraction of the compliance costs for a typical business. The calculations were based on the following assumptions:

- affected companies account for about 90 percent of the market share of aerosol coatings and about 90 percent of the market share of consumer products;

- all affected businesses were subject to federal and State tax rates of 39.6 percent and 10.6 percent respectively; and
- affected businesses are not able to increase the prices of their products, nor can they lower their costs of doing business through short-term cost-cutting measures.

Given the limitation of available data, we believe these assumptions are reasonable for most businesses at least in the short run; however, they may not be applicable to all businesses.

4. Results

Table VII-10 shows the results of our analysis of ROE. The percentage in reduction of profitability ranges from 0.05 percent to about 3.3 percent for aerosol coatings and from no impact to about 6.3 percent for consumer products. The average change in ROE is 0.8 percent for aerosol coatings and 1.0 percent for consumer products. These ROE values are not considered significant.

Table VII-10
Summary of Decline in Return on Owners' Equity (ROE)

NAICS	Description	Percent Change in ROE	Average Percent Change in ROE
325510	Paint and Coatings Manufacturing		
	- Aerosol Coatings	0.05 – 3.3	0.8
	- Multi-purpose Solvent and Paint Thinner	0.6	0.6
325520	Adhesive Manufacturing	0.00 – 6.3	1.0

Our analysis assumes that all compliance costs will be absorbed by the affected industry. However, it is most likely that affected businesses will be able to pass on at least part of the cost increase to consumers. Because consumers spend only a small portion of their annual budget on affected products, they are not expected to be sensitive to a small increase in the prices of those products. To the extent that the projected costs are passed on to consumers, the impact on business profitability is likely to be much less than estimated in our projection.

The proposed amendments impact each company uniquely and each company will choose the manner and timing to comply differently. We expect some companies to begin absorbing the costs from the proposed amendments immediately upon adoption, while others will wait until the effective dates. We believe that overall, most affected businesses will be able to absorb the costs, or will pass through some of the costs to the consumer, such that there will be no significant adverse impacts on their profitability. However, the proposed amendments may impose economic hardship on some businesses with very little or no margin of profitability.

F. Impacts on California Businesses, Consumers, and State and Local Agencies

Section 11346.3 of the Government Code requires State agencies to assess the potential for adverse economic impacts on California business enterprises and individuals when proposing to adopt or amend any administrative regulation. The assessment must include a consideration of the impact of the proposed amendments on California jobs; business expansion, elimination or creation; and the ability of California business to compete with businesses in other states.

1. Potential Impact on California Businesses

Our profitability analysis shows an insignificant change in the average profitability of affected businesses that manufacture consumer products and Aerosol Coating Products, if they absorbed the entire cost of compliance. We believe that these manufacturers will pass through at least a portion of their compliance costs to maintain profitability. To the extent that businesses are able to pass on the increased cost to consumers, the adverse impact of the proposed measures would be less than projected in this analysis. Furthermore, the projected impact will be less if businesses are able to improve their operational efficiency, thus reducing their costs.

Nonetheless, the proposed measures may impose economic hardship on some businesses with very little or no margin of profitability. These businesses can seek relief under the variance provisions of the consumer products and Aerosol Coating Products regulations for extensions to their compliance dates. Such extensions may provide sufficient time to minimize the cost impacts to these businesses.

2. Potential Impact on Business Creation, Elimination or Expansion

The proposed amendments would have no noticeable impact on the status of California businesses. This is because most affected businesses are expected to be able to pass on the bulk of the reformulation cost to consumers in terms of higher prices for their products. However, if any of the small California businesses that reported sales to us in the Surveys have little or no margin of profitability, they may lack the financial resources to reformulate their products on a timely basis. Should the proposed measures impose significant hardship on these businesses, temporary relief in the form of a compliance date extension under the variance provision may be warranted.

On the other hand, the proposed measures may provide business opportunities for some California businesses or result in the creation of new businesses. California businesses which supply raw materials and equipment or provide consulting services to affected industries may benefit from increased industry spending on reformulation.

3. Potential Impact on Business Competitiveness

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

Nonetheless, the proposed amendments may have an adverse impact on the competitive position of some small, marginal businesses in California if these businesses lack resources to develop commercially acceptable products in a timely manner. As stated above, such impacts can be mitigated to a degree with a justified compliance extension under the variance provisions of both the Consumer Products and the Aerosol Coating Products Regulations. For consumer products additional regulatory flexibility is afforded by the IPE or the ACP Regulation.

4. Potential Impact on California Employment

The proposed amendments are not expected to cause a noticeable change in California employment and payroll. As shown in Table VII-11, according to the U.S. Census Bureau, California employment in the industries affected by the proposed amendments was about 3,790 in 2011. This represents less than one percent of manufacturing employment in California. Also, as shown in Table VII-11, these employees generated about $220 million in payroll. This also accounts for less than one percent of the total California manufacturing payroll in 2011.

Table VII-11
California Employment and Payroll in Affected Industries

	Number of Employees		Payroll	
NAICS	California	California Share as Percent of U.S.	California (thousand dollars in 2011)	California Share as Percent of U.S.
325510	2,297	6.6	122,944	6.3
325520	1,493	8.1	96,983	8.7
Total	3,790		219,927	

Source: (U.S. Census Bureau, 2011)

5. Impacts on California Consumers

The potential impact of the proposed amendments on consumers depends upon the ability of affected businesses to pass on the cost increases to consumers. Competitive market forces may prevent businesses from passing all of their cost increases on to consumers. Thus, we do not expect a significant change in retail prices. However, for

the proposed limits for some categories, businesses will likely be unable to absorb all their costs of doing business. They will likely pass some of their cost increases on to consumers.

Assuming the affected industry will pass on the entire compliance costs to consumers in terms of higher prices, we estimate the average cost per unit increase for an "Aerosol Adhesive" product would be less than $0.27 for all "Aerosol Adhesive" categories, and $0.42 for "Multi-purpose Solvent" and "Paint Thinner" products. Under the same assumption, we estimate the price for 95 percent of Aerosol Coating Products would increase by no more than $0.53 per unit for all aerosol coating categories, except for "Electrical/Electronic/Conformal Coating" products. For very specialized niche products the cost increase would be from $1.55 to $28.22. The high end of this range is the cost for "Electrical/Electronic/Conformal Coating" products. These products are purchased by commercial or industrial consumers. We also believe our cost analysis over estimates the cost to comply because over 95 percent of products in this category are already in compliance with the proposed limit.

Apportioning annual sales of the categories to the number of California households, we estimated that households purchase less than three containers of Aerosol Coating Products and less than one container of aerosol adhesives and "Multi-purpose Solvent" and "Paint Thinner" products subject to the proposed regulations. We also estimated in Section B of this chapter that the potential cost increase per unit from compliance with the proposed VOC limits ranged from $0.12 to $0.42 for consumer products. The potential annual cost increase for almost all aerosol coatings would be no more than $1.59.

The proposed amendments may also affect consumers adversely if they result in reduced performance attributes of the products. However, this scenario is unlikely to occur for the following reasons. First, for the proposed limits, there are already complying products with a market presence. Thus, the industry already has the technology to manufacture compliant products that satisfy consumers. Second, marketers are unlikely to introduce a product which does not meet their consumers' expectations. This is because such an introduction would be damaging not only to the sale of the product, but also to the sale of other products sold under the same brand name (impairing so-called "brand loyalty"). Finally, the Board has provided flexibility, under the existing Consumer Products Regulation and Aerosol Coating Products Regulation, to businesses whose situations warrant an extension to their compliance dates. For companies that can justify such variances, the additional time may afford more opportunity to explore different formulation, cost-cutting, performance-enhancing, or other marketing strategies which can help make the transition to new complying products nearly transparent to consumers.

6. Potential Impacts to California State or Local Agencies

State agencies are required to estimate the cost or savings to any State or local agency and school district in accordance with instructions adopted by the Department of

Finance. The estimate shall include any non-discretionary cost or savings to local agencies and the cost or savings in federal funding to the State.

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

G. Other Possible Economic Impacts of Regulatory Changes

In addition to the proposed mass-based VOC and reactivity-based PWMIR limits, there are other proposed amendments to both the Consumer Products Regulation and Aerosol Coating Products Regulation, most of which are administrative in nature. We do not expect these amendments to have any significant economic impact on affected businesses, because the proposed amendments modify existing requirements rather than add new requirements. While we do not expect any significant economic impact from any of the proposals, it is possible that there could be some negligible increased cost to business resulting from proposed changes.

H. Mitigation of Potential Impacts

If adopted by the Board, the proposed mass-based VOC limits will be incorporated in section 94509 of the Consumer Products Regulation (title 17, CCR, sections 94507-94517).

Manufacturers of consumer products can also comply with the proposed amendments through the use of the IPE which allows a product to exceed the VOC limit if it is clearly demonstrated that the "innovative" product will result in less VOC emissions than a complying product that meets the applicable VOC limit.

Manufacturers of consumer products can also comply with the proposed amendments through the use of the ACP which allows emissions averaging of various regulated products throughout their product lines.

If adopted by the Board, the proposed reactivity limits will be incorporated in section 94522 of the Aerosol Coating Products Regulation (title 17, CCR, sections 94520-94528). These limits provide additional flexibility to reformulate aerosol coatings because they allow for use of a greater number of ingredients in formulating.

Nevertheless, the proposed measures may impose economic hardship on some businesses with very little or no margin of profitability. These businesses, if needed, can

seek relief under the variance provisions in the regulations for extensions to their compliance dates. Such extensions may provide sufficient time to minimize the cost impacts to these businesses.

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VIII. Summary and Rationale for Each Regulatory Provision

In this Chapter, we provide a description of the proposed amendments to the Regulation for Reducing Volatile Organic Compound Emissions from Antiperspirants and Deodorants (Antiperspirants and Deodorants Regulation), the California Regulation for Reducing Emissions from Consumer Products (Consumer Products Regulation), the California Regulation for Reducing the Ozone Formed from Aerosol Coating Product Emissions (Aerosol Coating Products Regulation), the Tables of MIR Values, and ARB Method 310 and explain the rationale for the amendments. Rationale for the proposed repeal of the Hairspray Credit Program is also described. It is intended to satisfy the requirements of Government Code 11343.2, which requires that a "plain English" summary of the regulation be made available to the public.

A. Antiperspirants and Deodorants

In this section, we provide a plain English description of the proposed amendments to the Antiperspirants and Deodorants Regulation along with the rationale for the amendments. The entire regulation is codified in Title 17, CCR, sections 94500-94506.5.

Summary of Proposed Amendments to Section 94501(m)

Staff is proposing to modify the definition of "Volatile Organic Compound" (VOC) to include an exemption for HFO-1234ze.

Rationale for Proposed Amendments to Section 94501(m)

ARB staff received a petition from Honeywell Corporation, requesting an exemption from the VOC definition for HFO-1234ze. U.S. EPA exempted HFO-1234ze on June 7, 2012. Staff evaluated the petition and determined that HFO-1234ze has a negligible contribution to tropospheric ozone formation, and is a nonflammable, low GWP, low reactive propellant. A multi-media evaluation of the health and environmental impacts of HFO-1234ze was conducted by ARB. No adverse health or environmental impacts were identified. The exemption would provide an additional reformulation option. Further information on the analysis is provided in Chapter III of this Staff Report.

Summary of Proposed Amendments to Section 94506

Section 94506 sets forth test methods to be used to determine the VOC content of an antiperspirant or deodorant. We are proposing to update the name of the test method by adding "and Reactive Organic Compounds in Aerosol Coating Products (ROC)" to the existing method title. We are also proposing to reference the most recent date of adoption (this rulemaking).

Rationale for Proposed Amendments to Section 94506

The proposed amendments would provide the current and correct name for ARB Method 310 and refer to the most recent effective date for the method, which would be, if these amendments are approved, the date of adoption.

B. Consumer Products

In this section, we provide a plain English description of the proposed amendments to the Consumer Products Regulation along with the rationale for the amendments. The regulation is codified in Title 17, CCR, sections 94507-94517.

1. Summary of Section 94508, Definitions

Section 94508 of the regulation defines all key terms used in the regulation that may not be in common use or which may potentially be ambiguous without a regulatory definition. Staff is proposing to modify or add a number of definitions. Because of the proposed definitional changes, subsections of section 94508(a) would also be renumbered. The proposed amendments to the definitions, along with the rationale for the proposals are set forth below, and reflect the proposed updated numerical order.

Summary of Proposed Amendments to Section 94508(a)(1)

Staff is proposing to reorganize the definitions pertaining to adhesive products by placing the individual adhesive subcategory definitions under the general "Adhesive" category definition. The existing subsections 94508(a)(3), (29), (32), (33), (34), (68), (101), (136), and (155), where individual adhesive subcategories are currently defined, would be deleted. In addition, staff is proposing to delete the term "refillable" from the definition of "Aerosol Adhesive."

A definition for "Screen Printing Adhesive" as a new subcategory of "Special Purpose Spray Adhesive" is also proposed. These products would be defined as adhesives designed and labeled exclusively to hold garments or fabric in place during the screen printing process. Minor nonsubstantive changes are also proposed.

Rationale for Proposed Amendments to Section 94508(a)(1)

The proposed reorganizational change would clarify the various subcategories that meet the "Adhesive" category definition and make them easier to find. The proposed removal of the term "refillable" in the definition of "Aerosol Adhesive" would expand the definition by including both refillable and nonrefillable aerosol adhesives. We have become aware of a recycling process that would allow empty aerosol adhesive products to be returned for refilling. Therefore, the proposed modification to delete the term "refillable" from the definition of "Aerosol Adhesive" would provide an environmental benefit. However, deletion of this term does not mean that pressurized adhesive systems, such as larger tanks with spray hoses in which the entire product container is not hand-held, are considered aerosol adhesive products; they are not. Such products are likely subject to air district adhesive rules. These systems are typically placed on the ground or work surface.

Proposing a new subcategory of specialty aerosol adhesives, that is designed and labeled exclusively to be used in the screen printing process, is in response to stakeholders' comments related to the feasibility of these products to meet the proposed lower VOC limits for "Mist Spray Adhesive" and "Web Spray Adhesive" products. To maintain these products' unique attributes would require a higher VOC content. Additional minor nonsubstantive changes would help clarify the definitions and streamline the regulation.

Summary of Proposed Amendments to Section 94508(a)(6)

We are proposing to reorganize the definition of "Air Freshener" by placing the individual air freshener subcategories under the general "Air Freshener" category definition. The existing subsections 94508(a)(41), (43), and (134), where individual air freshener subcategories are currently defined, would be deleted. Staff is proposing to add the terms "liquids," "semisolids," "solids," "aerosol" and "pump" to the "Air Freshener" definition. In addition, in the definition of "Dual Purpose Air Freshener/Disinfectant" staff would replace the term "product" with "Air Freshener," and "represented on the product container" with "designed or labeled." Minor nonsubstantive changes are also proposed.

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

The proposed reorganizational change would clarify the various subcategories that meet the "Air Freshener" category definition and make them easier to find. The "Air Freshener" definition provides examples of products that are included in the definition. Adding the terms "liquids," "semisolids," "solids," "aerosol," and "pump" would clarify that air fresheners in these forms are included. Replacing the term "product" with "Air Freshener," and "represented on the product container" with "designed or labeled" in the definition for "Dual Purpose Air Freshener/Disinfectant" would make it consistent with how these terms are used in other definitions in the regulation. Additional minor nonsubstantive changes are intended for clarification purposes.

Summary of Proposed Amendments to Section 94508(a)(14)

In the definition of "Artist's Solvent/Thinner" staff is proposing to delete the term "liquid," and add the terms "with a capacity" and "exclusively and explicitly."

Rationale for Proposed Amendments to Section 94508(a)(14)

Proposed changes to the definition of "Artist's Solvent/Thinner" would clarify that all product forms are included. "Artist's Solvent/Thinner" products are defined in the regulation to describe a type of product that is not regulated as a "Paint Thinner." Adding the terms "exclusively and explicitly" strengthens the criteria to be met to qualify for the exemption. Other minor nonsubstantive changes would provide clarity.

Summary of Proposed Amendments to Section 94508(a)(31)

Staff is proposing to delete part (A) of the "Deodorant Body Spray" category definition.

Rationale for Proposed Amendments to Section 94508(a)(31)

We are proposing to delete part (A) of the "Deodorant Body Spray" definition because it expired on December 31, 2005, and is no longer relevant. Deleting outdated language would help streamline the regulation.

Summary of Proposed Amendments to Sections 94508(a)(43) and (a)(114)

Both "Fabric Protectant" and "Rubber/Vinyl Protectant" category definitions specifically exclude "Vinyl/Fabric/Leather/Polycarbonate Coating" products. Staff is proposing to add the term "Plastic" and remove the term "Polycarbonate" in the category name. In addition, staff is proposing to delete the expired portions of "Fabric Protectant" and "Rubber/Vinyl Protectant" category definitions. Other minor nonsubstantive changes are also proposed.

Rationale for Proposed Amendments to Sections 94508(a)(43) and (a)(114)

Changing the category name to "Vinyl/Fabric/Leather/Plastic Coating" is proposed to be consistent with the change proposed to the "Vinyl/Fabric/Leather/Plastic Coating" category definition in section 94521(a)(82) of the Aerosol Coatings Regulation. Part (A) of the "Fabric Protectant" and "Rubber/Vinyl Protectant" category definitions expired on December 31, 2008, and is no longer relevant. Deleting outdated language and other minor nonsubstantive modifications would help clarify and streamline the regulation.

Summary of Proposed Amendments to Section 94508(a)(53)

The "Footwear or Leather Care Product" category specifically excludes "Vinyl/Fabric/Leather/Polycarbonate Coating" products. Staff is proposing to add the term "Plastic" and remove the term "Polycarbonate" in the category name.

Rationale for Proposed Amendments to Section 94508(a)(53)

The proposed modification to change the category name to "Vinyl/Fabric/Leather/Plastic Coating" would provide consistency with the change proposed to the category definition for "Vinyl/Fabric/Leather/Plastic Coating" in section 94521(a)(82) of the Aerosol Coating Products Regulation.

Summary of Proposed Amendments to Section 94508(a)(58)

Staff is proposing to modify the definition of "General Purpose Cleaner" to specify that these products are designed to clean hard surfaces in home, garage, patio, commercial, or institutional environments. The "General Purpose Cleaner" category would include products that clean appliances, counters, walls, cabinets, or floors and products that claim to clean a variety of similar surfaces including plastics, stone, or metal. The proposed modifications would also specify that "Single Purpose Cleaner" products are not "General Purpose Cleaner" products. The proposed modified definition would become effective on January 1, 2015, and would be set forth in Part (B) of the definition.

Rationale for Proposed Amendments to Section 94508(a)(58)

Stakeholders have indicated that it has been unclear in the existing definition for "General Purpose Cleaner" if cleaners used in environments outside of kitchens, and products that claim to clean a variety of similar surfaces are considered "General Purpose Cleaners." The proposed modifications are designed to clarify our intent. Staff is proposing to expand the definition by further describing the types of environments where "General Purpose Cleaners" are used, and is explicitly stating that "General Purpose Cleaner" includes products that claim to clean a variety of similar surfaces (such as a plastics cleaner). It has also been unclear that products designed to clean a single object, that may or may not have multiple parts, such as a bicycle, do not meet the definition of "General Purpose Cleaner." Such a product would be a single purpose cleaner. To further clarify our intent staff is also proposing to define "Single Purpose Cleaner."

Summary of Proposed Amendments to Section 94508(a)(59)

A minor modification to the definition of "General Purpose Degreaser" is proposed to specify that a "Single Purpose Degreaser" is not a "General Purpose Degreaser." The proposed modified definition would become effective on January 1, 2015, and would be set forth in part (C).

Rationale for Proposed Amendments to Section 94508(a)(59)

Stakeholders have indicated that it has been unclear in the existing definition for "General Purpose Degreaser" as to whether products designed to degrease a single object, which may or may not have multiple parts, meet the definition of "General Purpose Degreaser." Staff's intent is that "General Purpose Degreasers" are products

designed to degrease a variety of objects and that products designed to degrease a single object are not. As such, staff is clarifying our intent by specifically stating that "Single Purpose Degreaser" products are not "General Purpose Degreasers." For example a product that indicates on the label that it is suitable to degrease a variety of tools, chains, automotive parts, and "more," would be a "General Purpose Degreaser." However, a product labeled to degrease a single object, such as a lawn mower, even though it may have multiple parts, is a "Single Purpose Degreaser." Such parts of a single object are not considered "miscellaneous metallic parts." To further clarify our intent staff is also proposing to define "Single Purpose Degreaser."

Summary of Proposed Amendments to Section 94508(a)(66)

Staff is proposing to add the term "Finishing" to the "Hair Spray" category name and minor modifications to reorganize the definition. Staff is also proposing to delete part (A) of the "Hair Finishing Spray" category definition. Due to the proposed change to the category name, the "Hair Finishing Spray" definition would also be moved from existing section 94508(a)(80) to section 94508(a)(66).

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

The proposal to modify the "Hair Spray" category name to "Hair Finishing Spray" and reorganize the definition would better clarify that the product is to be used to finish styled hair. Other hair spray products that do not finish the hair style would not be "Hair Finishing Spray" products. Part (A) of the "Hair Finishing Spray" category definition expired on December 30, 2006, and is no longer relevant. The proposal to delete the outdated language would help streamline the regulation. The proposal to move the definition would maintain the alphabetical order of section 94508.

Summary of Proposed Amendments to Section 94508(a)(68)

The "Hair Shine" definition specifically excludes "Hair Spray" and "Hair Styling Gel" products. Minor modifications to the "Hair Shine" category definition are proposed to add the term "Finishing" to the "Hair Finishing Spray" category name and delete the "Hair Styling Gel" category name.

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

These proposed modifications to the "Hair Shine" definition are designed to provide consistency with changes proposed to the "Hair Finishing Spray" definition in section 94508(a)(66). Deletion of the term "Hair Styling Gel" [previously defined in section 94508(a)(79)] would provide clarity. Such products are "Hair Styling Products."

Summary of Proposed Amendments to Section 94508(a)(69)

Staff is proposing to delete the effective date of the "Hair Styling Product" category definition and add "No Rinse Shampoo" and "Thermal Protectant" to the list of products

that are not considered "Hair Styling Products." The reference to "Hair Spray" would also be changed to "Hair Finishing Spray."

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

We are proposing to delete the December 30, 2006, effective date of the "Hair Styling Product" definition because it is no longer relevant. Deleting this outdated language would streamline the regulation. Stakeholders have asked us to clarify whether "No Rinse Shampoo" and "Thermal Protectant" products are currently regulated as "Hair Styling Product." The proposed amendment would explicitly state that they are not. Other proposals would define "No Rinse Shampoo" and "Thermal Protectant." Modifying the term "Hair Spray" to "Hair Finishing Spray" would provide consistency with the change proposed to the "Hair Finishing Spray" definition in section 94508(a)(66).

Summary of Proposed Amendments to Section 94508(a)(76)

We are proposing to reorganize the definitions pertaining to insecticide products by placing the individual insecticide subcategories under the general "Insecticide" definition. Additional minor nonsubstantive changes are also proposed. The existing subsections 94508(a)(36), (56), (62), (89), (94), and (152), where individual insecticide subcategories are currently defined, would be deleted.

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

The proposed reorganizational change would clarify the various subcategories that are "Insecticide" products and make them easier to find. Additional minor nonsubstantive modifications are intended to further clarify the definition.

Summary of Proposed Amendments to Existing Section 94508(a)(79)

Staff is proposing to delete the existing "Hair Styling Gel" category definition.

Rationale for Proposed Amendments to Existing Section 94508(a)(79)

The "Hair Styling Gel" category definition expired on December 30, 2006, and is no longer relevant. Such products are considered "Hair Styling Products." Deleting the outdated definition would streamline the regulation.

Summary of Proposed Amendments to Section 94508(a)(82)

Staff is proposing to modify several subcategories of lubricants. The definition of "Dry Lubricant" would be modified to explicitly state that "Dry Lubricants" are not subject to the requirements for any other regulated lubricant category. Staff is also proposing to modify the definitions of "Multi-purpose Lubricant" and "Silicone-based Multi-purpose Lubricant" to specify that lubricant products labeled solely for a single purpose are excluded. In addition, the definition for "Gear, Chain, or Wire Lubricant" would be

modified to specify that lubricants labeled solely for use on chains of chain-driven vehicles are not included. Other minor nonsubstantive changes are also proposed.

Rationale for Proposed Amendments to Section 94508(a)(82)

"Dry Lubricant" products are defined in the Consumer Products Regulation but are not subject to a VOC limit. Stakeholders have indicated that it is unclear whether a product meeting the definition of "Dry Lubricant" would be subject to any other lubricant requirements in situations where it would otherwise meet the definition of a lubricant subcategory. Our intent has always been that any "Dry Lubricant" regardless of function is exempt. ARB staff is proposing the modification to the definition for clarity.

The proposal to specify that lubricants labeled solely for a single purpose are not "Multi-purpose Lubricants" or "Silicone-based Multi-purpose Lubricants" would clarify that single purpose lubricants are exempt from these definitions. This has always been our intent. For example, a lubricant labeled solely for lubrication of garage doors is not a "Multi-purpose Lubricant." The proposed amendment to the definition for "Gear, Chain, or Wire Lubricant" would clarify applicability. The other minor nonsubstantive changes would provide clarity and consistency of the definitions for various lubricant subcategories and the regulation in general.

Summary of Proposed Amendments to Section 94508(a)(88)

Staff is proposing several amendments to the existing definition of "Multi-purpose Solvent." First, staff is proposing to delete existing subsection (A), which is an outdated definition that applies only to products manufactured before January 1, 2008.

Second, staff is proposing to amend existing subsection (B), which is the currently effective definition that applies to products manufactured on or after January 1, 2008. Staff's proposed amendment would specify that that the current definition applies only to products manufactured before January 1, 2015.

Third, staff is proposing to delete the current third exclusion.

Fourth, staff is proposing to add the following new language (shown in underline below) to the last sentence of the current definition, which identifies five categories of products that are not included in the definition, and renumber it:

> "... Multi-purpose Solvent "does not include ... 4. Except as provided in section 94509(p)(4), any product making any representation that the product may be used as, or is suitable for use as a consumer product which meets another definition in section 94508(a); such products are not "Multi-purpose Solvents," and are subject to the "Most Restrictive Limit" provisions of section 94512(a)."

The new language refers to "section 94509(p)(4)." As explained later in this chapter, this is a new subsection that staff is proposing to add to the regulation.

Fifth, a new definition of "Multi-purpose Solvent" is proposed for products manufactured on or after January 1, 2015. The new definition provides that "Multi-purpose Solvent" means any product designed or labeled to be used for dispersing, dissolving, or removing contaminants or other organic materials, that does not display specific use instructions and/or does not display an end-use function or application on the label. Like the existing definition, the new definition also specifies that "Multi-purpose Solvent" includes (1) solvents used in institutional facilities; (2) products labeled as "Paint Clean-Up," or products used to clean paint, lacquer, varnish, or related coatings from painting equipment or tools, plastics, or metals; (3) products labeled to prepare surfaces for painting. The proposed new definition further specifies that "Multi-purpose Solvent" includes products that display on the Principal Display Panel a specific chemical name such as mineral spirits, ketone, turpentine, toluene, xylene(s), acetone, naphtha, and alcohol.

As in the current definition, the new definition would continue to specify that "Multi-purpose Solvent" does not include solvents used in cold cleaners, vapor degreasers, conveyorized degreasers or film-cleaning machines; solvents for the clean-up of application equipment used for polyaspartic and polyurea coatings; products for cleaning a specific contaminant, on a single substrate; and reagents used in laboratories. Staff is proposing to expand the list of excluded products by also excluding "Rubbing Alcohol." Also excluded would be products that are used exclusively for the thinning of "Industrial Maintenance Coatings," "Zinc-Rich Primers," or "High Temperature Coatings," if both of the following criteria are met:
(1) the Responsible Party for these thinning products must also manufacture "Industrial Maintenance Coatings," "Zinc-Rich Primers," or "High Temperature Coatings" for sale in California, and (2) the label for each thinning product must state the specific product or brand of the "Industrial Maintenance Coating," "Zinc-Rich Primer," or "High Temperature Coating" for which the product is used.

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

First, subsection (A) of the "Multi-purpose Solvent" definition is an outdated definition that applies only to products manufactured before January 1, 2008. Deleting this outdated language would streamline the regulation.

Second, providing a January 1, 2015, "sunset date" for the currently effective definition of "Multi-purpose Solvent" is necessary to allow manufacturers adequate lead time to assess the potential impacts of staff's proposed new definition on their current products, and to make any changes needed to accommodate the new definition. Changes may be necessary because, among other things, the new definition would include all product forms rather than just liquids. This change is proposed to recognize that other product forms of "Multi-purpose Solvent" are emerging into the marketplace. In addition, another proposed change (discussed later in this summary) would establish a VOC limit for aerosol "Multi-purpose Solvent." The differences between the currently effective

definition and the new definition make it necessary to provide adequate lead time, which will be provided by specifying a January 1, 2015, effective date for the new definition.

Third, deleting the current third exclusion would streamline the regulation. This exclusion specified that solvents that are incorporated into or used exclusively in the manufacture or construction of the goods or commodities at the site of the establishment are not included. This language is redundant to the "Industrial and Institutional (I&I) Product" definition.

Fourth, the new language staff is proposing to add to the current definition of "Multi-purpose Solvent" would provide consistency with proposed new subsection 94509(p)(4)(A). Proposed new subsection 94509(p)(4)(A) contains new provisions that apply to nonaerosol "Multi-purpose Solvents" sold in the SCAQMD. A detailed discussion of these new provisions can be found later in this chapter. The proposed change to the current definition of "Multi-purpose Solvent" is necessary to avoid confusion by ensuring that the language in the last sentence of the current definition is consistent with the language in proposed new subsection 94509(p)(4)(A).

Fifth, there are several reasons why staff is proposing to add a new definition of "Multi-purpose Solvent" that would apply to products manufactured on or after January 1, 2015. The proposal to include in the "Multi-purpose Solvent" category products that display on the Principal Display Panel a specific chemical name is to clarify that these types of products are considered "Multi-purpose Solvents" even if they do not have other language on the label that states they are used for dispersing, dissolving, or removing contaminants or other organic materials. Such chemical names include mineral spirits, ketone, turpentine, toluene, xylene(s), acetone, naphtha, and alcohol. It has always been the intent of the regulation to include these products, and the proposed language would clarify that these products are included.

The proposal to exclude "Industrial Maintenance Coating," "Zinc-Rich Primer," or "High Temperature Coating" thinning products is being made to clarify that these specialty thinning products are not regulated. However, to prevent misuse of the exemption through the simple expedient of adding product label claims, staff is proposing to include additional criteria that must be met before a product qualifies for the exemption. These additional criteria (described above) are necessary to prevent misuse of the exemption.

Other examples of products included or excluded from the "Multi-purpose Solvent" definition would provide additional details and help clarify the types of products considered to be a "Multi-purpose Solvent." Finally, the formatting of the definition has been reorganized to improve clarity by making it easier to read.

Summary of Proposed Amendments to Section 94508(a)(91)

Staff is proposing a new definition for "No Rinse Shampoo" to specify that these products are designed or labeled solely to be applied to hair that is dry to clean, absorb oil, or eliminate odor, and are subsequently removed from the hair by combing, brushing, or toweling the hair. This would include liquid and aerosol products that perform this function. Aerosol products are often labeled as "Dry Shampoo." These are "No Rinse Shampoo" products. However, "Dry Shampoo" products that claim to color the hair roots do not qualify as "No Rinse Shampoo" because these products would be regulated as "Temporary Hair Color" products.

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

Stakeholders have asked for clarification as to whether no rinse shampoo products are regulated as a "Hair Styling Product" or any other regulated hair care product. Our intent has always been that no rinse shampoo products are not regulated as long as they make no claims that would make them subject to any of the regulated hair care categories. Therefore, defining these products and excluding them from the "Hair Styling Product" definition would clarify our intent.

Summary of Proposed Amendments to Section 94508(a)(92)

Staff is proposing to define "Nonaerosol" as a product which is not an "Aerosol Product."

Rationale for Proposed Amendments to Section 94508(a)(92)

The undefined term "Nonaerosol" has been used extensively in the Consumer Products Regulation. Defining the term as any product that is not an "Aerosol Product," which is defined, would clarify the regulation.

Summary of Proposed Amendments to Section 94508(a)(99)

We are proposing that for products manufactured on or after January 1, 2015, a "Paint Thinner" would be any product (rather than liquid product) designed or labeled to reduce the viscosity of coating compositions or components, or a product that has the words "Paint Thinner," "Lacquer Thinner," "Thinner," or "Reducer" on the label. The new proposed definition would include aerosol products that provide a seamless transition between finishes, except for "Uniform Finish Coatings" as would be defined in the Aerosol Coatings Regulation. As is currently the case, "Paint Thinner" manufactured on or after January 1, 2015, would continue to exclude "Artist's Solvent/Thinner;" products labeled and used as an ingredient in a specific coating or coating brand line; and "Industrial Maintenance Coating," "Zinc-Rich Primer," or "High Temperature Coating" thinning products. We are proposing to expand this list of excluded products by also including "Rubbing Alcohol."

We are also proposing to modify the exemption criteria for "Industrial Maintenance Coating," "Zinc-Rich Primer," or "High Temperature Coating" thinning products. As proposed, "Industrial Maintenance Coating," "Zinc-Rich Primer," or "High Temperature Coating" thinning products would be excluded if the Responsible Party for these thinners also manufactures "Industrial Maintenance Coating," "Zinc-Rich Primer," or "High Temperature Coating" products for sale in California and the name or brand of these specialty coatings is stated on the label of the thinning product.

Other minor nonsubstantive changes are also proposed.

Rationale for Proposed Amendments to Section 94508(a)(99)

Providing dates for when proposed revised part (A) and new part (B) would become effective would allow manufacturers the needed time to assess the impacts, if any, on their products and make any needed changes. As proposed, the revised definition of "Paint Thinner" would now include all product forms rather than just liquids. This change is proposed to recognize that other product forms of "Paint Thinner" are emerging into the market. Proposed modification to section 94509(a) would establish a VOC limit for aerosol "Paint Thinner." Therefore, the definitional modification would be needed.

Products used to thin "Industrial Maintenance Coating," "Zinc-Rich Primer," or "High Temperature Coating" products are currently excluded from the "Paint Thinner" definition. The new proposed language would continue the extension but strengthen the criteria to be able to qualify for the exemption. Such specialty thinners would be excluded if the Responsible Party also manufactures for sale in California "Industrial Maintenance Coatings," "Zinc-Rich Primers," or "High Temperature Coatings;" and the label states the specific product or brand of the "Industrial Maintenance Coating," Zinc-Rich Primer," or "High Temperature Coating" for which the product is used.

Tightening exemption criteria would address any misuse of the exemption through mere additional labeling claims.

Other examples of products included or excluded from the "Paint Thinner" definition would provide additional details and help clarify the types of products considered to be a "Paint Thinner." Additional minor nonsubstantive changes are proposed for the clarity and consistency of the definition and regulation in general.

Summary of Proposed Amendments to Section 94508(a)(122)

Staff is proposing a new definition for "Single Purpose Cleaner" to specify that these products are designed to clean only one object or its parts. However, a product that is labeled to clean a single appliance, counter, wall, cabinet or floor is a "General Purpose Cleaner." "Single Purpose Cleaner" products are not currently subject to a VOC limit.

Rationale for Proposed Amendments to Section 94508(a)(122)

Stakeholders have requested that a clear distinction be made between "General Purpose Cleaner" *versus* "Single Purpose Cleaner" products. Therefore, staff is proposing to define "Single Purpose Cleaner" as a means to clarify that such a product is not regulated as a "General Purpose Cleaner." By way of example, a product labeled to clean a yoga mat is a "Single Purpose Cleaner." A cleaner that is labeled to clean a yoga mat but makes additional claims to clean other objects is a "General Purpose Cleaner." However, a product that is labeled to clean a single kitchen surface, such as a floor or counter has always been considered a "General Purpose Cleaner." The definition of "Single Purpose Cleaner" clarifies this intent.

Summary of Proposed Amendments to Section 94508(a)(123)

Staff is proposing a new definition for "Single Purpose Degreaser" products to specify that these products are designed to degrease only one object or its parts. "Single Purpose Degreaser" would not include "Adhesive Remover," "Electrical Cleaner," "Electronic Cleaner," "Energized Electrical Cleaner," "Engine Degreaser," "General Purpose Cleaner," "Metal Polish or Cleanser," or "Oven or Grill Cleaner." These products are separately regulated. "Single Purpose Degreaser" would also not include products used exclusively in "solvent cleaning tanks or related equipment," or products that are (A) exclusively sold directly or through distributors to establishments which manufacture or construct goods or commodities; and (B) labeled exclusively for "use in the manufacturing process only." "Solvent cleaning tanks or related equipment" includes, but is not limited to, cold cleaners, vapor degreasers, conveyorized degreasers, film cleaning machines, or products designed to clean miscellaneous metallic parts by immersion in a container. "Single Purpose Degreaser" products are not currently subject to a VOC limit.

Rationale for Proposed Amendments to Section 94508(a)(123)

Stakeholders have requested that a clear distinction be made between "General Purpose Degreaser" *versus* "Single Purpose Degreaser" products. Therefore, staff is proposing to define "Single Purpose Degreaser" as a means to clarify that such a product is not regulated as a "General Purpose Degreaser." By way of example, a product labeled solely to degrease a motorcycle chain is a "Single Purpose Degreaser." A degreaser that is labeled to degrease a motorcycle chain but makes additional claims to degrease other objects is a "General Purpose Degreaser." As proposed the definition would also clarify the types of degreasing products that are not "Single Purpose Degreasers."

Summary of Proposed Amendments to Section 94508(a)(127)

The "Temporary Hair Color" definition specifically excludes "Hair Spray" products. We are proposing to add the term "Finishing" in the "Hair Finishing Spray" category name.

Rationale for Proposed Amendments to Section 94508(a)(127)

The modification to add the term "Finishing" to "Hair Spray," which is listed as an exemption within the "Temporary Hair Color" definition, would be consistent with the change proposed to the "Hair Finishing Spray" category definition in section 94508(a)(66).

Summary of Proposed Amendments to Section 94508(a)(129)

Staff is proposing a new definition for "Thermal Protectant" to specify that this is a product designed or labeled solely to be applied to the hair to protect it from heat damage during the use of heated tools such as blow drier, flat iron, and/or curling iron.

Rationale for Proposed Amendments to Section 94508(a)(129)

Stakeholders have asked for clarification as to whether thermal protectant products are regulated as "Hair Styling Product" or any other regulated hair care product. Our intent has always been that thermal protectant products are not regulated as long as they make no hair styling, shine, or any other claims that would make them subject to any of the regulated hair care categories. Therefore, defining these products and excluding them from "Hair Styling Product" definition would clarify our intent.

Summary of Proposed Amendments to Section 94508(a)(136)

Staff is proposing to add language to the definition of "Undercoating" to indicate that these products must be labeled exclusively to impart a protective, nonpaint layer to the undercarriage, trunk interior, and/or firewall or other parts of motor vehicles to prevent the formation of rust or to deaden sound. Staff is also proposing to specify that a product that claims to be an undercoating but makes claims to be suitable for additional uses is a "Flexible Coating," as defined in section 94521(a)(31) of the Aerosol Coatings Regulation. The definition change would become effective on January 1, 2017, and would be designated part (B). The existing part (A) definition would continue to apply until January 1, 2017.

Rationale for Proposed Amendments to Section 94508(a)(136)

The proposed language modifications would clarify that "Undercoating" products are designed or labeled exclusively for application to various parts of motor vehicles including the undercarriage, trunk interior and/or firewall to prevent rust or deaden sound. The definition would further clarify that an undercoating product making any additional claims would be a "Flexible Coating" as defined in the Aerosol Coating Regulation in section 94521(a)(31). To allow manufacturers to make any needed changes, the proposed modification would become effective January 1, 2017.

Summary of Proposed Amendments to Section 94508(a)(138)

Staff is proposing to modify the definition of "Volatile Organic Compound" (VOC) to include an exemption for HFO-1234ze.

Rationale for Proposed Amendments to Section 94508(a)(138)

ARB staff received a petition from Honeywell Corporation, requesting an exemption from the VOC definition for HFO-1234ze. U.S. EPA exempted HFO-1234ze on June 7, 2012. Staff evaluated the petition and determined that HFO-1234ze has a negligible contribution to tropospheric ozone formation, and is a nonflammable, low GWP, low reactive propellant. A multi-media evaluation of the health and environmental impacts of HFO-1234ze was conducted by ARB. No adverse health or environmental impacts were identified. Based upon this review, ARB staff is proposing a VOC exemption for this compound. Further information on the analysis is provided in Chapter III of this Staff Report.

Summary of Proposed Amendments to Section 94508(a)(140)

Staff is proposing to add the term "nonaerosol" to the "Waterproofer" category definition. Staff is also proposing to add language to specify that aerosol products that meet the "Aerosol Coating Product" definition in section 94521(a)(2) and are designed or labeled exclusively to repel water from fabric or leather substrates, are "Vinyl/Fabric/Leather/Plastic Coating" products as defined in section 94521(a)(82).

Rationale for Proposed Amendments to Section 94508(a)(140)

Aerosol waterproofing products meet the definition of "Aerosol Coating" and are best described as "Vinyl/Fabric/Leather/Plastic Coatings," as defined in section 94521(a)(82) of the Aerosol Coatings Regulation. The proposed modification would clarify that aerosol waterproofing products are subject to the Aerosol Coatings Regulation. Nonaerosol "Waterproofer" products are not subject to a VOC standard in the Consumer Product Regulation.

2. Summary of Section 94509, Standards for Consumer Products

Section 94509 sets forth the VOC standard for each regulated category along with the effective date of the limit. Various other requirements for consumer products, such as prohibitions on use of toxic compounds, limits of use of compounds with high GWP values, product labeling, and sell-through provisions are also included.

Summary of Proposed Amendments to Section 94509(a)

We are proposing to modify the Table of Standards in section 94509(a) to be consistent with the proposed amendments to category names in section 94508(a). In addition, staff

is proposing new or lower VOC standards for five consumer product categories. Specific VOC limits for "Multi-purpose Solvent" and "Paint Thinner" in SCAQMD are also proposed.

Aerosol Adhesives Proposed Modifications

For "Mist Spray Adhesive" and "Web Spray Adhesive" categories we are proposing to set lower VOC limits of 30 and 40 percent by weight, respectively. We are also proposing to set a VOC limit of 55 percent by weight for the new "Screen Printing Adhesive" aerosol adhesive category. As proposed, all of these limits would become effective on January 1, 2017.

Multi-purpose Lubricant Proposed Modifications

The existing Table of Standards sets forth a 10 percent by weight VOC limit for the "Multi-purpose Lubricant" category effective December 31, 2015. We are proposing to extend the effective date for this limit until December 31, 2018.

Multi-purpose Solvent and Paint Thinner Proposed Modifications

Adopted limits for "Multi-purpose Solvent" and "Paint Thinner" categories apply only to liquid product forms, because these products have been defined as "liquids." As was described in section 1 of this chapter, we are proposing to modify these definitions to apply to all product forms. We are also proposing to specify VOC limits for aerosol forms of "Multi-purpose Solvent" and "Paint Thinner" products. As such we are proposing to maintain the already adopted limits but specify that these limits apply to "nonaerosols." Separate limits of 10 percent by weight VOC are proposed for aerosol forms of "Multi-purpose Solvent" and "Paint Thinner," effective January 1, 2016.

Section 94509(a) would be further modified to specify provisions for nonaearosol "Multi-purpose Solvent" and "Paint Thinner" products that are sold, supplied, offered for sale or manufactured for use in the SCAQMD. The Table of Standards would reference section 94509(p)(4) where the proposed requirements would be set forth. The table would also explicitly state which standards apply statewide and which standards are only applicable within the SCAQMD. All of the proposed changes to the Table of Standards for these products are shown in Table VIII-1.

Other Proposed Modifications

Other minor nonsubstantive changes are also proposed to section 94509(a), including deleting the reference to the Hairspray Credit Program, reorganizing the location of some categories in the Table of Standards, and updating section numbers referenced in the Table of Standards for "Aerosol Adhesive," "Multi-purpose Solvent," and "Paint Thinner" categories.

TableVIII-1
Standards for Multi-purpose Solvent and Paint Thinner Products

Product Category	*Effective Date* [1]	*VOC Standard* [2] (Percent by Weight)
*****		
Multi-purpose Solvent*		
- aerosol		
- standard for all areas of the State	1/1/2016	10
nonaerosol		
- standards for the South Coast Air Quality Management District	See section 94509(p)(4)	
- standards for all other areas of the State	12/31/2010 12/31/2013	30 3
[*See sections 94509(b)(1), (m)(1), (n), and (p); 94512(a)(1), (a)(4) and (e); 94513(g); and 94515(j) for additional requirements that apply to Multi-purpose Solvent.]		
*****		
Paint Thinner*		
aerosol		
- standard for all areas of the State	1/1/2016	10
nonaerosol		
- standards for the South Coast Air Quality Management District	See section 94509(p)(4)	
- standards for all other areas of the State	12/31/2010 12/31/2013	30 3
[*See sections 94509(b)(1), (m)(1), (n), and (p); 94512(a)(1), (a)(4) and (e); 94513(g); and 94515(j) for additional requirements that apply to Paint Thinner. See section 94510(m) for an exemption that applies to Paint Thinner.]		
*****		

[1] See section 94509(d) for the effective date of the VOC standards for products registered under FIFRA, and section 94509(c) and (d) for the "sell-through" allowed for products manufactured prior to the effective date of standards.

[2] See section 94510(c) for an exemption that applies to fragrances in consumer products, and section 94510(d) for an exemption that applies to LVP-VOCs.

Rationale for Proposed Amendments to Section 94509(a)

Aerosol Adhesives Proposed Modifications

The new and lower VOC standards proposed for three aerosol adhesive categories, "Mist Spray Adhesive," "Web Spray Adhesive," and "Screen Printing Adhesive" are necessary to achieve an additional reduction in VOC emissions. These limits were developed based on the review of data collected from the 2010 Survey as well as review of existing technologies, and were found to be commercially and technologically feasible. Upon the effective date the standards would result in a reduction of VOC emissions of about 0.3 tons per day. Further information on these aerosol adhesive categories is provided in Chapter IV of the Staff Report.

Multi-purpose Lubricant Proposed Modifications

The proposed delay of the 10 percent by weight VOC limit for "Multi-purpose Lubricant" products is based on the results of the 2011 technical assessment and stakeholder comments, and is necessary to address the challenges manufacturers are facing in reformulating "Multi-purpose Lubricant" products to meet this technology forcing limit. This proposal would delay a 1.3 tons per day emission reduction for three years.

Multi-purpose Solvent and Paint Thinner Proposed Modifications

The reorganization of the Table of Standards pertaining to provisions for aerosol and nonaerosol "Multi-purpose Solvent" and "Paint Thinner" products provides clarity as to the regulation of these products. The table would also set forth new limits for aerosol forms of "Multi-purpose Solvent" and "Paint Thinner" products. While these proposed standards would not result in significant emission reductions (about 0.1 tons per day), they are designed to level the playing field by regulating all forms of "Multi-purpose Solvent" and "Paint Thinner" products. To implement these proposed limits the table would be modified to indicate that the already adopted standards for the "Multi-purpose Solvent" and "Paint Thinner" categories of 30 percent and 3 percent by weight would apply to "nonaerosol" forms of these products. The table would also include provisions for "Multi-purpose Solvent" and "Paint Thinner" products sold, supplied, offered for sale, or manufactured for use in the SCAQMD to reinforce the intent of their Rule 1143 pertaining to these products. The table would provide further clarity by explicitly stating which standards apply statewide *versus* those that are only applicable in the SCAQMD. The need for incorporating standards specific to products available in SCAQMD is described in Chapter IV of the Staff Report.

Other Proposed Modifications

The intent of other minor changes to section 94509(a) would reflect the proposed repeal of the Hairspray Credit Program, nonsubstantive changes proposed to sections 94509(b), 94509(n), 94509(p), and 94512(a), and improve the order, clarity, and consistency of the Table of Standards and regulation in general.

Summary of Proposed Amendments to Section 94509(b)(1)

The proposed modification to subsection 94509(b)(1), *Products that are diluted prior to use*, would add language specifying that for "Multi-purpose Solvent" and "Paint Thinner" products the limits in subsection 94509(a) shall apply prior to any recommended dilution. This proposed modification would become effective after January 1, 2015.

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

Currently, for all categories except "Automotive Windshield Washer Fluid (Dilutable)," the VOC limits apply to products only after the minimum recommended dilution has taken place. We have become aware of "Multi-purpose Solvent" products that prominently display a chemical name (consistent with the "Multi-purpose Solvent" definition) that have used this clause to avoid complying with SCAQMD Rule 1143. Therefore, this proposal would stem circumvention of this provision for "Multi-purpose Solvent" and "Paint Thinner" products, particularly in the SCAQMD. The proposed modification would clarify that VOC limits would apply to "Multi-purpose Solvent" and "Paint Thinner" products as packaged regardless of a minimum recommended dilution specified for these products.

Summary of Proposed Amendments to Sections 94509(i) and (k)

Minor nonsubstantive changes are proposed to sections 94509(i), *Requirements for aerosol adhesives,* and 94509(k), *Effective dates of the VOC limits for "Carburetor or Fuel-Injection Air Intake Cleaner" and "Construction, Panel or Floor Covering Adhesive,"* to update section references for aerosol adhesives and substitute the term "and" with "or" in the "Construction, Panel or Floor Covering Adhesive" category name.

Rationale for Proposed Amendments to Section 94509(i) and (k)

These minor nonsubstantive changes would provide consistency with proposed changes to section 94508(a).

Summary of Proposed Amendments to Section 94509(m)

Staff is proposing to prohibit use of methylene chloride, perchloroethylene, and trichloroethylene in "Screen Printing Adhesive," "Single Purpose Cleaner," "Single Purpose Degreaser," and aerosol "Multi-purpose Solvent" and "Paint Thinner" products. Table 94509(m)(1), Product Categories in which Use of Methylene Chloride, Perchloroethylene, and Trichloroethylene is Prohibited, would be amended to reflect this. These proposed prohibitions would become effective on January 1, 2016, for aerosol "Multi-purpose Solvent" and "Paint Thinner," and January 1, 2017, for "Screen Printing Adhesive," "Single Purpose Cleaner," "Single Purpose Degreaser." Three year sell-through dates are proposed.

Rationale for Proposed Amendments to Section 94509(m)

The Consumer Products Regulation currently contains requirements limiting the use of methylene chloride, perchloroethylene, and trichloroethylene in existing "Aerosol Adhesive," "General Purpose Cleaner," "General Purpose Degreaser" and nonaerosol "Multi-purpose Solvent" and "Paint Thinner" categories. The proposal to prohibit methylene chloride, perchloroethylene, and trichloroethylene in "Screen Printing Adhesive," "Single Purpose Cleaner," "Single Purpose Degreaser," and aerosol "Paint Thinner" and "Multi-purpose Solvent" categories would stem the use of these toxic compounds and provide consistency with requirements for similar products. Providing a three year sell-through provision for products manufactured prior to the effective date is a requirement of State law.

Summary of Proposed Amendments to Section 94509(n)

Staff is proposing to limit the use of compounds with higher GWP values in "Mist Spray Adhesive," "Web Spray Adhesive," "Screen Printing Adhesive," aerosol "Multi-purpose Solvent," and aerosol "Paint Thinner" products. As proposed these products would not be able to contain any compound with a GWP value of 150 or greater. 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," would be amended to reflect these proposals. For the three "Aerosol Adhesive" subcategories, the proposed change would have an effective date of January 1, 2017, and a sell-through date of January 1, 2020. Liquid "Multi-purpose Solvent" and "Paint Thinner" products were subject to a GWP limit of 150 beginning in 2010. To distinguish the different compliance dates for aerosol and liquid products we would indicate that the 2010 prohibition applies to nonaerosol "Multi-purpose Solvent" and "Paint Thinner" products. For aerosol "Multi-purpose Solvent" and "Paint Thinner" products the proposed change would have an effective date of January 1, 2016, and a sell-through date of January 1, 2019.

Rationale for Proposed Amendments to Section 94509(n)

These prohibitions on the use of global warming compounds with higher GWP values would ensure that use of compounds with GWP values greater than or equal to 150 does not begin as products are reformulated to meet proposed VOC limits.

Summary of Proposed Amendments to Section 94509(p)(1)

Staff is proposing to extend the 1 percent by weight "Aromatic Compound" content limit, in effect for liquid "Multi-purpose Solvent" and "Paint Thinner" products to aerosol "Multi-purpose Solvent" and "Paint Thinner" products. This proposal would be reflected in subsection 94509(p)(1), *Additional requirements for "Multi-purpose Solvent" and "Paint Thinner:" Aromatic Compound Content.* The provisions would also be bifurcated into aerosol and nonaerosol. The requirements for aerosol "Multi-purpose Solvent" and

"Paint Thinner" products are proposed to become effective January 1, 2016. Additional minor nonsubstantive clarification changes are proposed.

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

The Consumer Products Regulation contains a 1 percent by weight "Aromatic Compound" content limit for liquid "Multi-purpose Solvent" and "Paint Thinner" products that became effective December 31, 2010. In view of staff's proposed changes to modify definitions of "Multi-purpose Solvent" and "Paint Thinner" to include aerosol products and establish a VOC limit, to ensure a level playing field it is appropriate to extend the one percent by weight limit for "Aromatic Compound" content to aerosol "Multi-purpose Solvent" and "Paint Thinner" products. To give manufacturers time to reformulate their products, the limit would become effective January 1, 2016. Other minor nonsubstantive changes are proposed for clarity and consistency of the regulation.

Summary of Proposed Amendments to Sections 94509(p)(2) and (p)(3)

Staff is proposing to modify subsections 94509(p)(2), *Sell-through of Products,* and 94509(p)(3), *Notification for products sold during the sell-through period.* Each of these subsections would be subdivided, with part (A) applying to nonaerosol "Multi-purpose Solvent" and "Paint Thinner" and part (B) applying to aerosol "Multi-purpose Solvent" and "Paint Thinner."

Rationale for Proposed Amendments to Sections 94509(p)(2) and (p)(3)

The proposed changes to sell-through provisions for "Aromatic Compound" content provisions for aerosol and nonaerosol "Multi-purpose Solvent" and "Paint Thinner" products are necessary to reflect the different compliance schedules for aerosol and nonaerosol "Multi-purpose Solvent" and "Paint Thinner." Other minor nonsubstantive changes would provide consistency within the regulation.

Summary of Proposed Amendments to Section 94509(p)(4)(A)

Staff is proposing to add a new subsection 94509(p)(4) that would set forth requirements that apply to nonaerosol "Multi-purpose Solvent" and "Paint Thinner" products sold, supplied, offered for sale, or manufactured for use in the SCAQMD. The proposed new subsection is titled "*Requirements for nonaerosol "Multi-purpose Solvent" and "Paint Thinner" products sold, supplied, offered for sale, or manufactured for use in the South Coast Air Quality Management District (SCAQMD).*"

Proposed new subsection 94509(p)(4)(A) would contain new language specifying how other provisions of the Consumer Products Regulation apply to nonaerosol products that meet the definition of "Multi-purpose Solvent" or "Paint Thinner" and are sold, supplied, offered for sale, or manufactured for use in the SCAQMD. The new language provides that such products do not meet the criteria for any other consumer product

category identified in ARB's Consumer Products Regulation, and do not qualify under a definition of any other consumer product category that is defined in section 94508(a) of the Consumer Products Regulation, regardless of any representation made that the product may be used as, or is suitable for use as another category of consumer product that is defined in section 94508(a). The effect of this proposed new language is that nonaerosol products meeting the definition of either "Multi-purpose Solvent" or "Paint Thinner" would not fall under any other consumer products category defined in section 94508(a) and would be regulated under SCAQMD Rule 1143, regardless of any representations that may be made on the product label, packaging, or elsewhere.

Rationale for Proposed Amendments to Section 94509(p)(4)(A)

"Multi-purpose Solvent" and "Paint Thinner" products sold, supplied, offered for sale, or manufactured for use in the SCAQMD are currently regulated under the existing provisions of both ARB's Consumer Products Regulation and SCAQMD Rule 1143[1].

However, there are differences between the two regulations that have allowed circumvention of Rule 1143 to occur in the SCAQMD, with the result that Rule 1143 has not achieved all of the emission reductions anticipated when Rule 1143 was adopted. Circumvention has been possible primarily because of how "Consumer Multi-purpose Solvents" is defined in Rule 1143. The definition in Rule 1143 includes the following sentence:

> "... "Multi-purpose Solvents" also do not include any products making any representation that the product may be used as, or is suitable for use as a consumer product which qualifies under another definition in CCR Title 17, § 94508 as of the date of adoption."

This one sentence has allowed some manufacturers to circumvent Rule 1143 by changing the labels on their "Multi-purpose Solvent" products to add claims that the products may also be used as "General Purpose Degreasers," "General Purpose Cleaners," "General Purpose Adhesive Removers," or other product categories that are defined in section 94508 of ARB's Consumer Products Regulation. The impact of such label changes is that the re-labeled products no longer qualify as "Multi-purpose Solvents" under Rule 1143. In other words, the above language in Rule 1143 has created an unanticipated loophole; instead of reformulating their products to comply with the Rule 1143's VOC standards, some manufacturers have simply re-labeled their products so that the products are not subject to Rule 1143.

This language was apparently placed in Rule 1143 to be consistent with ARB's definition of "Multi-purpose Solvent" in ARB's Consumer Products Regulation. ARB's

[1] Rule 1143 is legally effective in the SCAQMD even though Health and Safety Code section 41712(f) establishes a limited preemption of local air district regulations that are different than ARB regulations. This limited preemption does not apply to Rule 1143 because it was adopted by the SCAQMD before ARB adopted VOC standards for Multi-purpose Solvents and Paint Thinners (See *W.M. Barr & Co. v. South Coast Air Quality Management District* (June 28, 2012) 207 Cal.App.4th 406, 143 Cal.Rptr.3d 403).

definition contains the following language, which is very similar to the problematic language in Rule 1143:

> "... "Multi-purpose Solvent" does not include ... any product making any representation that the product may be used as, or is suitable for use as a consumer product which meets another definition in section 94508(a); such products are not "Multi-purpose Solvents" and are subject to the "Most Restrictive Limit" provisions of section 94512(a)."

However, SCAQMD's attempt to achieve consistency with ARB's Consumer Products Regulation has had unanticipated results because unlike Rule 1143, ARB's regulation includes a "Most Restrictive Limit" provision in section 94512(a). The relevant portions of section 94512(a) state:

> "... if anywhere on the container or packaging of any consumer product ... any representation is made that the product may be used as, or is suitable for use as a consumer product for which a lower VOC limit is specified in Section 94509(a), then the lowest VOC limit shall apply."

The purpose of the "Most Restrictive Limit" provision is to prevent product manufacturers from circumventing ARB's regulation by re-labeling their products. For example, a nonaerosol "General Purpose Degreaser" is currently subject to a 0.5 percent by weight VOC limit in ARB's Consumer Products Regulation, whereas a "Bug and Tar Remover" is subject to a much less stringent 40 percent by weight VOC limit. If a manufacturer makes a degreasing product containing 30 percent by weight VOC and does not want to incur the expense of reformulating the product to meet a 0.5 percent by weight VOC limit, the manufacturer might attempt to avoid reformulation by simply re-labeling the product as a "Bug and Tar Remover" while simultaneously representing on the product label that the product is also suitable for use as a general purpose degreaser. The "Most Restrictive Limit" provision is designed to prevent such attempted circumvention by ensuring that a product claiming it may be used as a general purpose degreaser is subject to the lower 0.5 percent by weight VOC limit for "General Purpose Degreaser," instead of the less stringent 40 percent by weight VOC limit for "Bug and Tar Remover."

However, Rule 1143 does not have a "Most Restrictive Limit" provision; it is not needed because unlike ARB, SCAQMD does not have numerous VOC standards for multiple consumer product categories. The result is that language in ARB's Consumer Products Regulation that is designed to prevent circumvention is actually being used to circumvent the requirements of Rule 1143. ARB never intended for this language to be interpreted in this way, because the purpose of the language is to prevent circumvention, not make it easier. To correct misinterpretation of the language from ARB's Consumer Products Regulation - language that has been copied by the SCAQMD and placed in Rule 1143 - ARB is proposing to clarify that products sold, supplied, offered for sale, or manufactured for use in the SCAQMD that meet the definition of "Multi-purpose Solvent" or "Paint Thinner," do not meet the criteria for any

other consumer product category identified in ARB's Consumer Products Regulation, and do not qualify under a definition of any other consumer product category that is defined in section 94508(a) of ARB's Consumer Products Regulation, regardless of any representation made that the product may be used as, or is suitable for use as another category of consumer product that is defined in section 94508(a).

The effect of this proposed new language is that products meeting the definition of "Multi-purpose Solvent" or "Paint Thinner" would not fall under any other consumer products category defined in section 94508(a) and would be regulated under SCAQMD Rule 1143, regardless of any representations that may be made on the product label, packaging, or elsewhere. This should prevent language derived from ARB's Consumer Products Regulation from being interpreted to allow circumvention of Rule 1143, and should thus help insure that the expected emission reduction benefits from Rule 1143 are fully achieved.

Summary of Proposed Amendments to Section 94509(p)(4)(B) through (p)(4)(E)

Proposed new subsection 94509(p)(4)(B) would set forth the following VOC limits for nonaerosol "Multi-purpose Solvent" and "Paint Thinner" products sold, supplied, offered for sale, or manufactured for sale in the SCAQMD as follows:

- a 30 percent by weight VOC standard, effective December 31, 2010, as tested pursuant to section 94515(a)-(i), as set forth in ARB Method 310;
- a 3 percent by weight VOC standard, effective December 31, 2013, as tested pursuant to section 94515(a)-(i), as set forth in ARB Method 310; and
- a VOC standard of 25 g/L or 0.21 lb/Gal, effective January 1, 2015, as tested pursuant to section 94515(j).

As proposed, both the VOC standard of 25 g/L (0.21 lb/Gal) and the 3 percent by weight VOC standard will be applicable in the SCAQMD beginning January 1, 2015. In addition, proposed new subparts (C), (D), and (E) would specify that all of the following provisions would apply to nonaerosol "Multi-purpose Solvent" or "Paint Thinner" products sold, supplied, offered for sale, or manufactured for use in the SCAQMD:

- provisions in sections 94509(m)(1) pertaining to prohibitions on use of specific toxic compounds [proposed subpart (C)];
- section 94509(n) pertaining to prohibition on use of compounds with GWP values greater than 150 [proposed subpart (C)];
- section 94509(p)(1),(2) and (3) pertaining to limiting aromatic content to no more than 1 percent by weight [proposed subpart (C)];
- section 94512(a)(4) pertaining to the "Most Restrictive Limit" provision [proposed subpart (C)];
- section 94512(e) pertaining to labeling [proposed subpart (C)]
- proposed subpart (D) pertaining to sell-through of noncomplying products; and
- proposed subpart (E) pertaining to notification of sale of sell-through products.

Rationale for Proposed Amendments to 94509(p)(4)(B) through (p)(4)(E)

To ensure that nonaerosol "Multi-purpose Solvent" and "Paint Thinner" products sold, supplied, offered for sale, or manufactured for use in the SCAQMD meet all of the requisite VOC limits proposed subpart (B) would contain both ARB's VOC limits and the SCAQMD's VOC limit of 25 g/L. Including the SCAQMD limit within the ARB's regulation would help to further stem the circumvention described above and improve clarity, because the 25 g/L VOC limits for nonaerosol "Multi-purpose Solvent" and "Paint Thinner" sold, supplied, offered for sale, or manufactured for use in the SCAQMD would be uniform in both SCAQMD Rule 1143 and ARB's Consumer Products Regulation.

Additional proposed new subparts (C), (D), and (E) would specify that all other relevant provisions of the Consumer Products Regulation pertaining to "Multi-purpose Solvent" and "Paint Thinner" would continue to apply to nonaerosol "Multi-purpose Solvent" and "Paint Thinner" sold, supplied, offered for sale, or manufactured for use in the SCAQMD. These are not new provisions, they would just be reiterated within a single subsection for clarity and to make them easier to find.

Proposed subpart (C) would reiterate that as of December 31, 2010, nonaerosol products may not contain methylene chloride, perchloroethylene, or trichloroethylene [section 94509(m)]; compounds with GWP values of 150 or greater [section 94509(n)]; or aromatic compounds in excess of 1 percent by weight [section 94509(p)(1)]. Such products must also comply with labeling provisions to alert end-users of potential flammability hazards as of December 31, 2010 [section 94512(e)].

Proposed subpart (C) would also specify that a new provision proposed in section 94512(a)(4) within the "Most Restrictive Limit" clause would apply. Proposed new section 94512(a)(4) within the "Most Restrictive Limit" clause would reinforce section 94509(p)(4)(A) by specifying that the "Most Restrictive Limit" provision does not apply to nonaerosol "Multi-purpose Solvent" and "Paint Thinner" sold, supplied, offered for sale, or manufactured for use in the SCAQMD.

Proposed new subpart (D) related to sell-through and (E) related to providing notification for products sold within the last 6 month of the sell-through time period are not new provisions. They are restated here for clarity and to make them easier to find.

3. Summary of Section 94512, Administrative Requirements

Among other things, section 94512 contains the "Most Restrictive Limit" provision and product dating requirements for all regulated categories. Additional labeling and requirements for a number of categories are also included.

Summary of Proposed Amendments to Sections 94512(a)(1) – (a)(3)

We are proposing to delete the expired subsection 94512(a)(1) and expired portion of subsection 94512(a)(2) of the "Most Restrictive Limit" provision, and renumber subsections 94512(a)(2) through (a)(3). Renumbered part (1) would reference a new subpart (4) pertaining to "Multi-purpose Solvent" and "Paint Thinner" products available in SCAQMD. Other minor nonsubstantive changes are also proposed.

Rationale for Proposed Amendments to Sections 94512(a)(1) – (a)(3)

Subsection 94512(a)(1) and part of subsection 94512(a)(2) of the "Most Restrictive Limit" provision expired on December 31, 2007, and are no longer relevant. Deleting outdated language would help streamline the regulation. The reference to a newly proposed section 94512(a)(4) is necessary to implement that proposed change. Additional minor nonsubstantive changes are proposed for existing subsections 94512(a)(2) through (a)(3) for clarity and consistency of the regulation, and would ensure the correct numbering order of subsections.

Summary of Proposed Amendments to Section 94512(a)(4)

Staff is proposing to add a new subsection 94512(a)(4), to specify that the "Most Restrictive Limit" provisions in subsections 94512(a)(1), (a)(2) and (a)(3) do not apply to nonaerosol "Multi-purpose Solvent" and "Paint Thinner" products sold, supplied, offered for sale, or manufactured for use in the SCAQMD.

Rationale for Proposed Amendments to Section 94512(a)(4)

The purpose of proposed new subsection 94512(a)(4) is to reflect and be consistent with language proposed in new subsection 94509(p)(4)(A), which would specify that "Paint Thinner" and "Multi-purpose Solvent" products sold in SCAQMD do not meet the criteria for any other consumer product category identified in ARB's Consumer Products Regulation, and do not qualify under a definition of any other consumer product category that is defined in section 94508(a) of the regulation, regardless of any representation made that the product may be used as, or is suitable for use as another category of consumer product that is defined in section 94508(a). The purpose of new subsection 94509(p)(4)(A) was explained previously in this chapter, and the new language in subsection 94512(a)(4) is necessary to insure that "Most Restrictive Limit" provisions in Consumer Products Regulation are consistent with new subsection 94509(p)(4)(A) for products sold in the SCAQMD.

Summary of Proposed Amendments to Section 94512(e)(1)

The current provisions prohibiting the sale of flammable or extremely flammable "Multi-purpose Solvent" or "Paint Thinner" products unless specifically labeled to warn the consumer of the potential hazard are scheduled to sunset on December 31, 2015. We are proposing to extend these safety labeling provisions until December 31, 2017. An

additional nonsubstantive change is proposed to substitute the term "Principle" with "Principal."

Rationale for Proposed Amendments to Section 94512(e)(1)

Section 94512(e)(1) prohibits the sale of flammable or extremely flammable "Multi-purpose Solvent" or "Paint Thinner" products unless certain labeling criteria are met. This provision is scheduled to sunset on December 31, 2015. At the time this provision was put in place, it applied to only liquid forms of "Multi-purpose Solvent" and "Paint Thinner" products. Because we are now proposing to regulate aerosol forms of "Multi-purpose Solvent" and "Paint Thinner" products, as a safety precaution, staff is proposing to extend until December 31, 2017, these safety labeling provisions. This proposal is designed to ensure that, should aerosol "Multi-purpose Solvent" and "Paint Thinner" products be reformulated to increase the product's flammability the consumer would be warned that the product is different. This warning would be especially necessary for products containing large amounts of acetone. While most aerosol forms of these products are already labeled as 'flammable' because they are formulated with flammable propellants, extending the date where this warning label is required would provide additional protection. As proposed, the safety labeling provisions would apply to all forms (aerosol and nonaerosol) of "Multi-purpose Solvent" and "Paint Thinner" products until December 31, 2017. Other nonsubstantive changes would correct a spelling error.

Summary of Proposed Amendments to Section 94512(e)(2)

Subsection 94512(e)(2) would be modified to add the language "excluding the company name, brand name, and logo." Additional minor nonsubstantive changes are proposed to correct a spelling error and substitute the term "panel" with "Principal Display Panel."

Rationale for Proposed Amendments to Section 94512(e)(2)

Section 94512(e)(2) sets forth specific labeling requirements that are designed to warn the end user of the "Multi-purpose Solvent" or "Paint Thinner" product that the product is flammable. The labeling requirements are to appear prominently on the Principal Display Panel in a font size as large, or larger than any other words. We have been asked to clarify whether a company's name, brand name, or logo is to be used to determine the applicable font size. This proposed modification would clarify that the font size of the company name, brand name, or logo are excluded from determining the proper font size for the "Flammable" or "Extremely Flammable" labeling requirement. Other nonsubstantive changes would improve clarity.

4. Summary of Section 94513, Reporting Requirements

Summary of Proposed Amendments to Section 94513(f)(2)

The current date for Responsible Parties to submit data for "Multi-purpose Lubricant" products specified in subsection 94513(f)(2), *Special Requirements for Multi-purpose Lubricant and Penetrant products*, is March 31, 2014. We are proposing to extend the date to submit data on their efforts to comply with the 10 percent by weight VOC limit from March 31, 2014, to March 31, 2017. We are also proposing that product sales and composition data to be submitted for the year 2016 instead of the currently stated 2013.

Rationale for Proposed Amendments to Section 94513(f)(2)

The amendments proposed for adoption in this rulemaking include the delay of the effective date of the 10 percent by weight VOC limit for "Multi-purpose Lubricant" from December 31, 2015, to December 31, 2018. In view of this proposal, amendments to section 94513(f)(2) would delay the existing reporting requirements for "Multi-purpose Lubricant" products. As proposed, "Multi-purpose Lubricant" manufacturers would need to supply detailed written updates on their research and development efforts to achieve compliance with the future 10 percent by weight VOC limit in addition to sales, formulation data, raw materials, testing protocols, testing results and reformulation costs on March 31, 2017, for the 2016 calendar year. By extending the date staff would get better information on the research and development efforts conducted to meet the 10 percent by weight VOC limit.

5. Summary of Section 94515, Test Methods

Section 94515 sets forth test methods to be used to determine VOC and GWP compound content for all consumer product categories, and "Aromatic Compound" content for "Multi-purpose Solvent" and "Paint Thinner" products.

Summary of Proposed Amendments to Section 94515(a)(1) and (2)

We are proposing to amend subpart (1) of section 94515(a), *VOC and GWP compound content determination using ARB Method 310*, to add "(ROC)" to the title of "Method 310, Determination of Volatile Organic Compound (VOC) in Consumer Products and Reactive Organic Compounds in Aerosol Coating Products." In addition, we are proposing to delete "September 29, 2011," (the date the method was last amended), and replace it with an "adoption date" placeholder. Subpart (2) reproduces sections 3.5, 3.6, and 3.7 of the ARB Method 310. Section 3.6 would be modified to state that after January 1, 2015, the determination of LVP-VOC status does not apply to nonaerosol "Multi-purpose Solvent" and "Paint Thinner" sold, supplied, offered for sale, or manufactured for sale SCAQMD. We are also proposing changes to the reproduced ARB Method 310 section 3.6.1 to delete the part "as modified in Appendix B to this Method 310," and to delete the entire section 3.6.3.

Rationale for Proposed Amendments to Section 94515(a)(1) and (2)

The proposed change to the name for ARB Method 310 and the date the method was last amended would update the method title and reflect the most recent amendments. The proposed change to section 3.6 is necessary to clarify that the LVP-VOC exemption does not apply to nonaerosol "Multi-purpose Solvent" and "Paint Thinner" sold, supplied, offered for sale, or manufactured for use in SCAQMD after January 1, 2015. Proposed changes to reproduced sections of the ARB Method 310 would reflect the changes proposed to sections 3.6.1 and 3.6.3 in the actual ARB Method 310 language, which are further described below in section F of this chapter.

Summary of Proposed Amendments to Section 94515(c)

We are proposing to add "(ROC)" to the title of "Method 310, Determination of Volatile Organic Compound (VOC) in Consumer Products and Reactive Organic Compounds in Aerosol Coating Products." In addition, we are proposing to delete "September 29, 2011," (the date the method was last amended), and replace it with "adoption date" to reflect updates proposed in this rulemaking.

Rationale for Proposed Amendments to Section 94515(c)

The proposed change to the name for ARB Method 310 and the date the method was last amended would update the method title and reflect the most recent amendments.

Summary of Proposed Amendments to Section 94515(j)

Staff is proposing to add subsection 94515(j) to specify the test method and the equation to determine final VOC content that would be used to determine compliance for nonaerosol "Multi-purpose Solvent" and "Paint Thinner" products sold, supplied, offered for sale, or manufactured for use in the SCAQMD. The procedure would become effective on January 1, 2015. Testing procedures would mirror those in the SCAQMD's Rule 1143 (already part of Method 310). VOC content would be reported in g/L. The LVP-VOC exemption would not apply, however, an exemption would be provided for methyl esters with 17 or more carbon atoms. Any amounts of methyl esters with 17 or more carbon atoms content would be subtracted prior to determining final VOC content. The equation for determining final VOC content is reproduced from Method 310 below and would be reproduced in section 94515(j). It is not shown in strikeout/underline format for clarity.

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

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

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 methyl esters with 17 or more carbon atoms.

Rationale for Proposed Amendments to Section 94515(j)

Because staff is proposing to incorporate the SCAQMD Rule 1143 limits for nonaerosol "Multi-purpose Solvent" and "Paint Thinner" products into the Consumer Products Regulation, it is also necessary to specify a test method to be used to determine compliance that would be consistent with the test method specified in Rule 1143. Method 310 already contains consistent testing procedures for these products (U.S. EPA Reference Method 24, Determination of Volatile Matter Content, Water Content, Density, Volume Solids, and Weight Solids of Surface Coatings: 40 Code of Federal Regulations (CFR) Part 60, Appendix A, as it existed on September 11, 1995). Therefore, Method 310 would be used. Equivalent methods to determine water content and exempt VOC compound content (such as acetone, methyl acetate, and other exempt VOC specified in section 94508(a)) are also already included in Method 310. However, the reason for the need to set forth a separate subsection is because final VOC content is determined in "grams per liter," rather than "percent by weight." In addition, there would be no need to determine LVP-VOC content because this exemption does not apply. However, SCAQMD recognizes methyl esters with 17 or more carbon atoms as nonvolatile compounds. As proposed in Method 310, and as shown in the equation above, an analysis for methyl esters with 17 or more carbon atoms would be conducted using standard procedures in Method 310 and any amounts of methyl esters with 17 or more carbon atoms present in nonaerosol "Multi-purpose Solvent" and "Paint Thinner" products would be subtracted prior to determining final VOC content. The date specified for the procedures to become effective would mirror the effective date of the proposed VOC limit, January 1, 2015.

C. Proposed Amendments to the Aerosol Coating Products Regulation

In this section, we provide a plain English description of the proposed amendments to the Aerosol Coating Products Regulation along with the rationale for the amendments. The regulation is codified in Title 17, CCR, sections 94520-94528.

1. Summary of Section 94520, Applicability

Summary of Proposed Amendments to Section 94520

We are proposing to add language to state that all Aerosol Coating Products are regulated unless specifically exempted.

Rationale for Proposed Amendments to Section 94520

The Aerosol Coatings Regulation has always applied to any person who sells, supplies, offers for sale, applies, or manufactures Aerosol Coating Products for use in California. However, stakeholders have raised questions as to whether certain aerosol coatings are regulated. This amendment would clarify the regulation by explicitly stating that the regulation applies to all aerosol coatings, unless the coating is explicitly exempted in section 94523.

2. Summary of Section 94521, Definitions

This section provides a summary and rationale for proposed definitional changes. It has numerous instances of renumbering due to additions and deletions of definitions. For this section, the references cited refer to the section of the proposed amendment (*i.e.* the renumbered definition), unless otherwise noted.

Summary of Proposed Amendments to Section 94521(a)(1)

We are proposing to amend the definition of "Adhesive" by specifying that an adhesive bonds one surface to another by attachment.

Rationale for Proposed Amendments to Section 94521(a)(1)

The proposed change would make the definition of "Adhesive" more consistent with the Consumer Products Regulation.

Summary of Proposed Amendments to Section 94521(a)(2)

We are proposing to add language to clarify that an aerosol coating is packaged in an aerosol container and that other coating solids in addition to pigments or resins may be included in the product. We are also specifying that the definition of "Aerosol Coating Product" does not include products subject to the Consumer Products Regulation or the Antiperspirants and Deodorants Regulation.

Rationale for Proposed Amendments to Section 94521(a)(2)

It has always been our intent that a specific consumer product is only subject to one regulation. This proposed modification would explicitly state our intent. Other proposed changes would clarify the definition of "Aerosol Coating Product".

Summary of Proposed Amendments to Section 94521(a)(3)

We are proposing a new definition for "Antimicrobial Compound," and would define it as any ingredient added to an "Aerosol Coating Product" exclusively to prevent microbial growth or product spoilage.

Rationale for Proposed Amendments to Section 94521(a)(3)

As water-based aerosol coating technology advances, the use of additives designed to inhibit microbial growth is increasing. Stakeholders requested that we define "Antimicrobial Compound." The definition would provide clarity because we are also proposing that compounds meeting this definition are not counted toward the PWMIR content.

Summary of Proposed Amendments to Section 94521(a)(4)

We are proposing to modify the "Anti-Static Spray" category name and redefine it as a product that is designed and labeled to eliminate, prevent, or inhibit the accumulation of static electricity.

Rationale for Proposed Amendments to Section 94521(a)(4)

The proposed language would provide consistency with the Consumer Products Regulation.

Summary of Proposed Amendments to Section 94521(a)(5), (a)(7), (a)(8), (a)(9), (a)(10), (a)(14), (a)(18), (a)(21), (a)(22), (a)(24), (a)(25), (a)(26), (a)(29), (a)(32), (a)(33), (a)(36), (a)(37), (a)(38), (a)(39), (a)(43), (a)(47), (a)(50), (a)(51), (a)(52), (a)(53), (a)(55), (a)(59), (a)(60), (a)(61), (a)(62), (a)(64), (a)(72), (a)(74), (a)(75), (a)(76), (a)(82), (a)(83), (a)(85), (a)(86), and (a)(87)

We are proposing minor amendments to many definitions to replace the term "coating" with the term "Aerosol Coating Product." Additionally, minor nonsubstantive wording modifications are proposed in a number of these definitions. A number of these definitions are also proposed for further modification and are described separately in this section.

Rationale for Proposed Amendments to Section 94521(a)(5), (a)(7), (a)(8), (a)(9), (a)(10), (a)(14), (a)(18), (a)(21), (a)(22), (a)(24), (a)(25), (a)(26), (a)(29), (a)(32), (a)(33), (a)(36), (a)(37), (a)(38), (a)(39), (a)(43), (a)(47), (a)(50), (a)(51), (a)(52), (a)(53), (a)(55), (a)(59), (a)(60), (a)(61), (a)(62), (a)(64), (a)(72), (a)(74), (a)(75), (a)(76), (a)(82), (a)(83), (a)(85), (a)(86), and (a)(87)

These minor proposed changes would increase consistency within the regulation and provide clarity. Use of the term "Aerosol Coating Product" in the definition would allow manufacturers to refer to this definition to determine applicability.

Summary of Proposed Amendments to Section 94521(a)(6)

We are proposing to update the definition of "ASTM," formerly known as the American Society for Testing and Materials, to indicate that it means ASTM International.

Rationale for Proposed Amendments to Section 94521(a)(6)

The proposed modification would update the definition to refer to the proper testing society.

Summary of Proposed Amendments to Section 94521(a)(7)

We are proposing to delete language in the definition of "Auto Body Primer" that refers to these products as automobile primer or primer surface coating. Other nonsubstantial changes are proposed.

Rationale for Proposed Amendments to Section 94521(a)(7)

Deletion of this language would streamline the definition because it is redundant.

Summary of Proposed Amendments to Existing Section 94521(a)(8)

We are proposing to delete the definition for "Automotive Underbody Coating."

Rationale for Proposed Amendments to Existing Section 94521(a)(8)

A definition for "Automotive Underbody Coating" has been included in the regulation to describe a type of product that is not subject to the regulation. Such products have been regulated within the Consumer Products Regulation as "Undercoatings." Because of other proposals to define and regulate "Flexible Coating" products within the Aerosol Coating Products Regulation the definition of "Automotive Underbody Coating" is no longer needed. Deleting the definition would streamline the regulation.

Summary of Proposed Amendments to Section 94521(a)(12)

We are proposing minor wording changes to the definition of "Belt Dressing" to describe them as products to be applied to all vehicle belts rather than just automotive belts.

Rationale for Proposed Amendments to Section 94521(a)(12)

The term "Belt Dressing" has been defined to describe products that are not subject to the regulation. The intent of the regulation has always been to exempt "Belt Dressing" products designed for use on all vehicles, not just automobiles. This modification would clarify our intent.

Summary of Proposed Amendments to Section 94521(a)(14)

We are proposing minor modifications to the definition of "Clear Coating" to indicate such coatings provide a colorless or transparent finish.

Rationale for Proposed Amendments to Section 94521(a)(14)

This modification would provide clarity.

Summary of Proposed Amendments to Section 94521(a)(15)

We are proposing a new definition for "Coating," and would define it as a material applied onto or impregnated into a substrate for protective, decorative, or functional purposes.

Rationale for Proposed Amendments to Section 94521(a)(15)

The term "Coating" is frequently used in the regulation but is not currently defined. Providing a definition would clarify the regulation. Adding this term, however, would in no way change or add to the types of products considered to be aerosol coatings.

Summary of Proposed Amendments to Section 94521(a)(16)

We are proposing minor modifications to the definition of "Coating Solid" by redefining them as any nonvolatile ingredient of an aerosol coating.

Rationale for Proposed Amendments to Section 94521(a)(16)

The existing definition of "Coating Solid" defined it as the film forming ingredients including pigments or resins. However, other ingredients added to aerosol coating formulations are solids and, therefore are also nonvolatile compounds. This change would provide clarity in the calculation of the PWMIR and thereby improve enforceability.

Summary of Proposed Amendments to Existing Section 94521(a)(21)

We are proposing to delete the definition for "Enamel."

Rationale for Proposed Amendments to Existing Section 94521(a)(21)

We are proposing to delete the definition of enamel because it is no longer needed. Deleting this unnecessary definition would streamline the regulation.

Summary of Proposed Amendments to Section 94521(a)(21)

Staff is proposing to modify the "Electrical Coating" category name and definition, to "Electrical/Electronic/Conformal Coating." The definition would be expanded to include electrical, electronic, and conformal coatings.

Rationale for Proposed Amendments to Section 94521(a)(21)

"Electrical Coating" has been defined to describe a type of product that is not subject to the regulation. However data now show that the exemption is no longer needed. Data also show that conformal coating products and electrical coating products are similar and are applied to similar substrates. Thus defining all of these products as a single category is appropriate, rather than defining them separately. Another proposal in section 94522 would establish a Reactivity Limit for this combined category.

Summary of Proposed Amendments to Section 94521(a)(22)

The definition for "Engine Paint" is provided in the regulation to define products that are not "High temperature Coating" products. We are proposing to change the name of the category from "Engine Paint" to "Engine Coating."

Rationale for Proposed Amendments to Section 94521(a)(22)

This minor change would provide consistency with other category names.

Summary of Proposed Amendments to Section 94521(a)(23)

A new definition is proposed for "Exact Match Finish" that includes all criteria common to, and previously defined in, the three exact match coating categories ("Exact Match Finish, Automotive," "Exact Match Finish, Engine," and "Exact Match Finish, Industrial").

Rationale for Proposed Amendments to Section 94521(a)(23)

This proposed reorganization would streamline several definitions, but would not change any criteria for products considered to be "Exact Match Finish" products. The proposed definition would avoid duplication of language in each of the individual exact match finish category definitions.

Summary of Proposed Amendments to Section 94521(a)(24), (a)(25), and (a)(26)

The definitions for "Exact Match Finish, Automotive," "Exact Match Finish, Engine," and "Exact Match Finish, Industrial" are proposed for modification to include language that indicates they must meet the definition of "Exact Match Finish." Other language that is now found in the proposed definition of "Exact Match Finish" would be deleted. The "Exact Match Finish, Automotive," would also be moved to new definition number 24. Other minor nonsubstantive wording updates are proposed.

Rationale for Proposed Amendments to Section 94521(a)(24), (a)(25), and (a)(26)

We have proposed to move the common criteria for "Exact Match Finish, Automotive," "Exact Match Finish, Engine," and "Exact Match Finish, Industrial" to the new "Exact Match Finish" definition. These three category definitions would be modified to reflect

this change but the proposed modifications would not modify any product criteria. Renumbering the definition for "Exact Match Finish, Automotive" would provide proper alphabetical order.

Summary of Proposed Amendments to Section 94521(a)(28)

A new definition is proposed for the term "Extender," and it would be defined as an ingredient added to an "Aerosol Coating Product" to increase coatings solids.

Rationale for Proposed Amendments to Section 94521(a)(28)

Defining the term "Extender" would provide clarity because understanding the meaning of this term is necessary to calculate PWMIR. The proposed definition also clarifies that such ingredients are coating solids, and therefore, nonvolatile.

Summary of Proposed Amendments to Section 94521(a)(29)

We are proposing to change the "Flat Paint Product" category name to "Flat Coating." The category would also be expanded to include products that are packaged in a single aerosol container that prominently display on the "Principal Display Panel" that the product is a dual function flat paint and primer.

Rationale for Proposed Amendments to Section 94521(a)(29)

The proposed name change for this product category would provide consistency with other product category names. Expanding the definition to include dual function products would also acknowledge technology advancements in this category. Explicitly stating that these dual function products are "Flat Coating" products would mean that the "Most Restrictive Limit" provision would not be imposed for products so labeled.

Summary of Proposed Amendments to Section 94521(a)(30)

We are proposing a minor modification to the "Flatting Agent" definition to indicate that it is an ingredient rather than a compound.

Rationale for Proposed Amendments to Section 94521(a)(30)

This modification would improve clarity by referring to a defined term in the regulation, "Ingredient."

Summary of Proposed Amendments to Section 94521(a)(31)

We are proposing a new definition for "Flexible Coating," and would define it as an aerosol coating product designed and labeled exclusively to provide a flexible coating to protect surfaces. The category would include rubberized, mastic and asphaltic

products, but would not include "Undercoating" products as defined in the Consumer Products Regulation.

Rationale for Proposed Amendments to Section 94521(a)(31)

Questions have been raised as to whether "Undercoating" products are regulated within the Aerosol Coatings Regulation or the Consumer Products Regulation. "Undercoatings" are products applied to various parts of motor vehicles including the undercarriage, trunk interior and/or firewall to prevent rust or deaden sound. It is true that some "Undercoating" products would meet the definition of "Aerosol Coating Product" in that they contain pigments or resins. To date, however, aerosol "Undercoating" products have been subject to the Consumer Products Regulation. Another group of products make claims that they can be used as an "Undercoating" but also claim a wider variety of uses, and are sometimes labeled as "rubberized" coatings.

To provide clear direction as to how these products are regulated we would first clarify in the Consumer Products Regulation that "Undercoating" products are designed and labeled exclusively to be applied to various parts of motor vehicles including the undercarriage, trunk interior and/or firewall to prevent rust or deaden sound. Such products would continue to be regulated within the Consumer Products Regulation. The definition would further clarify that an undercoating product making any additional claims would be a "Flexible Coating" as defined in the Aerosol Coatings Regulation.

Second, we would define "Flexible Coating." Products meeting this definition would be regulated within the Aerosol Coatings Regulation. Many of the products in the "Flexible Coating" category have been described as rubberized coatings in the past. "Flexible Coating" products would include rubberized products and products making additional claims beyond that of functioning as an "Undercoating." Another proposal would establish a specific Reactivity Limit for the "Flexible Coating" category in section 94522.

Summary of Proposed Amendments to Section 94521(a)(34)

We are proposing a new definition for "Fragrance," and define it as a substance or complex mixture of aroma chemicals, natural essential oils, and other functional components with a combined vapor pressure not in excess of 2 mm of Hg at 20°C, the sole purpose of which is to impart an odor or scent, or to counteract a malodor.

Rationale for Proposed Amendments to Section 94521(a)(34)

The proposed new definition for "Fragrance" would provide clarification to the regulation in that understanding the meaning would be necessary to calculate the PWMIR. The definition would be consistent with the definition in the Consumer Products Regulation.

Summary of Proposed Amendments to Section 94521(a)(35)

We are proposing a new definition for "General Coating," and define it as "Clear Coating," "Flat Coating," "Fluorescent Coating," "Metallic Coating," "Nonflat Coating," or "Primer."

Rationale for Proposed Amendments to Section 94521(a)(35)

While the term "General Coating" is used to determine applicable requirements, it has not been defined. Defining the term would provide clarity as to how to interpret various regulatory provisions. Providing a definition would clarify that the product categories of "Clear Coating," "Flat Coating," "Fluorescent Coating," "Metallic Coating," "Nonflat Coating," and "Primer" are subject to "General Coating" Reactivity Limits.

Summary of Proposed Amendments to Existing Section 94521(a)(37)

We are proposing to delete the definition for "Lacquer."

Rationale for Proposed Amendments to Existing Section 94521(a)(37)

The definition for "Lacquer" is no longer needed. Therefore, deleting it would streamline the regulation.

Summary of Proposed Amendments to Section 94521(a)(38)

We are proposing to modify the wording of the "High Temperature Coating" definition. Such products are designed and labeled exclusively for application to substrates exposed continuously or intermittently to temperatures above 204°C (400°F). "Engine Paint" would be renamed "Engine Coating."

Rationale for Proposed Amendments to Section 94521(a)(38)

The proposed language change would not impact the substance of the definition or alter the type of products that meet the definition. The proposed definition would provide consistency with the Consumer Products Regulation. Wording would also be updated to reflect the proposed category name change from "Engine Paint" to "Engine Coating."

Summary of Proposed Amendments to Section 94521(a)(42)

We are proposing a new definition for "Label," and define it as any written, printed, or graphic matter affixed to, applied to, attached to, blown into, formed, molded into, embossed on, or appearing upon any consumer product or consumer product package for purposes of branding, identifying, or giving information with respect to the product or to the contents of the package.

Rationale for Proposed Amendments to Section 94521(a)(42)

Another proposed amendment (described later) would add a definition for "Principal Display Panel or Panels" that is consistent with the Consumer Products Regulation. The "Principal Display Panel or Panels" definition refers to the term "label," therefore defining "Label" would provide clarity and is consistent with the Consumer Products Regulation.

Summary of Proposed Amendments to Section 94521(a)(45)

We are proposing to modify the definition of "Lubricant" to delete reference to lubricating substances and add language that indicates the function of the product.

Rationale for Proposed Amendments to Section 94521(a)(45)

The term "Lubricant" has been defined in the Aerosol Coating Products Regulation to describe products that are not subject to the regulation. "Lubricants" are subject to the Consumer Products Regulation. The proposed amendments would provide better consistency with the Consumer Products Regulation.

Summary of Proposed Amendments to Section 94521(a)(48)

We are proposing to modify the definition of "Maskant" by deleting reference to use during chemical milling, anodizing, aging, bonding, plating, etching, and other chemical operations. Instead "Maskant" would be defined as a product applied directly to a component to protect surface areas from damage during fabrication, inspection, or shipment and must not leave a residue when removed.

Rationale for Proposed Amendments to Section 94521(a)(48)

"Maskant" has been defined in the regulation to describe a type of product that is not subject to the regulation. The proposed modifications to the definition would better describe these products.

Summary of Proposed Amendments to Existing Section 94521(a)(50)

We are proposing to delete the definition for "Percent VOC By Weight."

Rationale for Proposed Amendments to Existing Section 94521(a)(50)

The term "Percent VOC By Weight" was defined to specify calculation of a product's VOC content and was necessary for determining compliance with mass-based VOC limits. Because the regulation no longer contains mass-based VOC limits the term is no longer necessary. Deleting the definition would streamline the regulation.

Summary of Proposed Amendments to Section 94521(a)(50)

We are proposing to modify the "Metallic Coating" category definition to delete the term "elemental" that describes the type of metallic pigment that such products must be formulated with. The definition would also be expanded to include products that are packaged in a single aerosol container that prominently display on the "Principal Display Panel" that the product is a dual function "Metallic Coating" and primer.

Rationale for Proposed Amendments to Section 94521(a)(50)

The current definition for "Metallic Coating" implies that a "Metallic Coating" must contain gold, silver, or bronze. Limiting a "Metallic Coating" to this requirement would render such products commercially unfeasible due to the cost of these precious metals. This change would acknowledge that other metallic pigments can be used to provide a finish that emulates a gold, silver, or bronze finish. Expanding the definition to include dual function products would also acknowledge technology advancements in this category. Explicitly stating that these dual function products are "Metallic Coating" products would mean that the "Most Restrictive Limit" provision would not be imposed for products so labeled.

Summary of Proposed Amendments to Section 94521(a)(51)

We are proposing to modify the name and definition of the "Mold Release" category, to "Mold Release Coating." The definition would be modified to indicate that products must be designed and labeled exclusively for use as mold release coatings.

Rationale for Proposed Amendments to Section 94521(a)(51)

A definition of "Mold Release" has been in the regulation to describe products that are not subject to the regulation. Such products may or may not contain resins. Survey data now show that the exemption for such "Mold Release" products containing pigments or resins is no longer necessary. Another proposal would establish a Reactivity Limit for "Mold Release Coating" products in section 94522. Modifying the name of the product category to include the word "coating" would provide consistency with other product category names. Because some "Mold Release" products do not include a pigment or resin, the definition would be modified to describe only mold release products meeting the definition of "Aerosol Coating Product." "Mold Release" products that do not contain pigments or resins would not meet the definition of "Aerosol Coating Product" and would continue to be exempt from compliance with the Aerosol Coatings Regulation.

Summary of Proposed Amendments to Section 94521(a)(53)

We are proposing to change the "Nonflat Paint Product" category name and definition, to "Nonflat Coating." The definition would also be expanded to include products that are

packaged in a single aerosol container that prominently display on the "Principal Display Panel" that the product is a dual function "Nonflat Coating" and primer.

Rationale for Proposed Amendments to Section 94521(a)(53)

The proposed category name change would provide consistency with other product category names. Expanding the definition to include dual function products would also acknowledge technology advancements in this category. Explicitly stating that these dual function products are "Nonflat Coating" products would mean that the "Most Restrictive Limit" provision would not be imposed for products so labeled.

Summary of Proposed Amendments to Section 94521(a)(56)

We are proposing a new definition for "Pigment," and would define it as a natural or synthetic insoluble material added to a coating to provide color, opacity, or corrosion inhibition to a coating film.

Rationale for Proposed Amendments to Section 94521(a)(56)

The definition of "Aerosol Coating Product" has always specified that such products contain pigments or resins. However, the term pigment was not defined. Defining this term would provide clarity as to applicability of the regulation.

Summary of Proposed Amendments to Section 94521(a)(57)

We are proposing a new definition for "Plasticizer," and would define it as an ingredient added to an "Aerosol Coating Product" to aid in flexibility.

Rationale for Proposed Amendments to Section 94521(a)(57)

The term "Plasticizer" has been used in the regulation to describe an ingredient that is assigned a MIR value of zero. However, the term has not been defined. Therefore, defining the term would provide clarity.

Summary of Proposed Amendments to Section 94521(a)(60)

We are proposing to delete language indicating the category does not include "Clear Coating" products.

Rationale for Proposed Amendments to Section 94521(a)(60)

Deleting this language streamlines the regulation because it is redundant.

Summary of Proposed Amendments to Section 94521(a)(61)

We are proposing minor amendments to the definition of "Polyolefin Adhesion Promoter" to specify that such products are designed and labeled exclusively to be applied to a polyolefin or polyolefin copolymer surface of all vehicular bodies, not just automotive body parts, bumpers, or trim parts, to provide a bond between the surface and subsequent topcoats.

Rationale for Proposed Amendments to Section 94521(a)(61)

The proposed minor amendments to the definition of "Polyolefin Adhesion Promoter" would clarify our intent.

Summary of Proposed Amendments to Section 94521(a)(63)

We are proposing a new definition for "Principal Display Panel or Panels," and would define it as that part, or those parts of a label that are so designed as to most likely be displayed, presented, shown or examined under normal and customary conditions of display or purchase. Whenever a principal display panel appears more than once, all requirements pertaining to the "Principal Display Panel" shall pertain to all such "Principal Display Panels."

Rationale for Proposed Amendments to Section 94521(a)(63)

Because of other proposed amendments to describe dual-function "Flat", "Metallic", or "Nonflat" Aerosol Coating Products, the proposed definition would be necessary to describe where such dual function claims must be displayed on a product's container. As proposed, combination paint and primer products must prominently display on the "Principal Display Panel" this dual use function.

Summary of Proposed Amendments to Section 94521(a)(65)

We are proposing to modify the definition of "Propellant" to eliminate reference to cosolvent.

Rationale for Proposed Amendments to Section 94521(a)(65)

This proposed minor modification would better describe the function of a propellant.

Summary of Proposed Amendments to Section 94521(a)(66)

We are proposing to modify the definition of "Reactivity Limit" to indicate that it refers to the ozone forming potential of ingredients expressed as the PWMIR, and that the product container and packaging are not product ingredients.

Rationale for Proposed Amendments to Section 94521(a)(66)

These modifications would clarify the regulation.

Summary of Proposed Amendments to Section 94521(a)(67)

We are proposing to modify the definition of "Reactive Organic Compound" to specify that the compound must contain at least one carbon atom.

Rationale for Proposed Amendments to Section 94521(a)(67)

This modification would clarify the regulation.

Summary of Proposed Amendments to Existing Section 94521(a)(68)

We are proposing to delete the definition of "Stain."

Rationale for Proposed Amendments to Existing Section 94521(a)(68)

This definition is no longer needed. Deleting the unneeded definition would streamline the regulation.

Summary of Proposed Amendments to Section 94521(a)(68)

We are proposing a new definition for "Resin," and would define it as a coating solid that comprises the film-forming ingredients in an aerosol coating product. The proposed definition gives examples of resin ingredients.

Rationale for Proposed Amendments to Section 94521(a)(68)

The definition of "Aerosol Coating Product" has always specified that such products contain pigments or resins. However, the term resin was not defined. Defining this term would provide clarity as to applicability of the regulation.

Summary of Proposed Amendments to Section 94521(a)(72)

We are proposing to modify the definition of "Rust Converter" to specify that products must contain a minimum acid content of 1.0 percent by weight, and a maximum solids content of 6.0 percent by weight.

Rationale for Proposed Amendments to Section 94521(a)(72)

"Rust Converter" has been a term used in the regulation to define a type of product that is not subject to the regulation. However, staff has become aware that the current definition does not accurately describe the level of coating solids or acid content that is necessary to produce a feasible "Rust Converter". In light of this, manufacturers, to this

point, have chosen to label these products as "Flat Coating" products and comply with the requirements for that category. However, the proposal to lower the limit for the "Flat Coating" category makes this no longer a feasible limit for rust converter products. Therefore, staff is proposing changes that accurately describe the attributes of a "Rust Converter," but is also proposing that the exemption be rescinded, and instead these products would be subject to a Reactivity Limit in section 94522.

Summary of Proposed Amendments to Section 94521(a)(73)

We are proposing a new definition for "Specialty Coating," and would define it as any Aerosol Coating Product that is not a "General Coating" unless specifically exempted as specified in section 94523. The definition would go on to indicate that a coating that does not meet all the criteria for a specific "Specialty Coating" or a coating that is not defined in section 94521(a) is a "General Coating."

Rationale for Proposed Amendments to Section 94521(a)(73)

Aerosol Coating Products have always been considered either a "General Coating" or a "Specialty Coating." The terms are used to describe how various products must comply with the Table of Reactivity Limits. For example, section 94522(a)(4) [re-lettered as 94522(b)] specifies that if an "Aerosol Coating Product" is subject to both a "General Coating" limit and a "Specialty Coating" limit, as listed in the Table of Reactivity Limits in section 94522(a), and the product meets all the criteria of the applicable "Specialty Coating" category as defined in section 94521, then the "Specialty Coating" limit shall apply instead of the "General Coating" limit. The terms "Specialty Coating" and "General Coating," however have not been defined. Explicitly defining "Specialty Coating" clarifies the regulation.

Summary of Proposed Amendments to Section 94521(a)(75)

We are proposing to change the "Slip-Resistant Coating" category name and definition, to "Slip-resistant/Non-slip Grip Coating," thereby including more products that perform a similar function. Describing the product as only being able to contain "synthetic" grit would be deleted, and reference to non-slip and grip properties would be added.

Rationale for Proposed Amendments to Section 94521(a)(75)

The category name and definition would be modified to be more reflective of products currently available. The modification would clarify that products formulated with grit (synthetic or otherwise) or without grit that are designed to reduce or prevent slipping are included in this product category.

Summary of Proposed Amendments to Section 94521(a)(76)

We are proposing to modify the "Spatter Coating/Multicolor Coating" category name and definition, to "Spatter/Multicolor/Stucco Coating." The definition would be expanded to

include stucco products that are labeled exclusively as a stucco coating to apply to a plaster finish typically made from a mixture of Portland cement, sand, and lime.

Rationale for Proposed Amendments to Section 94521(a)(76)

The proposed "Spatter/Multicolor/Stucco Coating" category would be modified to include additional products that perform a similar function, namely stucco coatings. Including these products acknowledges that stucco products are "Specialty Coatings" rather than "General Coatings."

Summary of Proposed Amendments to Section 94521(a)(77)

We are proposing a new definition for "Two Component Coating," and would define it as an aerosol coating product packaged in an aerosol container with a separate integrated chamber for the hardener or activator.

Rationale for Proposed Amendments to Section 94521(a)(77)

The definition for "Two Component Coating" is proposed to describe a relatively small category of coatings with unique packaging requirements. "Two Component Coating" products have an integrated chamber within the main container that serves to separate the hardener or activator from the remaining coating components. When the product is activated, the hardener/activator is combined with the other coating components. The product can only be used for a limited time (referred to as the "pot life") before the coating becomes too viscous to use. In so defining the category, a Reactivity Limit is also being proposed in section 94522.

Summary of Proposed Amendments to Section 94521(a)(78)

We are proposing a new definition for "Uniform Finish Coating," and would define it as an aerosol coating product designed and labeled exclusively for application to the area adjacent to a spot repair for the purpose of blending the spot repair's color or clear coating to match the appearance of an adjacent area's existing coating. The definition would go on to indicate that "Spot Repair" means repair of an area of less than one square foot. This category would include products labeled as edge blenders that are formulated to contain a pigment or resin. Another proposal would establish a Reactivity Limit for this category in section 94522.

Rationale for Proposed Amendments to Section 94521(a)(78)

Certain aerosol products perform a function to blend a spot repair to match the appearance of an adjacent area's existing coating. Products performing this function are sometimes referred to as "edge blenders" and may or may not contain a resin. Staff is proposing to define those "edge blenders" containing a resin as "Uniform Finish Coating," and is also proposing a Reactivity Limit for this category. However to ensure that all such edge blending products are regulated, those containing no resins would be

defined as "Paint Thinner" in the Consumer Products Regulation and would be subject to the proposed 10 percent by weight mass-based VOC limit proposed for aerosol "Paint Thinner" products.

Summary of Proposed Amendments to Section 94521(a)(80)

We are proposing to modify the definition of "Upper-Limit Mechanistic Reactivity" by referring to ROC rather than reactive organic compound.

Rationale for Proposed Amendments to Section 94521(a)(80)

This minor change is proposed because earlier in the section "Reactive organic compound" was defined along with the acronym "ROC." Use of the acronym would streamline the definition and reduce redundancy.

Summary of Proposed Amendments to Section 94521(a)(82)

We are proposing to modify the name of the "Vinyl/Fabric/Leather/Polycarbonate Coating" category, renaming it "Vinyl/Fabric/Leather/Plastic Coating." The definition would be expanded to include waterproofing products if the product is designed and labeled exclusively to repel water from fabric or leather substrates. The definition would also state that this category does not include "Fabric Protectants" as defined in section 94508(a) of the Consumer Products Regulation.

Rationale for Proposed Amendments to Section 94521(a)(82)

The proposed change would acknowledge that all types of coatings for plastic substrates should be included in this category rather than just products for use on polycarbonate plastic substrates. The definition modification would also include aerosol waterproofing products because these products are coatings used to repel water from fabric or leather substrates. Nonaerosol "Waterproofing" products are defined in the Consumer Products Regulation but are not subject to a VOC standard.

Summary of Proposed Amendments to Existing Section 94521(a)(73)

We are proposing to delete the definition of "Volatile Organic Compound (VOC)."

Rationale for Proposed Amendments to Existing Section 94521(a)(73)

The term ROC, rather than VOC, is now used to describe ingredients contained in Aerosol Coating Products that are regulated by Reactivity Limits. The mass-based VOC limits and provisions are proposed for deletion. Therefore, the term is no longer applicable and deletion would clarify and streamline the regulation.

Summary of Proposed Amendments to Section 94521(a)(86)

We are proposing to modify the definition for "Wood Stain" by specifying that this type of product is an "Aerosol Coating Product" which is designed and labeled exclusively as a "Wood Stain" and is used to change the color of a wood surface but not conceal the grain pattern or texture.

Rationale for Proposed Amendments to Section 94521(a)(86)

The proposed modified definition would provide consistency and clarity.

3. Summary of Section 94522, Reactivity Limits and Requirements

Summary of Proposed Amendments to Existing Section 94522(a)(1)

We are proposing to delete existing section 94522(a)(1) which describes the regulation of products during the transition from mass-based VOC limits to reactivity-based limits.

Rationale for Proposed Amendments to Existing Section 94522(a)(1)

Reactivity-based limits have been in place since 2002, therefore, this provision is no longer needed. Deletion would streamline the regulation.

Summary of Proposed Amendments to Existing Section 94522(a)(2)

We are proposing to delete existing section 94522(a)(2) which set forth mass-based VOC limits.

Rationale for Proposed Amendments to Existing Section 94522(a)(2)

Beginning in June 2002, for "General Coatings" and January 2003, for "Specialty Coatings," mass-based percent by weight VOC limits were no longer applicable. Deleting these limits would streamline the regulation and provide clarity by making the applicable limits easier to find.

Summary of Proposed New Subsection 94522(a)(1)

A new subsection 94522(a)(1) is proposed to stipulate that all Aerosol Coating Products are required to comply with the applicable General Coating Reactivity Limit unless it meets all of the requirements for a "Specialty Coating." If an aerosol coating meets all of the criteria for a specific "Specialty Coating," the applicable "Specialty Coating" limit applies rather than the "General Coating" limit.

Rationale for Proposed New to Subsection 94522(a)(1)

It has always been the intent that any aerosol coating product sold, supplied, applied, offered for sale, or manufactured for sale in California must comply with a reactivity limit, unless specifically exempted. Any product that does not meet all of the criteria for a given "Specialty Coating" category, then, is required to comply with the applicable "General Coating" category limit. This provision would explicitly state this intent.

Summary of Proposed Amendments to Existing Section 94522(3)(1)(A) [proposed new subsection 94522 (a)(2)]

We are proposing to amend subsection 94522(3)(1)(A) to delete the reference to the expired provision 94522(a)(1), renumber it as subsection 94522(a)(2) and clarify that products are to comply with Reactivity Limits. Section 94522(a)(2) would also set forth new and or lower Reactivity Limits for Aerosol Coating Products.

The existing Table of Limits is divided into "General Coatings" and "Specialty Coatings," with the "General Coatings" consisting of the following categories: "Clear Coatings," "Flat Paint Products," "Fluorescent Coatings," "Metallic Coatings," "Nonflat Paint Products," and "Primers." The proposed Table of Reactivity Limits would retain the same six categories under "General Coatings," with lower Reactivity Limits effective January 1, 2017. The "General Coating" categories with their respective existing and proposed Reactivity Limits are shown in Table VIII-2 below.

Table VIII-2
Proposed Reactivity Limits for General Coating Categories
Product-Weighted MIR in Grams of Ozone per Gram of Product

General Coating Category	Existing Limits effective 06/01/2002* (g O_3/g product)	Proposed Limits effective 01/01/2017** (g O_3/g product)
Clear Coating	1.50	0.85
Flat Coating	1.20	0.80
Fluorescent Coating	1.75	1.30
Metallic Coating	1.90	1.25
Nonflat Coating	1.40	0.95
Primer	1.20	0.70

* Limits based on 2001 MIR Values
** Limits based on 2010 MIR Values

In the proposed amendments to the regulation, the existing "Specialty Coating" categories would be further subdivided into "Specialty Coatings (A)" and "Specialty Coatings (B)." For the ten product categories in the "Specialty Coatings (A)" table, we are proposing that Reactivity Limits become effective on January 1, 2017. This

additional time, beyond the effective date proposed for the "Specialty Coating (B)" categories, acknowledges that products in these categories will need extra time to reformulate to meet the proposed limits. Five of the proposed limits represent a decrease in existing limits, and five of the proposed limits are for previously exempt products or products that had been included in a General Coating category. Table VIII-3 displays the "Specialty Coatings (A)" categories along with the existing and proposed Reactivity Limit for each category.

Table VIII-3
Proposed Reactivity Limits for Specialty Coatings (A)
Product-Weighted MIR in Grams of Ozone per Gram of Product

Specialty Coatings (A) Category	Existing Limits effective 01/01/2003* (g O_3/g product)	Proposed Limits effective 01/01/2017** (g O_3/g product)
Auto Body Primer	1.55	0.95
Electrical/Electronic/Conformal Coating[+]	N/A	2.00
Exact Match Finish: Automotive	1.50	0.95
Exact Match Finish: Engine;	1.70	0.95
Exact Match Finish: Industrial	2.05	1.20
Flexible Coating[++]	N/A	1.60
Ground Traffic/Marking Coating	1.20	0.85
Mold Release[+]	NA	1.10
Two-Component Coating[++]	N/A	1.20
Uniform Finish Coating[++]	N/A	1.30

* Limits based on 2001 MIR Values
** Limits based on 2010 MIR Values
[+] Indicates previously exempt coating category
[++] Indicates new coating category

The "Specialty Coatings (B)" table consists of twenty three categories for which staff is proposing to establish "cap" Reactivity Limits at a level that would not require reformulation, *i.e.*, all reported products would comply. Reactivity Limits for "Specialty Coatings (B)" product categories are proposed to become effective January 1, 2015. Table VIII-4 displays the "Specialty Coatings (B)" categories along with the existing and proposed Reactivity Limit for each category.

As shown in Table VIII-4 we are proposing to combine all forms of "Hobby/Model/Craft" coatings into a single category and change the existing limit for all products to 2.7 g O_3/g product. Likewise, we are proposing to combine all forms of "Shellac Sealer" coatings into a single category and change the existing limit for all products to 1.0 g O_3/g product.

Table VIII-4
Proposed Reactivity Limits for Specialty Coatings (B)
Product-Weighted MIR in Grams of Ozone per Gram of Product

Specialty Coatings (B) Category	Existing Limits effective 01/01/2003* (g O_3/g product)	Proposed Limits effective 01/01/2015** (g O_3/g product)
Art Fixative or Sealant	1.80	1.75
Automotive Bumper and Trim Product	1.75	1.70
Aviation or Marine Primer	2.00	1.25
Aviation Propeller Coating	2.50	1.40
Corrosion Resistant Brass, Bronze, or Copper Coating	1.80	1.80
Floral Coating	1.70	0.85
Glass Coating	1.40	1.35
High Temperature Coating	1.85	1.85
Hobby/Model/Craft Coating#	2.70#	1.60
Marine Spar Varnish	0.90	0.90
Photograph Coating	1.00	0.75
Pleasure Craft Finish Primer/Surfacer/Undercoater	1.05	0.90
Pleasure Craft Topcoat	0.60	0.60
Polyolefin Adhesion Promoter	2.50	2.50
Rust Converter+	NA	1.10
Shellac Sealer#	1.00#	1.00
Slip-resistant/Non-slip Grip Coating++	2.45	2.10
Spatter/Multicolor/Stucco Coating++	1.05	1.05
Vinyl/Fabric/Leather/Plastic Coating	1.55	1.45
Webbing/Veiling Coating	0.85	0.75
Weld-Through Primer	1.00	1.00
Wood Stain Coating	1.40	0.90
Wood Touch-Up/Repair/Restoration Coating	1.50	1.45

* Limits based on 2001 MIR Values
** Limits based on 2010 MIR Values
\# Indicates proposed combined category and limit
\+ Indicates previously exempt coating category
++ Indicates additional product types added to the category

Rationale for Proposed Amendments to Section 94522(3)(1)(A)

The minor wording amendments proposed to section 94522(a)(2), formerly 94522(3)(1)(A), are designed to clarify the provision. The revised Table of Reactivity Limits also would specify the new or lower Reactivity Limit for each category, as well as the date the limit would become effective. Reorganization of the table is proposed to accommodate differences in effective dates for the limits. The limits are proposed to achieve the maximum feasible reduction in OFP from aerosol coatings. If adopted the limits would result in an equivalent VOC reduction of about 3.7 tons per day.

The amendments to "cap" the Reactivity Limits for 23 categories of "Specialty Coating" are proposed because staff has determined that further lowering the Reactivity Limits would provide negligible air quality benefits, and would not be cost effective or commercially and technologically feasible. However, most of the proposed "cap" limits are lower than the existing limits and are set as low as possible to prevent future increases. Because the limits do not require reformulation an earlier effective date of January 1, 2015 is proposed.

The proposed modifications to consolidate all forms of "Hobby/Model/Craft" coatings (previously lacquer, enamel, clear, or metallic subcategories with individual limits ranging from 1.45 to 2.7 g O_3/g product) into a single category and change the existing limit for all products to 2.7 g O_3/g product is an effort to streamline the regulation. While it would appear that increasing the limit may result in an OFP increase the likelihood is small because all products already comply with the proposed future limit of 1.6 g O_3/g product.

The proposed modifications to consolidate both forms of "Shellac Sealer" coatings (previously clear or pigmented subcategories with individual limits of 1.00 and 0.95 g O_3/g product, respectively) into a single category and change the existing limit for all products to 1.0 g O_3/g product is also an effort to streamline the regulation. While it would appear that increasing the limit may result in an OFP increase the likelihood is small because all products already comply with the proposed future limit of 1.0 g O_3/g product.

With regard to the proposals for "Hobby/Model/Craft" coatings and "Shellac Sealer" coatings, if all products were to reformulate to the higher limits for the interim time between when the limits would become effective and the effective date of the future proposed limits (~ 3-4 months), we estimate the potential equivalent emission increase would be about 0.1 tons per day.

Summary of Proposed Amendments to Section 94522(a)(4) [proposed new subsection 94522(b)]

Proposed new subsection 94522(b), would be modified to capitalize defined terms, reference the Table of Reactivity Limits, and eliminate the reference to 94522(a)(3).

Rationale for Proposed Amendments to Section 94522(a)(4) [proposed new subsection 94522(b)]

Section 94522(a)(4) [re-lettered as 94522(b)] specifies that if an "Aerosol Coating Product" is subject to both a "General Coating" limit and a "Specialty Coating" limit, as listed in the Table of Reactivity Limits in section 94522(a), and the product meets all the criteria of the applicable "Specialty Coating" category as defined in section 94521, then the "Specialty Coating" limit shall apply instead of the "General Coating" limit.

The proposed modifications would provide clarity by deleting the reference to the expired provision (a)(3) that refers to VOC limits. Other proposals would provide consistency.

Summary of Proposed Amendments to Section 94522(a)(5)

We are proposing to delete subsection 94522(a)(5), which specified requirements for "High Temperature Coating" products.

Rationale for Proposed Amendments to Section 94522(a)(5)

Subsection 94522(a)(5) is no longer needed. Therefore the proposal to delete the provision would streamline the regulation.

Summary of Proposed Amendments to Section 94522(a)(6) [proposed new subsection 94522(c)]

Minor wording changes are proposed to this provision that specifies that Aerosol Coating Products cannot use the Alternative Control Plan.

Rationale for Proposed Amendments to Section 94522(a)(6) [proposed new subsection 94522(c)]

The proposed minor wording changes would provide clarity.

Summary of Proposed Amendments to Section 94522(b) [proposed new subsection 94522(d)]

Proposed amendments to section 94522(d), would delete the existing language for the sell-through provision for Aerosol Coating Products. New expanded language would be set forth beginning with subpart (1) that would contain the same provisions.

Provisions specific to sell-through for products sold in multi-unit packages would be added as part (1)(C). As proposed, to qualify for the sell-through, these multi-unit packages would be required to display a date of manufacture that is readily observable without irreversibly disassembling the container or package. However, to provide flexibility, the date the products were placed into the multi-unit package (the date of assembly) could be used as the date of manufacture.

Additional language in subpart (2) is proposed related to products that are sold during the last six months of any sell-through period. In this instance we are proposing that the purchaser (limited to distributors and retailers) must be notified that the sell-through is ending.

Rationale for Proposed Amendments to Section 94522(b) [proposed new subsection 94522(d)]

State law requires that products manufactured prior to the effective dates of limits be allowed to be sold, supplied, or offered for sale for up to three years. The modifications proposed by staff would not alter this requirement but would further align the provisions with those in the Consumer Products Regulation. Consistent with previous provisions in the Aerosol Coatings Regulation, products would have to display the date of manufacture on the product container to qualify for the sell-through period, and as specified in section 94524(b)(2) provide a "key" for understanding the date of manufacture if a code is used. This dating requirement has been necessary to determine those noncomplying products that can legally be sold after the effective date of a limit for up to three years if the date of manufacture indicates the products were manufactured prior to the effective date.

New requirements for date-coding of products contained in multi-unit packages and a requirement to notify distributors and retailers regarding products sold within the last six months of the sell-through period would mirror the Consumer Products Regulation. The provisions pertaining to sales of multi-unit packages are designed to allow enforcement staff to determine the date of manufacture without having to disassemble the product. If the dates of manufacture for the individual units are not readily observable, manufacturers would be allowed to use the date of assembly, *i.e.*, the date the products were packaged together, as the date of manufacture for all products in the multi-unit package.

Related to providing notification, as proposed, any distributor or retailer that sells or supplies an aerosol coating product must provide written notification to the purchaser that the sell-through for the product will expire in six months or less. When this provision was added to the Consumer Products Regulation staff had become aware of instances in which products nearing the end of sell-through were being sold to retailers and providing no notification that the products would soon be noncompliant. Therefore, this provision is designed to assist retailers to understand when products must be removed from shelves.

Summary of Proposed Amendments to Section 94522(c) and (d) [proposed new subsections 94522(e) and (f)]

As proposed, language in section 94522(e) would be modified to delete requirements for products subject to VOC limits. The existing prohibitions on use of methylene chloride, perchloroethylene, and trichloroethylene would be consolidated, and the

reference to the term "impurity" would be deleted. Subsection (f) would be reorganized to include only the prohibition on use of ozone depleting substances.

Rationale for Proposed Amendments to Section 94522(c) and (d) [proposed new subsections 94522(e) and (f)]

The proposed amendments to section 94522(e) and (f) are designed to streamline the regulation by deleting expired provisions, consolidating toxic compound prohibitions, and clarifying provisions pertaining to prohibition on use of ozone depleting substances. The amendments would not change any intent of the previous prohibitions. The prohibition on use of methylene chloride, perchloroethylene, trichloroethylene, and ozone depleting substances in all Aerosol Coating Products would continue, unless present in an amount less than 0.01 percent by weight.

Summary of Proposed Amendments to Section 94522(e) [proposed new subsection 94522(g)]

Within the provision for "Multi-component Kits" we are proposing to remove all references to VOC standards and total VOC calculation.

Rationale for Proposed Amendments to Section 94522(e) [proposed new subsection 94522(g)]

Existing subsection 94522(e) contains provisions for determining compliance for products sold in multi-unit kits. Subpart (1) pertains to kits subject to VOC limits, while subpart (2) pertains to kits subject to reactivity-based limits. Subpart (1) is proposed for deletion because it is no longer relevant. Deleting this subpart would streamline the regulation.

Summary of Proposed Amendments to Section 94522(f) [proposed new subsection 94522(h)]

Minor proposed amendments to subsection (h), related to products in which paint is added to aerosol containers of propellant, would be deleted.

Rationale for Proposed Amendments to Section 94522(f) [proposed new subsection 94522(h)]

VOC limits are no longer applicable. Therefore, deletion of this expired provision would streamline the regulation.

Summary of Proposed Amendments to Existing Section 94522(g)

We are proposing to delete the provisions for Lacquer products subject to VOC limits.

Rationale for Proposed Amendments to Existing Section 94522(g)

The provisions related to an interim VOC limit for "Lacquer" Aerosol Coating Products has expired. Deleting the provision would streamline the regulation.

Summary of Proposed Amendments to Section 94522(h) [proposed new subsection 94522(i)]

Section 94522(i) contains provisions for assigning MIR values for calculating a product's reactivity content. A number of changes and additions are being proposed to the assignment of MIR values.

We are proposing to move existing paragraph (E), which indicates that all product ingredients in an amount equal to or exceeding 0.1 percent by weight will be used to calculate the PWMIR, to new subpart (1).

Subpart (B) would be modified to indicate that "Coating Solid," "Extender," and "Plasticizer" ingredients are assigned a MIR value of 0.0 (zero). This would not alter the compounds assigned MIR values of 0.0 (zero), but reflects revised definitions. Language is also proposed that specifies that "Antimicrobial Compound" ingredients in an amount of up to 0.25 percent by weight and "Fragrance" in an amount of up to 0.25 percent by weight are assigned an MIR value of 0.0 (zero). However subpart (F) would specify that for any amount of "Fragrance" exceeding 0.25 percent by weight, the MIR value for terpinolene would be used.

As proposed in subparts (D) and (E), language would be added to specify that if a ROC is not listed in section 94700, title 17, CCR, the isomer(s) of that ROC with the highest listed MIR value shall be used. If no isomer(s) is listed, the MIR value for 1,2,3-trimethyl benzene shall be used to determine the weighted MIR of the ROC to calculate the PWMIR. Similarly, if an aliphatic hydrocarbon solvent is not listed in section 94701, title 17, CCR, the MIR value for 1,2,3-trimethyl benzene shall be used to calculate the PWMIR.

Renumbered subpart (3)(A) is proposed to establish the timeline for transitioning between the 2001 and 2010 MIR values contained in sections 94700 and 94701. Staff is proposing that the 2010 MIR values be used as soon as the amendments become effective. Staff is also proposing that the 2010 MIR values would remain in effect until at least January 1, 2020.

Minor amendment to subpart (3)(B) would specify that if a new ROC is added to section 94700 or 94701 that new MIR value, rather than a default MIR value, shall be used.

Rationale for Proposed Amendments to Section 94522(i)

Paragraph (E), which specifies that ingredients in an amount of 0.1 percent must be used to calculate the PWMIR, would be reorganized as subpart (1) to provide clarity.

Previous subpart (1), which would be renumbered to subpart (2) sets forth how to assign MIR values. Paragraph (B) would be modified to provide additional clarity as to the type of ingredients that are considered nonreactive and are assigned MIR values of zero. Such ingredients are "Coating Solids," "Extenders," and Plasticizers." To provide compliance flexibility fragrance compounds and antimicrobial compounds in amounts up to 0.25 percent by weight would also be considered to have MIR values of zero.

Previously, compounds not listed in the Tables of MIR Values (section 94700, Title 17, CCR) could not be used. To provide compliance flexibility staff is proposing various "default" MIR values that could be used when no MIR value exists. The proposals are conservative, meaning it is likely that the compound's "true" reactivity would be lower than the default value specified.

New subpart (D) would allow an isomer of a compound listed in the Tables of MIR Values to be used if an MIR value for the compound is not listed. In addition, if more than one isomer is listed, the higher MIR Value would be used to represent the ingredient's reactivity. This proposal would also provide flexibility to use all compounds.

Revised subpart (E) would specify that if a MIR value for a compound is not listed, the MIR value for 1,2,3-trimethyl benzene shall be used. This compound is the highest reactive compound reported in the 2010 Survey. Therefore, specifying the use of the MIR value for this compound when no MIR value exists is conservative, meaning it is likely that the compound's "true" reactivity would be lower than the default value specified.

In the Tables of MIR Values only a limited number of fragrance ingredients are listed. To provide flexibility such that any fragrance ingredients could be used staff would specify in subpart (F) that the MIR value for terpinolene be used. This compound is among the most reactive fragrance ingredients listed, but provides flexibility by allowing all fragrance compounds to be used.

In revised subpart (3) staff is proposing a date to transfer to use of the 2010 MIR values. These MIR values represent the state of the science so it is appropriate that their use begin expeditiously. Therefore staff is proposing that the 2010 MIR values would be used to calculate PWMIRs as soon as the amendments, if adopted, would be filed with the Secretary of State. Subpart (3)(B) would clarify which MIR value to use if a new compound is added to the Tables of MIR Values. In this case that new MIR value is proposed for use, rather than the default value, because it would more accurately represent the compound's reactivity.

Other minor nonsubstantive modifications would clarify and update various provisions.

4. Summary of Section 94523, Exemptions

Summary of Proposed Amendments to Section 94523(a)(1)

We are proposing to delete section 94523(a)(1) which sets forth exemptions for products manufactured prior to December 31, 2008.

Rationale for Proposed Amendments to Section 94523(a)(1)

Section 94523(a)(1) provides descriptions of the types of products that are exempt from compliance with the regulation. However, this section is no longer applicable as products manufactured prior to December 31, 2008, are no longer being marketed. Deleting this expired provision would streamline the regulation. The applicable section to describe exempt products would be contained in revised section (a).

Summary of Proposed Amendments to Section 94523(a)(2) [proposed section 94523(a)]

We are proposing to amend section 94523(a)(2) [proposed section 94523(a)] to describe the types of products that are not subject to the regulation. As proposed, staff is deleting the exemptions for "Mold Releases," "Electrical Coating," and "Rust Converter" products. The section would be further modified to delete unneeded terms, and update the category names for the types of products that remain exempt.

Rationale for Proposed Amendments to Section 94523(a)(2) [proposed section 94523(a)]

Section 94523(a)(2) [proposed section 94523(a)] would be updated to better characterize and clarify the types of products considered to be exempt from compliance. Because some products that had previously been exempt from compliance are now proposed for regulation, references to "Mold Release Coating" (formerly "Mold Release"), "Electrical/Electronic/Conformal Coating" (formerly "Electrical Coating") and "Rust Converter" would be deleted.

Summary of Proposed Amendments to Section 94523(c) and (d)

We are proposing to delete the reference to section 94522(a)(3) in subsections (c) and (d).

Rationale for Proposed Amendments to Section 94523(c) and (d)

Section 94523(a)(3) is a reference to the VOC limits which are no longer applicable. Deletion of the reference to the VOC limits would clarify and streamline the regulation.

5. Summary of Section 94524, Administrative Requirements

Summary of Proposed Amendments to Section 94524(a)

Within the "Most Restrictive Limit" provision we are proposing to delete the reference to section 94522(a)(3) which is a reference to the table of VOC limits.

Rationale for Proposed Amendments to Section 94524(a)

Deletion of the reference to mass-based VOC limits would clarify and streamline the regulation because these requirements are no longer applicable.

Summary of Proposed Amendments to Section 94524(b)

The requirements specifying that products subject to VOC limits must include the applicable limit, coating category, and date of manufacture are proposed for deletion in section 94524(b)(1)(A). Other proposals to subpart (1) would update language pertaining to labeling requirements for products subject to Reactivity Limits and would delete the existing requirement that such products must include a date of manufacture on the product.

New proposed section (2)(A) would require manufacturers to display a date of manufacture on product containers. This section would also specify that codes that represent a sequential batch number or that otherwise cannot be attributed to a specific day, month and year, do not satisfy the requirement.

Proposed subpart (B) would specify that if a specific code to indicate the date of manufacture is used that a manufacturer would not have to file an explanation of the date code with the Executive Officer. As proposed in subpart (C) the date of manufacture would have to be displayed 12 months prior to the effective date of the limit.

Proposed subpart (D) would set forth provisions for products sold in multi-unit packages. As proposed, if individual product units of a multi-unit package assembled after January 1, 2015, do not display a date of manufacture that is readily observable without disassembling the packaging, the individual product units shall be deemed to be subject to the Reactivity Limit in effect when the multi-unit package is sold, supplied, or offered for sale, regardless of the date on which the product units were manufactured. As further proposed, the date the units are assembled into a multi-unit package (date of assembly) rather than the dates the individual products were manufactured may be used to indicate the date of manufacture, as long as the date of assembly is readily observable without irreversibly disassembling any portion of the container or packaging. In such cases the "date of assembly" shall be the "date of manufacture" for all of the product units contained within the multi-unit package.

Proposed new subpart (E) would require manufacturers to submit to the Executive Officer an explanation of any date code used at least 12 months prior to using the code. Thereafter the code must be filed annually and be received before January 31st of each year. As proposed the first explanation would be due on January 31, 2015. If any changes to the code indicating date of manufacture are made that code would also be required to be filed prior to selling any products displaying the modified code.

New proposed subpart 4 would expand the requirement that no person shall alter or otherwise make a date code illegible.

Existing subpart (4) would be deleted.

Subpart 5 would clarify that date codes are public information and cannot be held as confidential.

Rationale for Proposed Amendments to Section 94524(b)

Deletion of the labeling requirements pertaining to VOC limits [existing subpart (1)(A)] would clarify and streamline the regulation because these requirements are no longer applicable.

Proposed labeling modifications are designed to align with provisions in the Consumer Products Regulation. However, the basic requirements that products must include the applicable Reactivity Limit, coating category, a date of manufacture that is readily observable, and the filing of an explanation of how to interpret a code representing a date of manufacture, would not be affected by the proposed amendments. These requirements would be reorganized to provide consistency.

The proposed provisions would provide more clarity as to how products must be labeled to indicate the date of manufacture [proposed new subpart (2)]. Addition of a provision [new proposed subpart (2)(E)] to not require annual filing of an explanation of date coding information if specific dating format [proposed in new subpart (2)(B)] is used could lessen the administrative burden on affected stakeholders.

New proposed subpart (2)(D) would specify labeling requirements for products sold in multi-unit packages. The amendments are designed to allow enforcement staff to observe the labeling information without disassembling the multi-unit kit. However, to provide flexibility, use of the date that the products were assembled together into the multi-unit package would be allowed.

New proposed subpart (E) requires filing with the Executive Officer an explanation of any code used to represent the date of manufacture. These requirements are not new, but are reorganized to provide additional clarity on when such filings are required.

Revised subpart (3) [new subpart 4.] would expand the provision that codes should not be tampered with. These proposed changes are consistent with those in the Consumer Products Regulation.

New subpart 5 would clarify that date codes are public information.

Summary of Proposed Amendments to Section 94524(c)

Section 94524(c) sets forth various reporting requirements. Subsection (c) would be modified to refer to the earliest Reactivity Limit and expand the type of contact information to be provided. The reporting requirements for product subject to VOC limits would be deleted [subpart (2)1.] and the information required to be submitted for products subject to Reactivity Limits would be reorganized. Language describing an "impurity" would be deleted. Existing provisions that allow products to be reported as a group and requirements for reporting exempt compounds are proposed for deletion.

Rationale for Proposed Amendments to Section 94524(c)

The proposal to reference the earliest Reactivity Limit in subsection (c)(1) would be necessary to specify the proper effective date and limits. The proposal to require an email address would expedite communication with stakeholders. The proposed amendments to reporting requirements would streamline the regulation by deleting expired provisions related to VOC limits, impurities, and exempt compounds. The proposal to delete the ability to report product information for a group is designed to assist staff better understand the variations in formulations. In addition, products that may be similar in VOC content may have differing PWMIRs. Therefore, grouping products does not provide the level of detail needed. The proposals to reorganize the reporting requirements pertaining to information to be reported in support of the reactivity-based provisions would provide clarity.

Summary of Proposed Amendments to Section 94524(d)

We are proposing to add reference to section 94526 to indicate that the information in this section would also be handled in accordance with confidentiality procedures.

Rationale for Proposed Amendments to Section 94524(b)

Section 94526 requires certain confidential formulation data to be reported. This information is considered confidential, therefore this change clarifies our intent to keep this information confidential.

Summary of Proposed Amendments to Section 94524(e)

We are proposing to delete the section, *Special Reporting Requirements for Perchloroethylene Containing Aerosol Coatings*, from the regulation.

Rationale for Proposed Amendments to Section 94524(e)

The requirement to report data on perchloroethylene content expired after data for 2002 was provided. Beginning in 2002 a prohibition on use of perchloroethylene in Aerosol Coating Products became effective. Therefore, there is no longer a need to track the use of perchloroethylene. The elimination would streamline and clarify the regulation.

6. Summary of Section 94525, Federal Enforceability; Section 94528, Variances

Summary of Proposed Amendments to Sections 94525 and 94528

We are proposing minor nonsubstantive wording corrections.

Rationale for Proposed Amendments to Sections 94525 and 94528

The minor wording changes would provide consistency within the regulation.

7. Summary of Section 94526, Test Methods and Compliance Verification

Section 94526, previously titled Test Methods, would have a number of proposed changes designed to improve enforcement and would be expanded to include a compliance verification process.

Summary of Proposed Amendments to Section 94526(a), (d), (e), (f) and (g)

We are proposing to delete testing procedures for products subject to VOC limits in existing subsection (a). A proposed new subpart (a) would specify the test methods to be used to determine compliance for products subject to Reactivity Limits. The title of the test method would be updated and the test methods for Metal Content (subsection d), Specular Gloss (subsection e), Acid Content (subsection f), and "Lacquers" (subsection g) would be deleted. We are also proposing to incorporate the test procedure for "Specular Gloss" and "Acid Content" into Method 310. These test procedures would also reflect the latest versions of the ASTM methods. Thus, sections 94526 (d), (e), (f) and (g) would be deleted.

Rationale for Proposed Amendments to Section 94526(a), (e), (f) and (g)

Deletion of the reference to testing procedures for mass-based VOC limits would clarify and streamline the regulation because these requirements are no longer applicable. Reorganization of the procedures to test for compliance with the Reactivity Limits would improve clarity. Modification of the title for the test method to "Air Resources Board Method 310, Determination of Volatile Organic Compounds (VOC) in Consumer Products and Reactive Organic Compounds (ROC) in Aerosol Coating Products" would provide the correct title. Proposed deletion of the test methods would streamline the

regulation because these test methods would be added to Method 310. Deletion of the reference to a test method for lacquers would streamline the regulation because specific provisions for such products are proposed for deletion. Incorporating the test procedures for "Specular Gloss" and "Acid Content" into Method 310 would streamline the regulation and update the methods to the latest version of the ASTM methods.

Summary of Proposed Amendments to Section 94526(b)

Existing subsection (b)(1) would be reorganized into subsection (a). Existing subsection (b)(2) would be deleted and reorganized and modified into new subsection (b), *Compliance Verification*. In proposed new subpart (b)(1) we are proposing to extend from 10 working days to 25 working days for manufacturers to supply formulation data upon written notification. Other proposals would provide further detail on what "formulation data" means and would specify additional ingredients and information that must be reported.

In addition, proposed new paragraph (A) would specify that all of the following must be reported:

- each ROC, water, "Antimicrobial Compound," "Coating Solid," "Extender," "Plasticizer," and any compound assigned MIR value of zero;
- each ROC in an amount greater than or equal to 0.1 percent by weight;
- each hydrocarbon solvent if it is present in an amount greater than or equal to 0.1 percent by weight and solvent Bin number;
- any solvent constituent of each additive in an amount greater than or equal to 0.1 percent by weight; and
- all hydrocarbon propellant ingredients (specified and separated).

The proposals would also specify that a material safety data sheet does not constitute formulation data, and that failure to provide the information, or providing incorrect information, is a violation.

Proposed new subpart (b)(2) would require any Responsible Party to supply contact information for the person whom is to receive written notification to provide formulation data and other information. As would be specified in subpart (b)(3), the contact information would be due on January 1, 2015, and any time the contact information changes.

Renumbered section (b)(4) would be amended to specify that Method 310 would be used to determine the PWMIR of Aerosol Coating Products.

Proposed new subpart (4)(A) would specify the MIR values [in proposed Table 94526(b)(4)(A)] to be used to calculate the reactivity of hydrocarbon solvent(s). The proposed MIR values are displayed in Table VIII-5 below. For clarity it is not shown in strikeout/underline format.

Table VIII-5
Proposed Reactivity Values for Hydrocarbon Solvent Constituents
(in Grams of Ozone per Gram VOC)

Hydrocarbon Solvent Fraction	MIR Value (October 2, 2010)
Alkanes	
Alkane(s) containing 5 carbons	1.45
Alkane(s) containing 6 carbons	1.27
Alkane(s) containing 7 carbons	1.41
Alkane(s) containing 8 carbons	1.27
Alkane(s) containing 9 carbons	1.09
Alkane(s) containing 10 carbons	0.90
Alkane(s) containing 11+ carbons	0.66
Aromatic Compounds	
Xylene isomers, Ethyl benzene	7.64
Aromatics containing 9 carbons	7.99
Aromatics containing C10+carbons	6.95

Proposed new subpart (4)(B) would specify that the analytical results would take precedence if there is a discrepancy between supplied formulation data and the results of Method 310.

Rationale for Proposed Amendments to Section 94526(b)

Proposed new subpart (b) is proposed to improve and clarify the enforcement process. Manufacturers have always been required to submit formulation data upon written notification that their products have been selected for compliance testing. However, stakeholders and enforcement division staff have requested that modifications be made to provide clarity. First of all, new proposed subpart (1) would allow 25 working days, rather than the previous 10 days, to provide requested data. The proposed subpart (1)(A) would also further clarify what constitutes formulation data and other information to be supplied. It would also clarify that a material safety data sheet is not formulation data. To aid in enforcing the requirements, the amendments would explicitly specify that failing to provide the requested data, or supplying incorrect data, are violations.

Proposed subpart (2) would specify that Responsible Parties must supply contact information related to whom letters of notification of compliance testing should be sent. This is proposed because we have learned that there have been instances where the letters were sent to the incorrect contact person, thereby resulting in the formulation

data not being received in a timely manner. However, to lessen the administrative burden, as proposed in subpart (3), contact information would only need to be supplied initially by January 15, 2015, and then, only when the information changes.

Hydrocarbon solvents can be defined as complex mixtures of normal alkanes, branched alkanes, cyclic alkanes, and aromatic compounds. Such products contain as many as several hundred different ingredients, but each is typically present in a small amount. These solvents have presented an analytical challenge in terms of determining their reactivity contribution to an aerosol coating product. Method 310 is being modified to put in place new analytical procedures to analyze for such ingredients. To align with the proposed analytical procedures we are proposing a new process for evaluating the reactivity of such solvents. As proposed in new subpart (4)(A), MIR values would be assigned based on carbon number as set forth in new Table 94526(b)(4)(A) [as shown in Table VIII-5 above].

New proposed subpart (B) would also clarify that Method 310 shall take precedence over supplied formulation data when there is a discrepancy. This provision will aid the determination of a violation.

D. Hairspray Credit Program

Summary of Proposed Amendments to Sections 94560-94575

We are proposing the repeal of the Hairspray Credit Program (provisions of sections 94560-94575 in Subchapter 8.5, Article 5, Title 17, CCR), in its entirety.

Rationale for Proposed Amendments to Sections 94560-94575

The Hairspray Credit Program (provisions of sections 94560-94575 in Subchapter 8.5, Article 5, Title 17, CCR) expired when the ability to utilize credits ended on January 1, 2010. Repealing the Hairspray Credit Program would formally acknowledge expiration of the program, and streamline the suite of Consumer Products Regulations.

E. Tables of MIR Values

Summary of Proposed Amendments to the Tables of Maximum Incremental Reactivity (MIR) Values, MIR Values for Compounds, Section 94700

We are proposing to reorganize the "Oxygenated Organics" section of the Tables of Maximum Incremental Reactivity (MIR) Values, MIR Values for Compounds (section 94700 in Subchapter 8.6, Article 1, Title 17, CCR).

Rationale for Proposed Amendments to Tables of Maximum Incremental Reactivity (MIR) Values, MIR Values for Compounds, Section 94700

The compounds in the table are organized by class of organic compounds. This includes "Alkanes," "Alkenes," "Aromatic hydrocarbons," "Oxygenated Organics," "Other Organic Compounds," and "Complex Mixtures." Currently in the "Oxygenated Organics" section, all organic compounds containing the chemical element oxygen are listed by carbon number. We are proposing to reorganize the section of "Oxygenated Organics" by subcategories of oxygenated compounds such as alcohols, aldehydes, ketones, esters of organic acids, and other subcategories. The proposed change would make the compounds easier to find.

F. Method 310

Method 310 sets forth procedures to be followed to determine compliance with the VOC limits for various consumer products and the reactivity limits for aerosol coatings. This section contains a plain English description of the proposed amendments to Method 310 and the rationale for them.

Summary of Proposed Amendments to the Title of Method 310

We are proposing a nonsubstantive modification to update the title of Method 310 by adding the acronym "ROC." The title would be: "Air Resources Board Method 310, Determination of Volatile Organic Compounds (VOC) in Consumer Products and Reactive Organic Compounds (ROC) in Aerosol Coating Products." We would also use the term ROC throughout the method.

Rationale for Proposed Amendments to the Title of Method 310

This minor nonsubstantive proposed change would increase consistency.

Summary of Proposed Amendments to Method 310, Section 1

We are proposing to add section 1.2 to clarify that Method 310 is used for the determination of PWMIR of aerosol coatings. Other sections would be renumbered.

Rationale for Proposed Amendments to Method 310, Section 1

The proposed addition of section 1.2 would clarify that Method 310 is used to determine the ROC content of aerosol coatings in order to determine the PWMIR.

Summary of Proposed Amendments to Method 310, Section 2

We are proposing to replace the term "American Society for Testing and Materials International" with "ASTM International." The acronym for this testing society, "ASTM" would be used throughout the method. In subsection 2.18 we are also proposing to

delete the reference to Appendix B. Test methods for Metal Content, Specular Gloss, and Acid Content would be added as new sections 2.32, 2.33, and 2.34, respectively.

Rationale for Proposed Amendments to Method 310, Section 2

The proposed modification to section 2 to refer to ASTM International would update the name of the testing society. Deleting the reference to Appendix B in section 2.18 would streamline the regulation because another proposal would repeal Appendix B.

Adding test methods for determining Metal Content, Specular Gloss, and Acid Content in new sections 2.32, 2.33, and 2.34, respectively, would be necessary to determine compliance with various requirements for aerosol coatings.

Summary of Proposed Amendments to Method 310, Section 3.3.5 and 3.3.8

We are proposing to explicitly indicate that, effective January 1, 2015, the analysis for exempt and prohibited compounds for nonaerosol "Multi-purpose Solvent" and "Paint Thinner" products sold, supplied, offered for sale, or manufactured for use in the SCAQMD shall include an analysis for methyl esters with 17 or more carbon atoms. We are proposing to amend section 3.3.8 to update a reference to an ASTM test method, ASTM D 3257 by adding '06.'

Rationale for Proposed Amendments to Section 3.3.5 and 3.3.8

This proposed modification to analyze for methyl esters with 17 or more carbon atoms is necessary to be more consistent with compounds SCAQMD considers to be nonvolatile. Other changes to Method 310 would specifically exclude any amount of methyl esters with 17 or more carbon atoms prior to determining final VOC content (proposed section 4.2.4). Therefore, an analysis for these compounds is necessary. The addition of '06' in section 3.3.8 would clarify that the analysis in Method 310 uses the version of ASTM D 3257 from 2006.

Summary of Proposed Amendments to Method 310, Section 3.6

We are proposing to add language specifying that effective January 1, 2015, section 3.6 does not apply to nonaerosol "Multi-purpose Solvent" and "Paint Thinner" products sold, supplied, offered for sale, or manufactured for use in the SCAQMD. In subsection 3.6.1, we are proposing to add the dates to the ASTM test methods and delete the reference to Appendix B. Section 3.6.2 would be modified to change the percentage from 5 to 1 percent to determine the amount of a mixture which has in initial boiling point greater than 216° C. We are also proposing to delete section 3.6.3.

Rationale for Proposed Amendments to Method 310, Section 3.6

The SCAQMD does not provide an LVP-VOC exemption for nonaerosol "Multi-purpose Solvent" and "Paint Thinner" products in Rule 1143. In the Consumer Products

Regulation we are proposing to add consistent requirements to those in Rule 1143 for nonaerosol "Multi-purpose Solvent" and "Paint Thinner" products sold, supplied, offered for sale, or manufactured for use in the SCAQMD. Therefore, the language proposed for addition to 3.6 would explicitly state that no determination of LVP-VOC status would be conducted for these products because there is no LVP-VOC exemption.

Proposed changes to section 3.6.1 would clarify the versions of ASTM test methods that would be used. Deleting the reference to Appendix B would streamline the regulation because another proposal would repeal Appendix B. The proposal in 3.6.2 to reduce the percentage from 5 to 1 percent to determine the percentage of a mixture that has an initial boiling point above 216° C would provide better accuracy of the LVP-VOC content. Deletion of section 3.6.3 would streamline and clarify the method because this section references procedures that are no longer used.

Summary of Proposed Amendments to Method 310, Section 4

Section 4 of Method 310 specifies the procedure for determining final VOC content. We are proposing to add that effective January 1, 2015, for nonaerosol "Multi-purpose Solvent" and "Paint Thinner" products sold, supplied, offered for sale, or manufactured for use in the SCAQMD, the final VOC content will be reported as grams of VOC per liter of material (g/L). Section 4.2.4 is proposed for addition to set forth the procedure for determining g/L of material for nonaerosol "Multi-purpose Solvent" and "Paint Thinner" products sold, supplied, offered for sale, or manufactured for use in the SCAQMD.

Section 4.2.3 sets forth the equation for calculating total grams of VOC per sheet for "Fabric Softener – Single Use Dryer Products." We are proposing a modification of the equation in section 4.2.3 to incorporate the inclusion of water content and exempt compound content.

Other nonsubstantive language modifications are proposed.

Rationale for Proposed Amendments to Method 310, Section 4

The Consumer Products Regulation sets forth VOC standards in the format of 'percent by weight.' Therefore, in Method 310 section 4 specifies that final VOC content will be reported as "percent by weight VOC." Because we are proposing to incorporate consistent requirements with those in Rule 1143 for nonaerosol "Multi-purpose Solvent" and "Paint Thinner" products in SCAQMD, it would be necessary to specify that VOC content for such products would be reported as g/L of material.

The existing equation in Section 4.2.3 does not account for water content or any exempt compounds which may be present in a "Fabric Softener Single-Use Product." Our original analysis conducted to establish the test procedure did not indicate any of these compounds were present. The change would be necessary to accurately determine

VOC content because we are now aware that some products have been formulated to contain water and/or various exempt compounds.

Proposed new subsection 4.2.4 would set forth the equation for calculating final VOC content for nonaerosol "Multi-purpose Solvent" and "Paint Thinner" products in SCAQMD. The equation would not account for any LVP-VOC content because there is no LVP-VOC exemption for these products in the SCAQMD. However, to be consistent with compounds that SCAQMD has determined to be nonvolatile the equation would specifically exclude any amount of methyl esters with 17 or more carbon atoms before final VOC content would be determined. To coincide with when the standards for these products become effective in the Consumer Products Regulation, the equation would become, effective January 1, 2015.

Other nonsubstantive language modifications would provide consistency.

Summary of Proposed Amendments to Method 310, Section 5

Section 5 of Method 310 specifies the procedure for determining the percent by weight of ROC contained in aerosol coating products, for the purposes of determining compliance with the Aerosol Coating Products Regulation. Minor nonsubstantive changes are proposed to a number of subsections in section 5 to incorporate the acronym "ROC" and "reactivity," and to add the term "Products" to the "Aerosol Coatings Regulation" name. Staff is also proposing to update the reference to the test method in the Aerosol Coating Regulation [section 94526(b)(1)]. We are also proposing in section 5.1 that Responsible Parties would have 25 (rather than 10) working days to supply data when requested.

Section 5.3 lists various analytical methods that are used to determine ROC content of aerosol coatings. We are proposing modification of subsection 5.3.5 to specify that there would be direct determination of ROCs and that modified ASTM D 5443-04 is among the methods that can be used for the direct determination of ROCs. Test methods for determining metal content, specular gloss, and acid content would be added as new sections 5.36, 5.37, and 5.38, respectively.

Rationale for Proposed Amendments to Method 310, Section 5

The proposed nonsubstantive modifications to various subsections would add consistency within the method. The proposed modification to subsection 5.1 to increase the number of working days to 25 to supply data would be necessary to correspond to a similar change in the Aerosol Coating Product Regulation. The proposed modifications to subsection 5.3.5 would allow for a more complete analysis to determine ROC content of aerosol coatings. Addition of ASTM D 5443-04 would allow for the direct determination of aromatic hydrocarbon compounds containing 6 through C10+ carbons and for aliphatic hydrocarbon compounds containing 5 through 10 carbons. These changes would also be reflected in corresponding existing Method 310 Standard Operating Procedures (SOPs) and the addition of new SOPs. Adding test methods for

determining Metal Content, Specular Gloss, and Acid Content in new sections 5.36, 5.37, and 5.38, respectively, would be necessary to determine compliance with various requirements for aerosol coatings.

Summary of Proposed Amendments to Method 310, Appendix A

Appendix A sets forth procedures for collecting propellant from aerosol product samples. Staff is proposing to modify footnotes in the appendix to refer to SOP SAS05 rather than specify where needed equipment can be obtained. Other nonsubstantive language changes are proposed.

Rationale for Proposed Amendments to Method 310, Appendix A

Updating the footnotes in Appendix A would clarify that the SOP SAS05 that is followed during the collection of propellant includes information as to where various equipment is obtained. Other nonsubstantive changes provide consistency within the method.

Summary of Proposed Amendments to Method 310, Appendix B

Staff is proposing to repeal entire Appendix B to Method 310.

Rationale for Proposed Amendments to Method 310, Appendix B

Appendix B describes a modified procedure for determination of vapor pressure and decomposition temperature of liquids using an isoteniscope. This procedure is no longer used by ARB staff and should be deleted. Deletion of Appendix B would streamline Method 310.

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IX. Public Process for Development of Proposed Amendments

This chapter contains a description of the public process used to develop the proposed amendments. The APA (Government Code section 11340 *et seq.*) requires that development of regulations must allow for public input.

Our process for development of these proposed amendments included a number of formal and informal opportunities for public participation. Consumer product manufacturers, chemical producers, marketers, trade associations, and various other stakeholders listed below, have actively participated in the process.

- American Coatings Association
- Consumer Specialty Products Association
- National Aerosol Association
- Personal Care Products Council

Representatives from local air districts and agencies, including the SCAQMD, and the U.S. EPA were also involved in the process.

The public process to develop the proposed amendments for aerosol adhesives and aerosol coating categories began in January 2011, with release of the 2010 Consumer & Commercial Products Survey Update for Aerosol Coating and Adhesive Products (2010 Survey). The data for the 2010 Survey provided detailed information on sales and product formulations which allows for calculation of emissions. The data also served as a basis for evaluating potential limits and reformulation strategies to ensure that the maximum feasible emission reductions are achieved.

Staff released for comment survey data summaries on September 2, 2011, that included data on products as well as a summary of ROCs reported in each of the categories. On February 2, 2012, staff released additional data on sales and emissions. Comments on the data summaries were received by September 23, 2011, and February 20, 2012, respectively. Staff considered the comments provided by stakeholders in response to the data summaries and made revisions to the data as appropriate.

In order to further involve the public, staff held public workshops on September 12, 2012, February 26, 2013, and April 24, 2013, to discuss the amendments proposed in this rulemaking. The information discussed at the workshops was posted on our consumer products program webpage, and stakeholders were

notified *via* a list server announcement. At the workshops, staff discussed proposed amendments to the Antiperspirants and Deodorants Regulation, the Consumer Products Regulation, the Aerosol Coating Products Regulation, repeal of the Hairspray Program Regulation, reorganization of the Tables of MIR Values, changes to Method 310, and the rulemaking schedule.

The workshop notices were distributed *via* the consumer products electronic list server, which has over 2,800 subscribers. The list server is used to provide subscribers pertinent information about the consumer products program.

In addition to workshops, staff held discussions with individual stakeholders and associations representing manufacturers and distributors of consumer products. Staff also participated in two technical seminars conducted by the aerosol coating industry in our Sacramento office on January 31, 2013, and February 16, 2013, respectively. These seminars provided an opportunity for staff to gather technical information regarding the opportunities and challenges facing the industry in reformulating products.

Staff made some modifications to the proposals after consideration and evaluation of comments provided in response to the workshops and meetings with stakeholders.

Staff also conducted a technical assessment to evaluate the technical feasibility of the 25 percent by weight VOC limit for "Multi-purpose Lubricants." This limit is scheduled to become effective on December 31, 2013.

Additionally, staff conducted a technical assessment for "Multi-purpose Solvent" and "Paint Thinner" products. The technical assessments were designed to evaluate the technical feasibility of the VOC limits. The 3 percent by weight VOC limit for these categories is to become effective on December 31, 2013. Data summaries from this technical assessment were shared at a public workshop on April 24, 2013.

X. References

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Appendix A

Proposed Amendments to the Regulation for Reducing Volatile Organic Compound Emissions from Antiperspirants and Deodorants

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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.

Proposed Amendments to the Regulation for Reducing Volatile Organic Compound Emissions from Antiperspirants and Deodorants

Subchapter 8.5 Consumer Products

Amend title 17, California Code of Regulations, sections 94501 and 94506 to read as follows:

Article 1. Antiperspirants and Deodorants

*****

§ 94501. Definitions.

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

*****

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

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

1,1-difluoroethane (HFC-152a),
trans-1,3,3,3-tetrafluoropropene (HFO-1234ze),
cyclic, branched, or linear completely methylated siloxanes,
the following classes of perfluorocarbons:

(A) cyclic, branched, or linear, completely fluorinated alkanes;
(B) cyclic, branched, or linear, completely fluorinated ethers with no unsaturations;
(C) cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations; and
(D) sulfur-containing perfluorocarbons with no unsaturations and with the sulfur bonds to carbon and fluorine, and

(2) the following low-reactive organic compounds which have been exempted by the U.S. EPA:
acetone,
ethane,
methyl acetate
parachlorobenzotrifluoride (1-chloro-4-trifluoromethyl benzene).

*****

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

§ 94506. Test Methods.

(a)(1) Testing to determine the volatile organic compound content of an antiperspirant or deodorant, or to determine compliance with the requirements of this article, shall be performed using Air Resources Board Method 310, Determination of Volatile Organic Compounds (VOC) in Consumer Products and Reactive Organic Compounds (ROC) in Aerosol Coating Products, adopted September 25, 1997, and last amended on ~~May 5, 2005~~ [insert date of amendment], which is incorporated herein by reference. Alternative methods which are shown to accurately determine the concentration of VOCs in a subject product or its emission may be used upon approval of the Executive Officer.

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

Appendix B

Proposed Amendments to the Regulation for Reducing Emissions from Consumer Products

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Note: Amendments are shown in underline to indicate additions and ~~strikeout~~ to indicate deletions from the existing regulatory text. Portions of the regulation that are nonsubstantively changed with renumbering are indicated by [Nonsubstantive changes to indicate renumbering]. The symbol "*****" means that intervening text not proposed for amendment is not shown.

Proposed Amendments to the Regulation for Reducing Emissions from Consumer Products

Subchapter 8.5 Consumer Products

Amend title 17, California Code of Regulations, sections 94508, 94509, 94512, 94513 and 94515 to read as follows:

Article 2. Consumer Products

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§ 94508. Definitions.

(a) For the purpose of this article, the following definitions apply:

(1) "Adhesive" means any product that is used to bond one surface to another by attachment. "Adhesive" does not include products used on humans and animals, adhesive tape, contact paper, wallpaper, shelf liners, or any other product with an adhesive incorporated onto or in an inert substrate. For "Contact Adhesive," "Construction, Panel, ~~and~~or Floor Covering Adhesive," and "General Purpose Adhesive" only, "~~a~~Adhesive" also does not include units of product, less packaging, which weigh more than one pound and consist of more than 16 fluid ounces. This limitation does not apply to aerosol adhesives.

"Adhesive" includes the following categories (A-D):

(A) "Aerosol Adhesive" means any "Adhesive" packaged as an aerosol product in which the spray mechanism is permanently housed in a can designed for hand-held application without the need for ancillary hoses or spray equipment.

"Aerosol Adhesive" includes the following subcategories (1-3):

1. "Mist Spray Adhesive" means any "Aerosol Adhesive" which is not a "Special Purpose Spray Adhesive" and which delivers a particle or mist spray, resulting in the formation of fine, discrete particles that yield a generally uniform and smooth application of adhesive to the substrate.

2. "Special Purpose Spray Adhesive" means an "Aerosol Adhesive" that

meets one of the following definitions:

a. "Automobile Headliner Adhesive" means an "Aerosol Adhesive" designed and labeled exclusively to bond together layers in motor vehicle headliners.

b. "Automotive Engine Compartment Adhesive" means an "Aerosol Adhesive" designed and labeled exclusively for use in motor vehicle under-the-hood applications which require oil and plasticizer resistance, as well as high shear strength, at temperatures of 200-275 degrees Fahrenheit.

c. "Flexible Vinyl Adhesive" means an "Aerosol Adhesive" designed and labeled exclusively to bond flexible vinyl to substrates. Flexible vinyl means a nonrigid polyvinyl chloride plastic with at least five percent, by weight, of plasticizer content. A plasticizer is a material that is incorporated into a vinyl to increase its flexibility, workability, or distensibility, that may be determined using ASTM Method E260-91 (Jan. 25, 1991) Standard Practice for Packed Column Gas Chromatography, which is incorporated by reference herein, or from product formulation data.

d. "Laminate Repair/Edgebanding Adhesive" means an "Aerosol Adhesive" designed and labeled exclusively for:

i. the touch-up or repair of items laminated with high pressure laminates (for example, lifted edges, delaminations, etc.), or for

ii. the touch-up, repair, or attachment of edgebanding materials, including, but not limited to, other laminates, synthetic marble, veneers, wood molding, or decorative metals.

For the purposes of this definition "high pressure laminate" means sheet materials which consist of paper, fabric, or other core material that have been laminated at temperatures exceeding 265 degrees F, and at pressures between 1,000 and 1,400 psi.

e. "Mounting Adhesive" means an "Aerosol Adhesive" designed and labeled exclusively to permanently mount photographs, artwork, or any other drawn or printed media to a backing (paper, board, cloth, etc.) without causing discoloration to the artwork.

f. "Polyolefin Adhesive" means an "Aerosol Adhesive" designed and labeled exclusively to bond polyolefins (for example, polyethylene, polypropylene, etc.) to substrates.

g. "Polystyrene Foam Adhesive" means an "Aerosol Adhesive" designed and labeled exclusively to bond polystyrene foam (for example, Styrofoam®, expanded polystyrene foam, etc.) to substrates.

h. "Screen Printing Adhesive" means an "Aerosol Adhesive" designed and labeled exclusively to hold garments or fabric in place during the screen printing process.

3. "Web Spray Adhesive" means any "Aerosol Adhesive" which is not a "Mist Spray Adhesive" or "Special Purpose Spray Adhesive."

(B) "Construction, Panel, or Floor Covering Adhesive" means any nonaerosol, one-component "Adhesive" that is designed or labeled for the installation, remodeling, maintenance, or repair of: (A) structural and building components that include, but are not limited to, beams, trusses, studs, paneling (drywall or drywall laminates, fiberglass reinforced plastic (FRP), plywood, particle board, insulation board, pre-decorated hardboard or tileboard, etc.), ceiling and acoustical tile, molding, fixtures, countertops or countertop laminates, cove or wall bases, and flooring or subflooring; or (B) floor or wall coverings that include, but are not limited to, wood or simulated wood covering, carpet, carpet pad or cushion, vinyl-backed carpet, flexible flooring material, nonresilient flooring material, mirror tiles and other types of tiles, and artificial grass. "Construction, Panel, and Floor Covering Adhesive" does not include "Floor Seam Sealer."

(C) "Contact Adhesive" means a nonaerosol "Adhesive" that: (A) is designed for application to both surfaces to be bonded together, and (B) is allowed to dry before the two surfaces are placed in contact with each other, and (C) forms an immediate bond that is impossible, or difficult, to reposition after both adhesive-coated surfaces are placed in contact with each other, and (D) does not need sustained pressure or clamping of surfaces after the adhesive-coated surfaces have been brought together using sufficient momentary pressure to establish full contact between both surfaces. "Contact Adhesive" does not include rubber cements that are primarily intended for use on paper substrates. "Contact Adhesive" also does not include vulcanizing fluids that are designed and labeled for tire repair only.

"Contact Adhesive" is divided into two subcategories:

1. "Contact Adhesive - General Purpose" means any contact adhesive that is not a "Contact Adhesive - Special Purpose."

2. "Contact Adhesive - Special Purpose" means a contact adhesive that: (A) is used to bond melamine-covered board, unprimed metal, unsupported vinyl, Teflon, ultra-high molecular weight polyethylene,

rubber, high pressure laminate or wood veneer 1/16 inch or less in thickness to any porous or nonporous surface, and is sold in units of product, less packaging, that contain more than eight fluid ounces, or (B) is used in automotive applications that are (1.) automotive under-the-hood applications requiring heat, oil or gasoline resistance, or (2.) body-side molding, automotive weatherstrip or decorative trim.

(D) "General Purpose Adhesive" means any nonaerosol "Adhesive" designed for use on a variety of substrates. "General Purpose Adhesive" does not include (A) "Contact Adhesive," (B) "Construction, Panel, or Floor Covering Adhesive," (C) adhesives designed exclusively for application on one specific category of substrates (that is, substrates that are composed of similar materials, such as different types of metals, paper products, ceramics, plastics, rubbers, or vinyls), or (D) adhesives designed exclusively for use on one specific category of articles (that is, articles that may be composed of different materials but perform a specific function, such as gaskets, automotive trim, weather-stripping, or carpets).

*****

~~(3) "Aerosol Adhesive" means any adhesive packaged as an aerosol product in which the spray mechanism is permanently housed in a nonrefillable can designed for hand-held application without the need for ancillary hoses or spray equipment. Aerosol adhesives include special purpose spray adhesives, mist spray adhesives, and web spray adhesives.~~

§94508(a)(3) – §94508(a)(5) [Nonsubstantive changes to indicate renumbering].

(~~7~~6) "Air Freshener" means any product including, but not limited to, liquids, semisolids, solids, aerosol or pump sprays, wicks, wipes, diffusers, powders, ~~and~~or crystals, designed or labeled for the purpose of masking odors, or freshening, cleaning, scenting, or deodorizing the air. ~~"Air Freshener" includes dual purpose air freshener/disinfectant products.~~ "Air Freshener" does not include products that are used on the human body, products that function primarily as cleaning products as indicated on a product label, "Odor Remover/Eliminator," or "Toilet/Urinal Care Product."

"Air Freshener" includes the following subcategories (A-C):

(A) "Double Phase Aerosol Air Freshener" means an aerosol "Air Freshener," with the liquid contents in two or more distinct phases, that requires the product container be shaken before use to mix the phases, producing an emulsion.

(B) "Dual Purpose Air Freshener/Disinfectant" means an aerosol "Air Freshener" that is designed or labeled for use as both a "Disinfectant" and an "Air Freshener," or is so represented on any sticker, label, packaging, or

literature attached to the product container.

(C) "Single Phase Aerosol Air Freshener" means an aerosol "Air Freshener" with the liquid contents in a single homogeneous phase which does not require that the product container be shaken before use.

§94508(a)(7) – §94508(a)(13) [Nonsubstantive changes to indicate renumbering].

(~~15~~14) "Artist's Solvent/Thinner" means any ~~liquid~~ product, labeled to meet ASTM D4236 – 95 (March 1, 2005) Standard Practice for Labeling Art Materials for Chronic Health Hazards, which is incorporated by reference herein, and is packaged in a container with a capacity equal to or less than 34 fluid ounces, and is labeled exclusively and explicitly to reduce the viscosity of, and or remove, art coating compositions or components.

§94508(a)(15) – §94508(a)(27) [Nonsubstantive changes to indicate renumbering].

~~(29) "Construction, Panel, and Floor Covering Adhesive" means any nonaerosol, one-component adhesive that is designed or labeled for the installation, remodeling, maintenance, or repair of: (A) structural and building components that include, but are not limited to, beams, trusses, studs, paneling (drywall or drywall laminates, fiberglass reinforced plastic (FRP), plywood, particle board, insulation board, pre-decorated hardboard or tileboard, etc.), ceiling and acoustical tile, molding, fixtures, countertops or countertop laminates, cove or wall bases, and flooring or subflooring; or (B) floor or wall coverings that include, but are not limited to, wood or simulated wood covering, carpet, carpet pad or cushion, vinyl-backed carpet, flexible flooring material, nonresilient flooring material, mirror tiles and other types of tiles, and artificial grass. "Construction, Panel, and Floor Covering Adhesive" does not include "Floor Seam Sealer."~~

§94508(a)(28) – §94508(a)(29) [Nonsubstantive changes to indicate renumbering].

~~(32) "Contact Adhesive" means a nonaerosol adhesive that: (A) is designed for application to both surfaces to be bonded together, and (B) is allowed to dry before the two surfaces are placed in contact with each other, and (C) forms an immediate bond that is impossible, or difficult, to reposition after both adhesive-coated surfaces are placed in contact with each other, and (D) does not need sustained pressure or clamping of surfaces after the adhesive-coated surfaces have been brought together using sufficient momentary pressure to establish full contact between both surfaces. "Contact Adhesive" does not include rubber cements that are primarily intended for use on paper substrates. "Contact Adhesive" also does not include vulcanizing fluids that are designed and labeled for tire repair only.~~

~~(33) "Contact Adhesive – General Purpose" means any contact adhesive that is not a "Contact Adhesive – Special Purpose."~~

~~(34) "Contact Adhesive - Special Purpose" means a contact adhesive that: (A) is used to bond melamine-covered board, unprimed metal, unsupported vinyl, Teflon, ultra-high molecular weight polyethylene, rubber, high pressure laminate or wood veneer 1/16 inch or less in thickness to any porous or nonporous surface, and is sold in units of product, less packaging, that contain more than eight fluid ounces, or (B) is used in automotive applications that are (1.) automotive under-the-hood applications requiring heat, oil or gasoline resistance, or (2.) body-side molding, automotive weatherstrip or decorative trim.~~

§94508(a)(30) [Nonsubstantive change to indicate renumbering].

~~(36) "Crawling Bug Insecticide" means any insecticide product that is designed for use against ants, cockroaches, or other household crawling arthropods, including, but not limited to, mites, silverfish or spiders. "Crawling Bug Insecticide" does not include products designed to be used exclusively on humans or animals, or any house dust mite product. For the purposes of this definition only:~~

~~"House dust mite product" means a product whose label, packaging, or accompanying literature states that the product is suitable for use against house dust mites, but does not indicate that the product is suitable for use against ants, cockroaches, or other household crawling arthropods.~~

~~"House dust mite" means mites which feed primarily on skin cells shed in the home by humans and pets and which belong to the phylum Arthropoda, the subphylum Chelicerata, the class Arachnida, the subclass Acari, the order Astigmata, and the family Pyroglyphidae.~~

(~~37~~31) "Deodorant Body Spray" means~~:~~

~~(A) for products manufactured before January 1, 2006: a "Personal Fragrance Product" with 20 percent or less fragrance.~~

~~(B) for products manufactured on or after January 1, 2006:~~ a "Personal Fragrance Product" with 20 percent or less fragrance, that is designed for application all over the human body to provide a scent. A "Deodorant Body Spray" product that indicates or depicts on the container or packaging, or on any sticker or label affixed thereto, that it can be used on or applied to the human axilla, is a "Deodorant" as defined in section 94501(d).

§94508(a)(32) – §94508(a)(34) [Nonsubstantive changes to indicate renumbering].

~~(41) "Double Phase Aerosol Air Freshener" means an aerosol air freshener with the liquid contents in two or more distinct phases that requires the product container be shaken before use to mix the phases, producing an emulsion.~~

§94508(a)(35) [Nonsubstantive change to indicate renumbering].

~~(43) "Dual Purpose Air Freshener/Disinfectant" means an aerosol product that is represented on the product container for use as both a disinfectant and an air freshener, or is so represented on any sticker, label, packaging, or literature attached to the product container.~~

§94508(a)(36) – §94508(a)(42) [Nonsubstantive changes to indicate renumbering].

(~~51~~43)"Fabric Protectant" means~~:~~

~~(A) for products manufactured before December 31, 2008: a product designed or labeled to be applied to fabric substrates to protect the surface from soiling from dirt and other impurities or to reduce absorption of liquid into the fabric's fibers. "Fabric Protectant" does not include "Waterproofers," products designed for use solely on leather, or products designed for use solely on fabrics which are labeled "for dry clean only" and sold in containers of 10 fluid ounces or less.~~

~~(B) for products manufactured on or after December 31, 2008:~~ a product designed or labeled to be applied to fabric substrates to protect the surface from soiling from dirt or other impurities or to reduce absorption of liquid into the fabric's fibers. "Fabric Protectant" does not include "Waterproofers~~,~~;" ~~or~~ products labeled for use solely on leather~~;~~. ~~"Fabric Protectant" does not include~~ pigmented products that are designed or labeled to be used primarily for coloring~~,~~; products used for construction, reconstruction, modification, structural maintenance or repair of fabric substrates~~,~~; or products that renew or restore fabric. ~~and qualifying as either~~ "Fabric Protectant" also does not include "Clear Coating" or "Vinyl/Fabric/Leather/Plastic/~~Polycarbonate~~ Coating" ~~under~~ as defined in section 94521(a).

§94508(a)(44) – §94508(a)(47) [Nonsubstantive changes to indicate renumbering].

~~(56) "Flea and Tick Insecticide" means any insecticide product that is designed for use against fleas, ticks, their larvae, or their eggs. "Flea and Tick Insecticide" does not include products that are designed to be used exclusively on humans or animals and their bedding.~~

§94508(a)(48) – §94508(a)(52) [Nonsubstantive changes to indicate renumbering].

~~(62) "Flying Bug Insecticide" means any insecticide product that is designed for use against flying insects or other flying arthropods, including but not limited to flies, mosquitoes, moths, or gnats. "Flying Bug Insecticide" does not include "wasp and hornet insecticide," products that are designed to be used exclusively on humans or animals, or any moth-proofing product. For the purposes of this definition only, "moth-proofing product" means a product whose label, packaging,~~

~~or accompanying literature indicates that the product is designed to protect fabrics from damage by moths, but does not indicate that the product is suitable for use against flying insects or other flying arthropods.~~

(~~63~~53) "Footwear or Leather Care Product" means any product designed or labeled to be applied to footwear or to other leather articles/components, to maintain, enhance, clean, protect, or modify the appearance, durability, fit, or flexibility of the footwear or leather article/component. Footwear includes both leather and nonleather foot apparel. "Footwear or Leather Care Product" does not include "Fabric Protectant," "General Purpose Adhesive," "Contact Adhesive," "Vinyl/Fabric/Leather/Plastic/~~Polycarbonate~~ Coating," as defined in section 94521(a), "Rubber/Vinyl Protectant," "Fabric Refresher," products solely for deodorizing, or sealant products with adhesive properties used to create external protective layers greater than 2 millimeters thick.

§94508(a)(54) – §94508(a)(57) [Nonsubstantive changes to indicate renumbering].

~~(68) "General Purpose Adhesive" means any nonaerosol adhesive designed for use on a variety of substrates. "General Purpose Adhesive" does not include (A) contact adhesives, (B) construction, panel, and floor covering adhesives, (C) adhesives designed exclusively for application on one specific category of substrates (i.e., substrates that are composed of similar materials, such as different types of metals, paper products, ceramics, plastics, rubbers, or vinyls), or (D) adhesives designed exclusively for use on one specific category of articles (i.e., articles that may be composed of different materials but perform a specific function, such as gaskets, automotive trim, weather-stripping, or carpets).~~

(~~69~~58) "General Purpose Cleaner" means:

(A) for products manufactured before January 1, 2015: a product labeled to clean a variety of hard surfaces. "General Purpose Cleaner" includes, but is not limited to, products designed or labeled for general floor cleaning, kitchen, countertop, or sink cleaning, and cleaners designed or labeled to be used on a variety of hard surfaces such as stovetops, cooktops, or microwaves.

(B) for products manufactured on or after January 1, 2015: a product that is designed or labeled to clean hard surfaces in homes, garages, patios, commercial, or institutional environments. "General Purpose Cleaner" includes products that clean kitchens, sinks, appliances, counters, walls, cabinets or floors and products that claim to clean a variety of similar surfaces such as plastics, stone or metal. "General Purpose Cleaner" does not include "Single Purpose Cleaner."

(~~70~~59)"General Purpose Degreaser" means:

(A) for products manufactured before December 31, 2012: any product labeled to remove or dissolve grease, grime, oil and other oil-based contaminants from a variety of substrates, including automotive or miscellaneous metallic parts. "General Purpose Degreaser" does not include "Engine Degreaser," "General Purpose Cleaner," "Adhesive Remover," "Electronic Cleaner," "Electrical Cleaner," "Energized Electrical Cleaner," and "Metal Polish or Cleanser." "General Purpose Degreaser" also does not include products used exclusively in "solvent cleaning tanks or related equipment," or products that are (A) sold exclusively to establishments which manufacture or construct goods or commodities; and (B) labeled "not for retail sale." "Solvent cleaning tanks or related equipment" includes, but is not limited to, cold cleaners, vapor degreasers, conveyorized degreasers, film cleaning machines, or products designed to clean miscellaneous metallic parts by immersion in a container.

(B) for products manufactured on or after December 31, 2012, but before January 1, 2015: any product labeled to remove or dissolve grease, grime, oil and other oil-based contaminants from a variety of substrates, including automotive or miscellaneous metallic parts. "General Purpose Degreaser" does not include "Adhesive Remover," "Electrical Cleaner," "Electronic Cleaner," "Energized Electrical Cleaner," "Engine Degreaser," "General Purpose Cleaner," "Metal Polish or Cleanser," or "Oven or Grill Cleaner." "General Purpose Degreaser" also does not include products used exclusively in "solvent cleaning tanks or related equipment," or products that are (A) exclusively sold directly or through distributors to establishments which manufacture or construct goods or commodities; and (B) labeled exclusively for "use in the manufacturing process only." "Solvent cleaning tanks or related equipment" includes, but is not limited to, cold cleaners, vapor degreasers, conveyorized degreasers, film cleaning machines, or products designed to clean miscellaneous metallic parts by immersion in a container.

(C) for products manufactured on or after January 1, 2015: any product that is designed or labeled to remove or dissolve grease, grime, oil or other oil-based contaminants from a variety of substrates, including automotive or miscellaneous metallic parts. "General Purpose Degreaser" does not include "Adhesive Remover," "Electrical Cleaner," "Electronic Cleaner," "Energized Electrical Cleaner," "Engine Degreaser," "General Purpose Cleaner," "Metal Polish or Cleanser," "Oven or Grill Cleaner," or "Single Purpose Degreaser." "General Purpose Degreaser" also does not include products used exclusively in "solvent cleaning tanks or related equipment," or products that are (A) exclusively sold directly or through distributors to establishments which manufacture or construct goods or commodities; and (B) labeled exclusively for "use in the manufacturing process only." "Solvent cleaning

tanks or related equipment" includes, but is not limited to, cold cleaners, vapor degreasers, conveyorized degreasers, film cleaning machines, or products designed to clean miscellaneous metallic parts by immersion in a container.

§94508(a)(60) – §94508(a)(65) [Nonsubstantive changes to indicate renumbering].

(66) "Hair Finishing Spray" means a consumer product that is designed or labeled for application to styled hair to provide sufficient rigidity, to hold, retain or finish the style of the hair for a period of time. "Hair Finishing Spray" includes aerosol hair sprays, pump hair sprays, spray waxes; color, glitter, or sparkle hair sprays that make finishing claims; and products that are both a styling and finishing product. "Hair Finishing Spray" does not include spray products that are intended to aid in styling but do not provide finishing of a hair style.

For the purposes of this subchapter, "finish" or "finishing" means the maintaining and/or holding of previously styled hair for a period of time.

For the purposes of this subchapter, "styling" means the forming, sculpting, or manipulating the hair to temporarily alter the hair's shape.

§94508(a)(67) [Nonsubstantive change to indicate renumbering].

(~~78~~68) "Hair Shine" means any product designed for the primary purpose of creating a shine when applied to the hair. "Hair Shine" includes, but is not limited to, dual-use products designed primarily to impart a sheen to the hair. "Hair Shine" does not include "Hair Finishing Spray," "Hair Mousse," "Hair Styling Product," ~~"Hair Styling Gel,"~~ or products whose primary purpose is to condition or hold the hair.

~~(79) "Hair Styling Gel" means a consumer product manufactured before December 31, 2006, that is a high viscosity, often gelatinous, product that contains a resin and is designed for the application to hair to aid in styling and sculpting of the hair coiffure.~~

~~(80) "Hair Spray" means:~~

~~(A) for products manufactured before December 31, 2006: a consumer product designed primarily for the purpose of dispensing droplets of a resin on and into a hair coiffure which will impart sufficient rigidity to the coiffure to establish or retain the style for a period of time, and~~

~~(B) for products manufactured on or after December 31, 2006: a consumer product that is applied to styled hair, and is designed or labeled to provide sufficient rigidity, to hold, retain and/or (finish) the style of the hair for a period of time. "Hair Spray" includes aerosol hair sprays, pump hair sprays, spray~~

~~waxes; color, glitter, or sparkle hair sprays that make finishing claims; and products that are both a styling and finishing product. "Hair Spray" does not include spray products that are intended to aid in styling but do not provide finishing of a hairstyle.~~

~~For the purposes of this subchapter, "finish" or "finishing" means the maintaining and/or holding of previously styled hair for a period of time.~~

~~For the purposes of this subchapter, "styling" means the forming, sculpting, or manipulating the hair to temporarily alter the hair's shape.~~

(~~81~~69) "Hair Styling Product" means a consumer product ~~manufactured on or after December 31, 2006,~~ that is designed or labeled for the application to wet, damp or dry hair to aid in defining, shaping, lifting, styling and/or sculpting of the hair. "Hair Styling Product" includes, but is not limited to hair balm, clay, cream, creme, curl straightener, gel, liquid, lotion, paste, pomade, putty, root lifter, serum, spray gel, stick, temporary hair straightener, wax, spray products that aid in styling but do not provide finishing of a hair style, and leave-in volumizers, detanglers and/or conditioners that make styling claims. "Hair Styling Product" does not include "No Rinse Shampoo," "Thermal Protectant," "Hair Mousse," "Hair Shine," "Hair Finishing Spray," or shampoos ~~and/~~or conditioners that are rinsed from the hair prior to styling.

For the purposes of this subchapter, "finish" or "finishing" means the maintaining and/or holding of previously styled hair for a period of time.

For the purposes of this subchapter, "styling" means the forming, sculpting, or manipulating the hair to temporarily alter the hair's shape.

§94508(a)(70) – §94508(a)(75) [Nonsubstantive changes to indicate renumbering].

(~~88~~76) "Insecticide" means a pesticide product that is designed for use against insects or other arthropods, but excluding products that are: (A) for agricultural use, or (B) for a use which requires a structural pest control license under Chapter 14 (commencing with Section 8500) of the Business and Professions Code, or (C) restricted materials that require a permit for use and possession.

"Insecticide" includes the following subcategories (A-F):

(A) "Crawling Bug Insecticide" means any insecticide product that is designed for use against ants, cockroaches, or other household crawling arthropods, such as mites, silverfish or spiders. "Crawling Bug Insecticide" does not include products designed to be used exclusively on humans or animals, or any house dust mite product. For the purposes of this definition only:

"House dust mite product" means a product whose label, packaging, or

accompanying literature states that the product is suitable for use against house dust mites, but does not indicate that the product is suitable for use against ants, cockroaches, or other household crawling arthropods.

"House dust mite" means mites which feed primarily on skin cells shed in the home by humans and pets and which belong to the phylum Arthropoda, the subphylum Chelicerata, the class Arachnida, the subclass Acari, the order Astigmata, or the family Pyroglyphidae.

(B) "Flea or Tick Insecticide" means any insecticide product that is designed for use against fleas, ticks, their larvae, or their eggs. "Flea or Tick Insecticide" does not include products that are designed to be used exclusively on humans or animals or their bedding.

(C) "Flying Bug Insecticide" means any insecticide product that is designed for use against flying insects or other flying arthropods such as flies, mosquitoes, moths, or gnats. "Flying Bug Insecticide" does not include "Wasp or Hornet Insecticide," products that are designed to be used exclusively on humans or animals, or any moth-proofing product. For the purposes of this definition only, "moth-proofing product" means a product whose label, packaging, or accompanying literature indicates that the product is designed to protect fabrics from damage by moths, but does not indicate that the product is suitable for use against flying insects or other flying arthropods.

(D) "Insecticide Fogger" means any insecticide product designed to release all or most of its content, as a fog or mist, into indoor areas during a single application.

(E) "Lawn or Garden Insecticide" means an insecticide product labeled primarily to be used in household lawn or garden areas to protect plants from insects or other arthropods. Notwithstanding the requirements of section 94512(a) aerosol "Lawn or Garden Insecticide" may claim to kill insects or other arthropods.

(F) "Wasp or Hornet Insecticide" means any insecticide product that is designed for use against wasps, hornets, yellow jackets or bees by allowing the user to spray from a distance a directed stream or burst at the intended insects, or their hiding place.

~~(89) "Insecticide Fogger" means any insecticide product designed to release all or most of its content, as a fog or mist, into indoor areas during a single application.~~

§94508(a)(77) – §94508(a)(80) [Nonsubstantive changes to indicate renumbering].

~~(94) "Lawn or Garden Insecticide" means an insecticide product labeled primarily to be used in household lawn or garden areas to protect plants from insects or other arthropods. Notwithstanding the requirements of section 94512(a) aerosol "Lawn or Garden Insecticide" may claim to kill insects or other arthropods.~~

§94508(a)(81) [Nonsubstantive change to indicate renumbering].

(~~96~~82) "Lubricant" means:

(A) for products manufactured before December 31, 2012: a product that reduces friction, heat, noise, or wear between moving parts, or loosens rusted or immovable parts or mechanisms. "Lubricant" does not include automotive power steering fluids; products designed and labeled exclusively to release manufactured products from molds; products for use inside power generating motors, engines, and turbines, and their associated power-transfer gearboxes; two cycle oils or other products designed to be added to fuels; products for use on the human body or animals; or products that are (1) sold exclusively to establishments which manufacture or construct goods or commodities, and (2) labeled "not for retail sale."

(B) for products manufactured on or after December 31, 2012: a product that reduces friction, heat, noise, or wear between moving parts, or loosens rusted or immovable parts or mechanisms. "Lubricant" does not include automotive power steering fluids; products designed and labeled exclusively to release manufactured products from molds; products for use inside power generating motors, engines, and turbines, and their associated power-transfer gearboxes; two cycle oils or other products designed to be added to fuels; products for use on the human body or animals; or products that are (1) exclusively sold directly or through distributors to establishments which manufacture or construct goods or commodities, and (2) labeled exclusively for "use in the manufacturing process only." "Lubricant" includes products labeled for use in food-servicing environments that include, but are not limited to, restaurants and food stores.

(C) "Lubricant" includes the following subcategories (1-9):

(1) "Anti-seize Lubricant" means any "Llubricant" designed or labeled exclusively for use in high temperature or high pressure conditions to prevent moving metal parts from seizing or galling, and/or to facilitate disassembly of metal parts. A lubricant that meets the definition for ~~"Dry Lubricant" or~~ "Firearm Lubricant" is not an "Anti-seize Lubricant."

(2) "Cutting or Tapping Oil" means any "Llubricant" designed or labeled exclusively for drilling, cutting, or tapping metals.

(3) "Dry Lubricant" means any "Llubricant" which provides lubricity solely by depositing a thin film of solid material including, but not limited to, graphite, molybdenum disulfide ("moly"), polytetrafluoroethylene or closely related fluoropolymer ("teflon"), or boron nitride on surfaces. Products that meet the definition for "Dry Lubricant" are not subject to the requirements for "Anti-seize Lubricant," "Cutting or Tapping Oil," "Gear, Chain, or Wire Lubricant," "Multi-purpose Lubricant," "Penetrant," "Rust Preventative or Rust Control Lubricant," or "Silicone-based Multi-purpose Lubricant."

(4) "Firearm Lubricant" means any "Llubricant" designed or labeled exclusively for use on firearms or their parts to lubricate ~~and/~~or to provide corrosion or rust prevention.

(5) "Gear, Chain, or Wire Lubricant" means any "Llubricant" designed or labeled exclusively for use on gears, chains, or wire ropes. "Gear, Chain or Wire Lubricant" does not include lubricant products labeled solely for use on chains of chain-driven vehicles.

(6) "Multi-purpose Lubricant" means any "Llubricant" designed or labeled for general purpose lubrication, or a lubricant labeled for use in a wide variety of applications. Products that meet the definition for "Anti-seize Lubricant," "Cutting or Tapping Oil," "Dry Lubricant," "Firearm Lubricant," "Gear, Chain, or Wire Lubricant," "Penetrant," "Rust Preventative or Rust Control Lubricant," ~~or~~ "Silicone-based Multi-purpose Lubricant," or other lubricant products labeled solely for a single purpose are not "Multi-purpose Lubricants."

(7) "Penetrant" means a "Llubricant" designed or labeled primarily to loosen metal parts that have bonded together due to rusting, oxidation, or other causes. Lubricants that claim to have penetrating qualities, but are not labeled primarily to loosen bonded parts are not "Penetrant" products.

(8) "Rust Preventative or Rust Control Lubricant" means any "Llubricant" designed or labeled primarily for the prevention or control of rust. A Lubricant that meets the definition for "Firearm Lubricant" is not a "Rust Preventative or Rust Control Lubricant."

(9) "Silicone-based Multi-purpose Lubricant" means any "Llubricant" which is designed or labeled for general lubrication or for use in a wide variety of applications, in which lubricity is primarily provided through the use of silicone compounds including, but not limited to, polydimethylsiloxane. "Silicone-based Multi-purpose Lubricant" does not include silicone-based lubricant products labeled solely for a single purpose.

§94508(a)(83) – §94508(a)(86) [Nonsubstantive changes to indicate renumbering].

~~(101) "Mist Spray Adhesive" means any aerosol adhesive which is not a "Special Purpose Spray Adhesive" and which delivers a particle or mist spray, resulting in the formation of fine, discrete particles that yield a generally uniform and smooth application of adhesive to the substrate.~~

§94508(a)(87) [Nonsubstantive change to indicate renumbering].

(~~103~~88) "Multi-purpose Solvent" means:

~~(A) for products manufactured before January 1, 2008: any organic liquid designed to be used for a variety of purposes, including cleaning or degreasing of a variety of substrates, or thinning, dispersing or dissolving other organic materials. "Multi-purpose Solvent" includes solvents used in institutional facilities, except for laboratory reagents used in analytical, educational, research, scientific or other laboratories. "Multi-purpose Solvent" does not include solvents used in cold cleaners, vapor degreasers, conveyorized degreasers or film cleaning machines, or solvents that are incorporated into, or used exclusively in the manufacture or construction of, the goods or commodities at the site of the establishment.~~

(B<u>A</u>) for products manufactured ~~on or after January 1, 2008~~ <u>before January 1, 2015</u>: any liquid product designed or labeled to be used for dispersing, dissolving, or removing contaminants or other organic materials. "Multi-purpose Solvent" ~~also~~ includes: 1. products that do not display specific use instructions on the product container or packaging; 2. products that do not specify an end-use function or application on the product container or packaging; 3. solvents used in institutional facilities, except for laboratory reagents used in analytical, educational, research, scientific or other laboratories; 4. "Paint clean-up" products; and 5. products labeled to prepare surfaces for painting. For the purposes of this definition only, "Paint clean-up" means any liquid product labeled for cleaning oil-based or water-based paint, lacquer, varnish, or related coatings from, but not limited to, painting equipment or tools, plastics, or metals. "Multi-purpose Solvent" does not include 1. solvents used in cold cleaners, vapor degreasers, conveyorized degreasers or film cleaning machines; 2. solvents labeled exclusively for the clean-up of application equipment used for polyaspartic and polyurea coatings; ~~3. solvents that are incorporated into, or used exclusively in the manufacture or construction of, the goods or commodities at the site of the establishment; 4~~<u>3</u>. ~~P~~<u>p</u>roducts that are labeled exclusively to clean a specific contaminant, on a single substrate, in specific situations; or ~~5~~<u>4. except as provided in section 94509(p)(4)(A),</u> any product making any representation that the product may be used as, or is suitable for use as a consumer product which meets another definition in section 94508(a); such products are not "Multi-purpose Solvents" and are subject to the "Most Restrictive Limit" provisions of section 94512(a).

(B) for products manufactured on or after January 1, 2015: any product designed or labeled to be used for dispersing, dissolving, or removing contaminants or other organic materials, that does not display specific use instructions and/or does not display an end-use function or application on the label.

"Multi-purpose Solvent" includes:

1. solvents used in institutional facilities;

2. products labeled as "Paint Clean-Up," or products designed or labeled for cleaning oil-based or water-based paint, lacquer, varnish, or related coatings from painting equipment or tools, plastics, or metals;

3. products labeled to prepare surfaces for painting; and

4. products that display on the Principal Display Panel a specific chemical name. Examples of specific chemical names include mineral spirits, ketone, turpentine, toluene, xylene(s), acetone, naphtha, or alcohol.

"Multi-purpose Solvent" does not include:

1. solvents used in cold cleaners, vapor degreasers, conveyorized degreasers or film cleaning machines;

2. solvents labeled exclusively for the clean-up of application equipment used for polyaspartic and polyurea coatings;

3. products that are labeled exclusively to clean a specific contaminant, on a single substrate;

4. "Rubbing Alcohol;"

5. laboratory reagents used in analytical, educational, research, scientific or other laboratories; and

6. products that are used exclusively for the thinning of "Industrial Maintenance Coatings," "Zinc –Rich Primers," or "High Temperature Coatings" that meet both of the following criteria:

   a. the Responsible Party also manufactures for sale in California "Industrial Maintenance Coatings," "Zinc –Rich Primers," or "High Temperature Coatings;" and

   b. the label states the specific product or brand of the "Industrial

Maintenance Coating," Zinc-Rich Primer," or "High Temperature Coating" for which the product is used.

§94508(a)(89) – §94508(a)(90) [Nonsubstantive changes to indicate renumbering].

(91) "No Rinse Shampoo" means a product designed or labeled solely to be applied to hair that is dry to clean, absorb oil, or eliminate odor, and is subsequently removed from the hair by combing, brushing, or toweling the hair.

(92) "Nonaerosol" means any product which is not an "Aerosol Product."

§94508(a)(93) – §94508(a)(98) [Nonsubstantive changes to indicate renumbering].

(~~11~~299) "Paint Thinner" means:

(A) for products manufactured before January 1, 2015: any liquid product used for reducing the viscosity of coating compositions or components, that prominently displays the term "Paint Thinner," "Lacquer Thinner," "Thinner," or "Reducer" on the front panel of its packaging. "Paint Thinner" does not include any of the following products:

~~(A)~~1. "Artist's Solvent/Thinner;"

~~(B)~~2. products that are sold in containers with a capacity of 5 gallons or more and labeled exclusively for the thinning of "Industrial Maintenance Coatings," "Zinc-Rich Primers," or "High Temperature Coatings;"

~~(C)~~3. products labeled and used exclusively as an ingredient in a specific coating or coating brand line, whereby the coating would not be complete or useable without the specific ingredient; and

~~(D)~~4. products that meet both of the following criteria:

~~1~~a. the ~~Principle~~Principal Display Panel of the product displays, in a font size as large as, or larger than, the font size of all other words on the Principal Display ~~p~~Panel, language that the product is used exclusively for the thinning of "Industrial Maintenance Coatings," "Zinc-Rich Primers," or "High Temperature Coatings," and

~~2~~b. no representation is made anywhere on the product container or packaging, or any label or sticker attached thereto, that the product is suitable for use or may be used for any other purpose except the thinning of "Industrial Maintenance Coatings," "Zinc-Rich Primers," or "High Temperature Coatings."

(B) for products manufactured on or after January 1, 2015: any product that is

designed or labeled to reduce the viscosity of coating compositions or components, or a product that prominently displays terms such as "Paint Thinner," "Lacquer Thinner," "Thinner," or "Reducer" on the label. "Paint Thinner" includes aerosol products that provide a seamless transition between finishes, except for "Uniform Finish Coating" as defined in section 94521(a).

"Paint Thinner" does not include any of the following products:

1. "Artist's Solvent/Thinner;"

2. "Rubbing Alcohol;"

3. products that are sold in containers with a capacity of 5 gallons or more and labeled exclusively for the thinning of "Industrial Maintenance Coatings," "Zinc –Rich Primers," or "High Temperature Coatings" that meet both of the following criteria:

   a. the Responsible Party also manufactures for sale in California "Industrial Maintenance Coatings," "Zinc –Rich Primers," or "High Temperature Coatings;" and

   b. the label states the specific product or brand of the "Industrial Maintenance Coating," "Zinc –Rich Primer," or "High Temperature Coating" for which the thinning product is to be used.

4. products labeled and used exclusively as an ingredient in a specific coating or coating brand line, whereby the coating would not be complete or useable without the specific ingredient; and

5. products that meet all of the following criteria:

   a. the Principal Display Panel of the product displays, in a font size as large as, or larger than, the font size of all other words on the Principal Display Panel, excluding the company name, brand name, and logo, language that the product is used exclusively for the thinning of "Industrial Maintenance Coatings," "Zinc-Rich Primers," or "High Temperature Coatings;"

   b. no representation is made anywhere on the product container or packaging, or any label or sticker attached thereto, that the product is suitable for use or may be used for any other purpose except the thinning of "Industrial Maintenance Coatings," "Zinc-Rich Primers," or "High Temperature Coatings;"

   c. the Responsible Party also manufactures for sale in California

"Industrial Maintenance Coatings," "Zinc –Rich Primers," or "High Temperature Coatings;" and

d. the label states the specific product or brand of the "Industrial Maintenance Coating," "Zinc –Rich Primer," or "High Temperature Coating" for which the thinning product is to be used.

§94508(a)(100) – §94508(a)(113) [Nonsubstantive changes to indicate renumbering].

(~~127~~114) "Rubber/Vinyl Protectant" means:

~~(A) for products manufactured before December 31, 2008: any product designed to protect, preserve or renew vinyl, rubber, and plastic on vehicles, tires, luggage, furniture, and household products such as vinyl covers, clothing, and accessories. "Rubber/Vinyl Protectant" does not include products primarily designed to clean the wheel rim, such as aluminum or magnesium wheel cleaners, and tire cleaners that do not leave an appearance-enhancing or protective substance on the tire.~~

~~(B) for products manufactured on or after December 31, 2008:~~ any product labeled to protect, preserve or renew vinyl, or rubber on vehicles, tires, luggage, furniture, and/or household products such as vinyl covers, clothing, or accessories. "Rubber/Vinyl Protectant" does not include: products labeled to clean the wheel rim, such as aluminum or magnesium wheel cleaners; tire cleaners that do not leave an appearance-enhancing or protective substance on the tire; pigmented products designed or labeled to be used primarily for coloring; products used for construction, reconstruction, modification, structural maintenance or repair of rubber or vinyl substrates; or products, other than those labeled to be used on vehicle tires, qualifying as either "Clear Coating" or "Vinyl/Fabric/Leather/Plastic/~~Polycarbonate~~ Coating" ~~under~~ as defined in section 94521(a).

§94508(a)(115) – §94508(a)(120) [Nonsubstantive changes to indicate renumbering].

~~(134) "Single Phase Aerosol Air Freshener" means an aerosol air freshener with the liquid contents in a single homogeneous phase and which does not require that the product container be shaken before use.~~

§94508(a)(121) [Nonsubstantive change to indicate renumbering].

(122) "Single Purpose Cleaner" means a cleaning product that is designed or labeled exclusively to clean one specific object or its parts, except that a cleaning product that claims to clean a single appliance, counter, wall, cabinet or floor is a "General Purpose Cleaner."

(123) "Single Purpose Degreaser" means a product that is designed or labeled exclusively to degrease one specific object or its parts. "Single Purpose Degreaser" does not include "Adhesive Remover," "Electrical Cleaner," "Electronic Cleaner," "Energized Electrical Cleaner," "Engine Degreaser," "General Purpose Cleaner," "Metal Polish or Cleanser," or "Oven or Grill Cleaner." "Single Purpose Degreaser" also does not include products used exclusively in "solvent cleaning tanks or related equipment," or products that are (A) exclusively sold directly or through distributors to establishments which manufacture or construct goods or commodities; and (B) labeled exclusively for "use in the manufacturing process only." "Solvent cleaning tanks or related equipment" includes, but is not limited to, cold cleaners, vapor degreasers, conveyorized degreasers, film cleaning machines, or products designed to clean miscellaneous metallic parts by immersion in a container.

~~(136) "Special Purpose Spray Adhesive" means an aerosol adhesive that meets any of the following definitions:~~

~~(A) "Mounting Adhesive" means an aerosol adhesive designed to permanently mount photographs, artwork, and any other drawn or printed media to a backing (paper, board, cloth, etc.) without causing discoloration to the artwork.~~

~~(B) "Flexible Vinyl Adhesive" means an aerosol adhesive designed to bond flexible vinyl to substrates. Flexible vinyl means a nonrigid polyvinyl chloride plastic with at least five percent, by weight, of plasticizer content. A plasticizer is a material, such as a high boiling point organic solvent, that is incorporated into a vinyl to increase its flexibility, workability, or distensibility, and may be determined using ASTM Method E260-91 (Jan. 25, 1991) Standard Practice for Packed Column Gas Chromatography, which is incorporated by reference herein, or from product formulation data.~~

~~(C) "Polystyrene Foam Adhesive" means an aerosol adhesive designed to bond polystyrene foam (e.g. Styrofoam®, expanded polystyrene foam, etc.) to substrates.~~

~~(D) "Automobile Headliner Adhesive" means an aerosol adhesive designed to bond together layers in motor vehicle headliners.~~

~~(E) "Polyolefin Adhesive" means an aerosol adhesive designed to bond polyolefins (e.g. polyethylene, polypropylene, etc.) to substrates.~~

~~(F) "Laminate Repair/Edgebanding Adhesive" means an aerosol adhesive designed for:~~

~~1. the touch-up or repair of items laminated with high pressure laminates~~

~~(e.g. lifted edges, delaminations, etc.), or for~~

~~2. the touch-up, repair, or attachment of edgebanding materials, including, but not limited to, other laminates, synthetic marble, veneers, wood moulding, and decorative metals.~~

~~For the purposes of this definition "high-pressure laminate" means sheet materials which consist of paper, fabric, or other core material that have been laminated at temperatures exceeding 265 degrees F, and at pressures between 1,000 and 1,400 psi.~~

~~(G) "Automotive Engine Compartment Adhesive" means an aerosol adhesive designed for use in motor vehicle under-the-hood applications which require oil and plasticizer resistance, as well as high shear strength, at temperatures of 200-275 degrees Fahrenheit.~~

§94508(a)(124) – §94508(a)(126) [Nonsubstantive changes to indicate renumbering].

(~~140~~127) "Temporary Hair Color" means any product that applies color, glitter, or UV-active pigments to hair, wigs, or fur and is removable when washed. "Temporary Hair Color" includes hair color mousses and products labeled to add texture or thickness to cover thinning/balding areas. "Temporary Hair Color" does not include "Hair Finishing Spray," "Hair Styling Product," or "Hair Mousse."

§94508(a)(128) [Nonsubstantive change to indicate renumbering].

(129) "Thermal Protectant" means a product that is designed or labeled solely to be applied to the hair to protect it from heat damage during the use of heated tools such as blow drier, flat iron, and/or curling iron.

§94508(a)(130) – §94508(a)(135) [Nonsubstantive change to indicate renumbering].

(~~148~~136) "Undercoating" means:

(A) for products manufactured before January 1, 2017: any aerosol product designed to impart a protective, nonpaint layer to the undercarriage, trunk interior, and/or firewall of motor vehicles to prevent the formation of rust or to deaden sound. "Undercoating" includes, but is not limited to, rubberized, mastic, or asphaltic products.

(B) for products manufactured on or after January 1, 2017: any aerosol product designed or labeled exclusively to impart a protective, nonpaint layer to the undercarriage, trunk interior, and/or firewall or other parts of motor vehicles to prevent the formation of rust or to deaden sound. "Undercoating" includes,

but is not limited to, rubberized, mastic, or asphaltic products. An aerosol product that may be used as an "Undercoating" but makes claims it may be used to provide a flexible or protective coating to non-vehicular surfaces is a "Flexible Coating" as defined in section 94521(a).

§94508(a)(137) [Nonsubstantive change to indicate renumbering].

(~~150~~138) "Volatile Organic Compound (VOC)" means any compound containing at least one atom of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, and excluding the following:

(A) methane,
methylene chloride (dichloromethane),
1,1,1-trichloroethane (methyl chloroform),
trichlorofluoromethane (CFC-11),
dichlorodifluoromethane (CFC-12),
1,1,2-trichloro-1,2,2-trifluoroethane (CFC-113),
1,2-dichloro-1,1,2,2-tetrafluoroethane (CFC-114),
chloropentafluoroethane (CFC-115),
chlorodifluoromethane (HCFC-22),
1,1,1-trifluoro-2,2-dichloroethane (HCFC-123),
1,1-dichloro-1-fluoroethane (HCFC-141b),
1-chloro-1,1-difluoroethane (HCFC-142b),
2-chloro-1,1,1,2-tetrafluoroethane (HCFC-124),
trifluoromethane (HFC-23),
1,1,2,2-tetrafluoroethane (HFC-134),
1,1,1,2-tetrafluoroethane (HFC-134a),
pentafluoroethane (HFC-125),
1,1,1-trifluoroethane (HFC-143a),
1,1-difluoroethane (HFC-152a),
ethoxy-nonafluorobutane (HFE 7200),
trans-1,3,3,3-tetrafluoropropene (HFO-1234ze),
cyclic, branched, or linear completely methylated siloxanes,
the following classes of perfluorocarbons:

1. cyclic, branched, or linear, completely fluorinated alkanes;
2. cyclic, branched, or linear, completely fluorinated ethers with no unsaturations;
3. cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations; and
4. sulfur-containing perfluorocarbons with no unsaturations and with the sulfur bonds to carbon and fluorine, and

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

acetone,
ethane,
methyl acetate,
parachlorobenzotrifluoride (1-chloro-4-trifluoromethyl benzene),
perchloroethylene (tetrachloroethylene).

§94508(a)(139) [Nonsubstantive change to indicate renumbering].

~~(152) "Wasp or Hornet Insecticide" means any insecticide product that is designed for use against wasps, hornets, yellow jackets or bees by allowing the user to spray from a distance a directed stream or burst at the intended insects, or their hiding place.~~

(~~153~~140) "Waterproofer" means a nonaerosol product designed ~~and~~or labeled exclusively to repel water from fabric or leather substrates. "Waterproofer" does not include "Fabric Protectant." Any aerosol product that meets the definition of an "Aerosol Coating Product" as defined in section 94521(a) and is designed or labeled exclusively to repel water from fabric or leather substrates is a "Vinyl/Fabric/Leather/Plastic Coating" as defined in section 94521(a).

§94508(a)(141) [Nonsubstantive change to indicate renumbering].

~~(155) "Web Spray Adhesive" means any aerosol adhesive which is not a "Mist Spray Adhesive" or "Special Purpose Spray Adhesive."~~

§94508(a)(142) – §94508(a)(144) [Nonsubstantive changes to indicate renumbering].

NOTE: Authority cited: Sections 38501, 38510, 38560, 38560.5, 38562, 38580, 39600, 39601 and 41712, Health and Safety Code. Reference: Sections 38501, 38510, 38560, 38560.5, 38562, 38580, 39002, 39600, 40000 and 41712, Health and Safety Code.

§ 94509. Standards for Consumer Products.

[Note: Only those parts of the Table of Standards proposed for amendment are shown.]

(a) Except as provided in ~~S~~sections 94510 (Exemptions), 94511 (Innovative Products), 94514 (Variances), and 94540 through 94555 (Alternative Control Plan), ~~and 94567(a)(1) (Hairspray Credit Program), T~~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

Product Category	*Effective Date* [1]	*VOC Standard* [2]
Adhesive*:		
[*See section 94510(i) for an exemption that applies to adhesives.]		
Aerosol**	1/1/95	75
Mist Spray Adhesive**	1/1/2002 1/1/2017	65 30
Web Spray Adhesive**	1/1/2002 1/1/2017	55 40
Special Purpose Spray Adhesive:**		
Automobile Headliner Adhesive	1/1/2002	65
Automotive Engine Compartment Adhesive	1/1/2002	70
Flexible Vinyl Adhesive	1/1/2002	70
Laminate Repair/Edgebanding Adhesive	1/1/2002	60
Mounting Adhesive~~, Automotive Engine Compartment, and Flexible Vinyl Adhesive Polystyrene Foam and Automobile Headliner Adhesive~~	1/1/2002	70
Polyolefin ~~and Laminate Repair/Edgebanding~~ Adhesive	1/1/2002	60
Polystyrene Foam Adhesive	1/1/2002	65
Screen Printing Adhesive	1/1/2017	55
[**See ~~sub~~sections 94509(i), ~~and~~ 94509(m)(1), 94509(n), ~~and sections~~ 94512(d), and 94513(d) for additional requirements that apply to aerosol		

adhesive.]		
Construction, Panel, ~~and~~or Floor Covering Adhesive[#]	1/1/95 12/31/2002 12/31/2008	40 15 7
[[#]See section 94509(k) for the effective date of the VOC limit for certain types of Construction, Panel, ~~and~~or Floor Covering Adhesive, and subsection 94509(m)(1) for additional requirements that apply to Construction, Panel, ~~and~~or Floor Covering Adhesive.]		
*****		
Hair Finishing Spray	1/1/93 6/1/99	80 55
~~Hair Styling Gel~~	~~1/1/94~~	~~6~~
*****		
Insecticide*:		
*****		
Flea ~~and~~or Tick Insecticide	1/1/95	25
*****		
Lubricant*		
*****		
Multi-purpose Lubricant (excluding solid or semisolid products)[#]	1/1/2003 12/31/2013 12/31/201~~5~~18	50 25 10
*****		
Multi-purpose Solvent*		
aerosol		
- standard for all areas of the State	1/1/2016	10
nonaerosol		
- standards for the South Coast Air Quality Management District	See section 94509(p)(4)	

- standards for all other areas of the State	12/31/2010 12/31/2013	30 3
==========	==========	==========
[*See ~~sub~~sections 94509(b)(1), (m)(1), (n), and (p); 94512(a)(1), (a)(4) and (e); ~~and~~ 94513(g); and 94515(j) for additional requirements that apply to Multi-purpose Solvent.] *****		
Paint Thinner* aerosol - standard for all areas of the State	1/1/2016	10
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nonaerosol - standards for the South Coast Air Quality Management District	See section 94509(p)(4)	
- standards for all other areas of the State	12/31/2010 12/31/2013	30 3
==========	==========	==========
[*See ~~sub~~sections 94509(b)(1), (m)(1), (n), and (p); 94512(a)(1), (a)(4) and (e); ~~and~~ 94513(g); and 94515(j) for additional requirements that apply to Paint Thinner. See ~~sub~~section 94510(m) for an exemption that applies to Paint Thinner.] *****		

[1] See section 94509(d) for the effective date of the VOC standards for products registered under FIFRA, and section 94509(c) and (d) for the "sell-through" allowed for products manufactured prior to the effective date of standards.

[2] See section 94510(c) for an exemption that applies to fragrances in consumer products, and section 94510(d) for an exemption that applies to LVP-VOCs.

(b) *Products that are diluted prior to use*

(1) Except for "Multi-purpose Solvent" and "Paint Thinner" products manufactured after January 1, 2015, and "Automotive Windshield Washer Fluid (Dilutable)," for consumer products for which the label, packaging, or accompanying literature specifically states that the product should be diluted with water or non-VOC solvent prior to use, the limits specified in subsection (a) shall apply to the product only after the minimum recommended dilution has taken place. For purposes of this subsection (b), "minimum recommended dilution" shall not include recommendations for incidental use of a concentrated product to deal with limited

special applications such as hard-to-remove soils or stains.

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(i) *Requirements for aerosol adhesives* (as defined in sections 94508(a)(1) ~~and 94508(a)(3)~~).

(1) As specified in Health and Safety Code section 41712(h)(2), the standards for aerosol adhesives apply to all uses of aerosol adhesives, including consumer, industrial, and commercial uses. Except as otherwise provided in sections 94509(c), 94510, 94511, and 94514, no person shall sell, supply, offer for sale, use or manufacture for sale in California any aerosol adhesive which, at the time of sale, use, or manufacture, contains VOCs in excess of the specified standard.

(2)(A) In order to qualify as a "Special Purpose Spray Adhesive" the product must meet one or more of the definitions for "Special Purpose Spray Adhesive" specified in section 94508(a)(1), but if the product label indicates that the product is suitable for use on any substrate or application not listed in one of the definitions for "Special Purpose Spray Adhesive," then the product shall be classified as either a "Web Spray Adhesive" or a "Mist Spray Adhesive."

(B) If a product meets more than one of the definitions specified in section 94508(a)(1) for "Special Purpose Spray Adhesive," and is not classified as a "Web Spray Adhesive" or "Mist Spray Adhesive" under subsection 94509(i)(2)(A), then the VOC limit for the product shall be the lowest applicable VOC limit specified in section 94509(a).

(3) All aerosol adhesives must comply with the labeling requirements specified in section 94512(d), and all manufacturers and responsible parties for aerosol adhesives must comply with the special reporting requirements specified in section 94513(d).

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(k) *Effective dates of the VOC limits for "Carburetor or Fuel-injection Air Intake Cleaners" and "Construction, Panel, ~~and~~or Floor Covering Adhesives.*" The definitions for the product categories of "Carburetor or Fuel-injection Air Intake Cleaners" and "Construction, Panel, ~~and~~or Floor Covering Adhesives" were modified as part of the "Mid-term Measures II" rulemaking action that was considered by the Board in October 1999. As a result of these modifications, certain types of consumer products were included in these definitions that had not previously been included. For those consumer products that were included in these definitions for the first time as a result of the "Mid-term Measures II" rulemaking action, the VOC limits (in section 94509(a)) applicable to these newly included products shall not become legally effective until December 31, 2002.

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(m) *Requirements limiting the use of specific toxic compounds in specific consumer products categories.*

(1) *Requirements for products listed in Table (m)(1).*

Except as provided below in sections 94509(m)(4), (m)(6), and (m)(7), after the applicable effective date specified in Table 94509(m)(1) for each product category, no person shall sell, supply, offer for sale, or manufacture for use in California any consumer product listed in Table 94509(m)(1) that contains any of the following compounds: methylene chloride, perchloroethylene, or trichloroethylene.

Table 94509(m)(1)
Product Categories in which Use of Methylene Chloride, Perchloroethylene, and Trichloroethylene is Prohibited

Product Category	*Effective Date*	*Sell-through Date*
Adhesive:		
Aerosol	~~1/1/2002~~	~~1/1/2005~~
• Mist Spray Adhesive	1/1/2002	1/1/2005
• Web Spray Adhesive	1/1/2002	1/1/2005
• Special Purpose Spray Adhesive		
• Automobile Headliner Adhesive	1/1/2002	1/1/2005
• Automotive Engine Compartment Adhesive	1/1/2002	1/1/2005
• Flexible Vinyl Adhesive	1/1/2002	1/1/2005
• Laminate Repair/Edgebanding Adhesive	1/1/2002	1/1/2005
• Mounting Adhesive~~, Automotive Engine Compartment, and Flexible Vinyl Adhesive~~	1/1/2002	1/1/2005
~~• Polystyrene Foam and Automobile Headliner Adhesive~~		
• Polyolefin Adhesive ~~and Laminate Repair/Edgebanding Adhesive~~	1/1/2002	1/1/2005
• Polystyrene Foam Adhesive	1/1/2002	1/1/2005
• Screen Printing Adhesive	1/1/2017	1/1/2020
Construction, Panel ~~and~~or Floor Covering Adhesive	12/31/2008	12/31/2011
Contact Adhesive	~~12/31/2005~~	~~12/31/2008~~
• Contact Adhesive - General Purpose	12/31/2005	12/31/2008
• Contact Adhesive - Special Purpose	12/31/2005	12/31/2008
*****		
Multi-purpose Solvent • aerosol • nonaerosol	1/1/2016 12/31/2010	1/1/2019 12/31/2013
*****		

Paint Thinner • aerosol • nonaerosol	1/1/2016 12/31/2010	1/1/2019 12/31/2013
*****		
Single Purpose Cleaner	1/1//2017	1/1/2020
Single Purpose Degreaser	1/1/2017	1/1/2020
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(n) *Requirements limiting the use of any chemical compound that has a Global Warming Potential (GWP) Value of 150 or greater.*

(1) *Requirements for products listed in Table (n)(1)*

Except as provided below in sections 94509(n)(2) and (n)(3), after the applicable effective date specified in Table 94509(n)(1), no person shall sell, supply, offer for sale, or manufacture for use in California any consumer product listed in Table 94509(n)(1) that contains any chemical compound that has a GWP Value of 150 or greater.

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***
Aerosol Adhesive: • Mist Spray Adhesive • Web Spray Adhesive • Screen Printing Adhesive	 1/1/2017 1/1/2017 1/1/2017	 1/1/2020 1/1/2020 1/1/2020
Double Phase Aerosol Air Freshener	12/31/2012	12/31/2015
Flying Bug Insecticide	12/31/2013	12/31/2016
Furniture Maintenance Product	12/31/2013	12/31/2016
Lubricant: • Anti-Seize Lubricant • Cutting or Tapping Oil • Gear, Chain, or Wire Lubricant • Rust Preventative or Rust Control Lubricant	 12/31/2013 12/31/2013 12/31/2013 12/31/2013	 12/31/2016 12/31/2016 12/31/2016 12/31/2016
Metal Polish or Cleanser	12/31/2012	12/31/2015
Multi-purpose Solvent • aerosol • nonaerosol	 1/1/2016 12/31/2010	 1/1/2019 12/31/2013
Paint Thinner		

• aerosol • nonaerosol	1/1/2016 12/31/2010	1/1/2019 12/31/2013
Pressurized Gas Duster	12/31/2010	12/31/2011
Spot Remover	12/31/2012	12/31/2015
Wasp or Hornet Insecticide	12/31/2013	12/31/2016

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(p) *Additional requirements for "Multi-purpose Solvent" and "Paint Thinner."*

(1) *Aromatic Compound Content.*

(A) *Nonaerosol "Multi-purpose Solvent" and "Paint Thinner" products.* Except as provided below in sections 94509(p)(2)(A), effective December 31, 2010, no person shall sell, supply, offer for sale, or manufacture for use in California ~~any~~ a nonaerosol "Multi-purpose Solvent" or "Paint Thinner" product that contains greater than 1% "Aromatic Compound" content by weight.

(B) *Aerosol "Multi-purpose Solvent" and "Paint Thinner" products.* Except as provided below in sections 94509(p)(2)(B), effective January 1, 2016, no person shall sell, supply, offer for sale, or manufacture for use in California an aerosol "Multi-purpose Solvent" or "Paint Thinner" product that contains greater than 1% "Aromatic Compound" content by weight.

(2) *Sell-through of Products.*

(A) *Nonaerosol "Multi-purpose Solvent" and "Paint Thinner" products.* Nonaerosol "Multi-purpose Solvent"s and "Paint Thinner"s products that contain greater than 1% "Aromatic Compound" content by weight; and were manufactured before December 31, 2010, may be sold, supplied, or offered for sale until December 31, 2013, so long as these products compliesy with the product dating requirements in section 94512(b).

(B) *Aerosol "Multi-purpose Solvent" and "Paint Thinner" products.* Aerosol "Multi-purpose Solvent" and "Paint Thinner" products that contain greater than 1% "Aromatic Compound" content by weight; and were manufactured before January 1, 2016, may be sold, supplied, or offered for sale until January 1, 2019, so long as these products comply with the product dating requirements in section 94512(b).

(3) *Notification for products sold during the sell-through period.*

(A) *Nonaerosol "Multi-purpose Solvent" and "Paint Thinner" products.* Any person who sells or supplies a consumer product identified ~~above~~ in

section 94509(p)(2)(A) must notify the purchaser of the product in writing that the sell-through period for that product will end on December 31, 2013, provided, however, this notification must be given only if both of the following conditions are met:

~~(A)~~1. the product is sold or supplied to a distributor or retailer; and

~~(B)~~2. the product is sold or supplied on or after June 30, 2013.

(B) *Aerosol "Multi-purpose Solvent" and "Paint Thinner" products.* Any person who sells or supplies a consumer product identified in section 94509(p)(2)(B) must notify the purchaser of the product in writing that the sell-through period for that product will end on January 1, 2019, provided, however, this notification must be given only if both of the following conditions are met:

1. the product is sold or supplied to a distributor or retailer; and

2. the product is sold or supplied on or after June 30, 2018.

(4) *Requirements for nonaerosol "Multi-purpose Solvent" and "Paint Thinner" products sold, supplied, offered for sale, or manufactured for use in the South Coast Air Quality Management District (SCAQMD).*

(A) Nonaerosol products that are sold, supplied, offered for sale, or manufactured for use in the SCAQMD that meet the definition of "Paint Thinner" or "Multi-purpose Solvent" do not meet the criteria for any other consumer product category and do not qualify under a definition of any other consumer product category that is defined in section 94508(a), regardless of any representation made that the product may be used as, or is suitable for use as another category of consumer product that is defined in section 94508(a).

(B) *Standards for nonaerosol "Multi-purpose Solvent" and "Paint Thinner" products sold, supplied, offered for sale, or manufactured for use in the SCAQMD.*

1. Effective December 31, 2010, no person shall sell, supply, offer for sale, or manufacture for use in the SCAQMD any nonaerosol "Multi-purpose Solvent" or "Paint Thinner" product which, at the time of sale or manufacture, contains VOCs in excess of 30 percent by weight, as determined in accordance with procedures specified in section 94515(a) – (i) and as set forth in ARB Method 310.

2. Effective December 31, 2013, no person shall sell, supply, offer for sale, or manufacture for use in the SCAQMD any nonaerosol

"Multi-purpose Solvent" or "Paint Thinner" product which, at the time of sale or manufacture, contains VOCs in excess of 3 percent by weight, as determined in accordance with procedures specified in section 94515(a) – (i) and as set forth in ARB Method 310.

3. Effective January 1, 2015, no person shall sell, supply, offer for sale, or manufacture for use in the SCAQMD any nonaerosol "Multi-purpose Solvent" or "Paint Thinner" product that contains VOCs in excess of 25 grams per liter of material (g/L) or 0.21 pounds per gallon (lb/Gal), as determined in accordance with procedures specified in section 94515(j) and as set forth in ARB Method 310. As specified in section 94515(j) and section 3.6 of ARB Method 310, determination of the LVP-VOC content does not apply because there is no LVP-VOC exemption for these products.

(C) The provisions in sections 94509(m)(1), 94509(n), 94509(p)(1), (2) and (3), 94512(a)(4), and 94512(e) shall apply to any nonaerosol "Multi-purpose Solvent" or "Paint Thinner" product sold, supplied, offered for sale, or manufactured for use in the SCAQMD.

(D) *Sell-through of Products.*

Nonaerosol "Multi-purpose Solvent" or "Paint Thinner" products sold, supplied, offered for sale, or manufactured for use in the SCAQMD that were manufactured before January 1, 2015, may be sold, supplied, or offered for sale until January 1, 2018, so long as these products comply with the product dating requirements in section 94512(b).

(E) *Notification for products sold during the sell-through period.*

Any person who sells or supplies a nonaerosol "Multi-purpose Solvent" or "Paint Thinner" product identified in section 94509(p)(4)(D) must notify the purchaser of the product in writing that the sell-through period for that product will end on January 1, 2018, provided, however, this notification must be given only if both of the following conditions are met:

1. the product is sold or supplied to a distributor or retailer; and

2. the product is sold or supplied on or after June 30, 2017.

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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.

§ 94512. Administrative Requirements.

(a) *Most Restrictive Limit.*

~~(1) *Products Manufactured Before January 1, 2007, and FIFRA-registered Insecticides Manufactured Before January 1, 2008.* Notwithstanding the definition of "Product Category" in Section 94508, if anywhere on the principal display panel of any consumer product manufactured before January 1, 2007, *or any FIFRA-registered insecticide manufactured before January 1, 2008,* any representation is made that the product may be used as, or is suitable for use as a consumer product for which a lower VOC limit is specified in Section 94509(a), then the lowest VOC limit shall apply. This requirement does not apply to general purpose cleaners and insecticide foggers.~~

(21) ~~*Products Manufactured on or After January 1, 2007, and FIFRA-registered Insecticides Manufactured on or After January 1, 2008.*~~ Except as provided below in section 94512(a)(4), ~~N~~notwithstanding the definition of "product category" in Section 94508, if anywhere on the container or packaging of any consumer product manufactured on or after January 1, 2007, *or any FIFRA-registered insecticide manufactured on or after January 1, 2008,* or on any sticker or label affixed thereto, any representation is made that the product may be used as, or is suitable for use as a consumer product for which a lower VOC limit is specified in Section 94509(a), then the lowest VOC limit shall apply. This requirement does not apply to general purpose cleaners and insecticide foggers.

(~~3~~2) *Rule that applies when Product Category definitions exclude each other.* When determining the applicable VOC standard for a product that meets the definitions for both "Regulated Category A" and "Regulated Category B", in circumstances where the definition of "Regulated Category A" states that it excludes "Regulated Category B", and the definition of "Regulated Category B" states that it excludes "Regulated Category A," the product is subject to the VOC standard for whichever regulated category, "A" or "B," has the lower VOC standard.

For the purposes of this section, a "Regulated Category" means a category of consumer products that is both: (A) defined in section 94508(a), and (B) has a VOC standard specified in section 94509(a) for that product category.

(43) Notwithstanding the provisions of section 94512(a)~~(2)~~(1) and ~~(3)~~(2), a product that makes ancillary disinfecting, sanitizing, or antimicrobial claims on the label is not subject to the VOC standards for "Disinfectant" or "Sanitizer" if the product is designed and labeled on the Principal Display Panel as a "Bathroom and Tile Cleaner," "Carpet/Upholstery Cleaner," "Fabric Refresher," "General Purpose Cleaner," "Glass Cleaner," "Metal Polish or Cleanser," or "Toilet/Urinal Care Product."

(4) Pursuant to section 94509(p)(4), the provisions of section 94512(a)(1), (a)(2), and (a)(3) shall not apply to nonaerosol "Multi-purpose Solvent" or "Paint Thinner" product sold, supplied, offered for sale, or manufactured for use in the South Coast Air Quality Management District.

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(e) *Additional Requirements for Multi-purpose Solvent and Paint Thinner*

The following requirements apply in addition to the requirements specified in section 94512(a), (b), and (c):

(1) Except as provided below in section 94512(e)(2), effective December 31, 2010, until December 31, ~~2015~~2017, no person shall sell, supply, offer for sale, or manufacture for use in California any "Flammable" or "Extremely Flammable" Multi-purpose Solvent or Paint Thinner named, on the ~~Principle~~ Principal Display Panel as "Paint Thinner," "Multi-purpose Solvent," "Clean-up Solvent," or "Paint Clean-up."

(2) Section 94512(e)(1) does not apply to products that meet either of the following criteria:

(A) Products which include an attached "hang tag," sticker, or contrasting square or rectangular area on the ~~Principle~~ Principal Display Panel that displays, at a minimum, the following statements in a font size as large as, or larger than, the "signal word" (i.e., "DANGER," "WARNING," or "CAUTION") as specified in title 16, Code of Federal Regulations, section 1500.121:

"Formulated to meet California VOC limits; see warnings on label; Vea las advertencias en la etiqueta, formulado complacientes con leyes de California" or

(B) Products where the ~~Principle~~ Principal Display Panel displays, in both English and Spanish and a font size as large as, or larger than, the font size of all other words on the Principal Display Ppanel, excluding the company name, brand name, and logo, the common name of the chemical compound (e.g., "Acetone," "Methyl acetate," etc.) that results in the product meeting the criteria for "Flammable" or "Extremely Flammable."

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

§ 94513. Reporting Requirements.

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(f) Special Reporting Requirements for Multi-purpose Lubricant and Penetrant products

(1) On or before March 31, 2012, all responsible parties for Multi-purpose Lubricant and Penetrant products shall report to the Executive Officer the following information for products sold or offered for sale in California:

(A) data regarding product sales and composition for the year 2011, including the information listed in section 94513(a), the entire product label; and

(B) a written update of the research and development efforts undertaken to achieve the 25 percent VOC limits specified in section 94509(a). The written update must include detailed information about the raw materials evaluated for use, maximum incremental reactivity (MIR) values for any VOC or LVP- VOC used or evaluated, the function of the raw material evaluated, hardware used in product reformulation, the testing protocols used, the results of the testing, and the cost of reformulation efforts.

(2) On or before March 31, ~~2014~~2017, all responsible parties for Multi-purpose Lubricant products shall report to the Executive Officer the following information for products sold or offered for sale in California:

(A) data regarding product sales and composition for the year ~~2013~~2016, including the information listed in ~~S~~section 94513(a), the entire product label; and

(B) a written update of the research and development efforts undertaken to achieve the 10 percent VOC limit specified in section 94509(a). The written update must include detailed information about the raw materials evaluated for use, MIR values for any VOC or LVP-VOC used or evaluated, the function of the raw material evaluated, hardware used in product reformulation, the testing protocols used, the results of the testing, and the cost of reformulation efforts.

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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.

(a)(1) *VOC and GWP compound content determination using ARB Method 310.* Testing to determine compliance with the requirements of this article, shall be performed using Air Resources Board Method 310, Determination of Volatile Organic Compounds (VOC) in Consumer Products and Reactive Organic Compounds (ROC) in Aerosol Coating Products, adopted September 25, 1997 and as last amended on ~~September 29, 2011~~ [date of amendment], which is incorporated herein by reference. Alternative methods which are shown to

accurately determine the concentration of VOCs in a subject product or its emissions may be used upon approval of the Executive Officer.

(2) In sections 3.5, 3.6, and 3.7 of Air Resources Board (ARB) Method 310, a process is specified for the "Initial Determination of VOC Content" and the "Final Determination of VOC Content". This process is an integral part of testing procedure set forth in ARB Method 310, and is reproduced below:

Sections 3.5, 3.6, and 3.7 of Air Resources Board Method 310

3.5 *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.

3.5.1 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 ARB 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.

3.5.2 If the results obtained under section 3.5.1 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 ARB Executive Officer may be claimed as confidential; such information will be handled in accordance with the confidentiality procedures specified in Title 17, California Code of Regulations, sections 91000 to 91022.

3.5.3 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.

3.5.4 If the manufacturer or responsible party fails to provide formulation data as specified in section 3.5.2, the initial determination of VOC content under this section 3.5 shall determine if the product is in compliance with the applicable VOC standards. This determination may be used to establish a violation of ARB regulations.

3.6 Determination of the LVP-VOC status of compounds and mixtures. This section does not apply to antiperspirant and deodorants or aerosol coating products~~.~~. Effective January 1, 2015, this section also does not apply to nonaerosol "Multi-purpose Solvent" and "Paint Thinner" products sold, supplied, offered for sale, or manufactured for use in the South Coast Air

Quality Management District. ~~because t~~ There is no LVP-VOC exemption for these products.

3.6.1 Formulation data. If the vapor pressure is unknown, the following ASTM methods, which are incorporated by reference herein, may be used to determine the LVP-VOC status of compounds and mixtures: ASTM D 86-01 (Aug. 10, 2001), ASTM D 850-00 (Dec. 10, 2000), ASTM D 1078-01 (June 10, 2001), ASTM D 2879-97 (April 10, 1997), ~~as modified in Appendix B to this Method 310,~~ ASTM D 2887-01 (May 10, 2001) and ASTM E 1719-97 (March 10, 1997).

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 5 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.

~~3.6.3 Reference method for identification of LVP-VOC compounds and mixtures. If a product does not qualify as an LVP-VOC under 3.6.2, the Executive Officer will test a sample of the compound or mixture used in a product's formulation utilizing one or both of the following: ASTM D 2879-97 (April 10, 1997), as modified in Appendix B to this Method 310, and ASTM E 1719-97 (March 10, 1997), to determine if the compound or mixture meets the requirements of Title 17, CCR, section 94508(a)(98)(A).~~

3.7 *Final Determination of VOC Content.* If a product's compliance status is not satisfactorily resolved under sections 3.5 and 3.6, the Executive Officer will conduct further analyses and testing as necessary to verify the formulation data.

3.7.1 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.

3.7.2 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.

3.7.3 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 ARB regulations.

(b) VOC content determinations using product formulation and records. Testing to determine compliance with the requirements of this article may also be demonstrated through calculation of the VOC content from records of the amounts of constituents used to make the product pursuant to the following criteria:

(1) Compliance determinations based on these records may not be used unless the manufacturer of a consumer product keeps accurate records for each day of production of the amount and chemical composition of the individual product constituents. These records must be kept for at least three years.

(2) For the purposes of this section 94515(b), the VOC content shall be calculated according to the following equation:

$$\text{VOC Content} = \frac{B - C}{A} \times 100$$

where,

A = total net weight of unit (excluding container and packaging)

B = total weight of all VOCs, as defined in Section 94508(a), per unit

C = total weight of VOCs exempted under Section 94510, per unit

(3) If product records appear to demonstrate compliance with the VOC limits, but these records are contradicted by product testing performed using ARB Method 310, the results of ARB Method 310 shall take precedence over the product records and may be used to establish a violation of the requirements of this article.

(c) *Aromatic Compound content determination for Multi-purpose Solvent or Paint Thinner using ARB Method 310.* Testing to determine compliance with the requirements of section 94509(p)(1), shall be performed using Air Resources Board Method 310, Determination of Volatile Organic Compounds (VOC) in Consumer Products and Reactive Organic Compounds (ROC) in Aerosol Coating Products, adopted September 25, 1997 and as last amended on ~~September 29, 2011~~ [date of amendment], which is incorporated by reference herein. Alternative test methods that are demonstrated to be equally or more accurate than ARB Method 310 in determining the Aromatic Compound content in a product or its emissions may be

used upon the written approval of the Executive Officer.

(d) *Aromatic Compound content determinations for Multi-purpose Solvent or Paint Thinner using product formulation and records.* Testing to determine compliance with the requirements of section 94509(p)(1), may also be demonstrated through calculation of Aromatic Compound content from records of the amounts of constituents used to make the product pursuant to the following criteria:

(1) Compliance determinations based on these records may not be used unless the manufacturer of a Multi-purpose Solvent or Paint Thinner keeps accurate records for each day of production of the amount and chemical composition of the individual product constituents. These records must be kept for at least three years.

(2) For the purposes of this section 94515(d), the Aromatic Compound content shall be calculated according to the following equation:

$$\text{Aromatic Compound Content} = \frac{E}{D} \times 100$$

where,

D = total net weight of unit (excluding container and packaging)

E = total weight of all Aromatic Compounds, as defined in Section 94508(a), per unit

(3) If product records appear to demonstrate compliance with the Aromatic Compound limit, but these records are contradicted by product testing performed using ARB Method 310, the results of ARB Method 310 shall take precedence over the product records and may be used to establish a violation of the requirements of this article.

(e) Determination of liquid or solid. Testing to determine whether a product is a liquid or solid shall be performed using ASTM D4359-90 (May 25, 1990), which is incorporated by reference herein.

(f) Compliance determinations for charcoal lighter material products. Testing to determine compliance with the certification requirements for charcoal lighter material shall be performed using the procedures specified in the South Coast Air Quality Management District Rule 1174 Ignition Method Compliance Certification Protocol (February 28, 1991), which is incorporated by reference herein.

(g) Testing to determine distillation points of petroleum distillate-based charcoal lighter materials shall be performed using ASTM D86-01 (Aug. 10, 2001), which is incorporated by reference herein.

(h) Fragrance content determinations for personal fragrance products. Testing to determine the percent by weight of fragrance in personal fragrance products shall be performed according to the Association of Official Analytical Chemists (AOAC) Official Method of Analysis No. 932.11, 1990, "Essential Oil in Flavor Extracts and Toilet Preparations, Babcock Method" (AOAC Official Methods of Analysis, 15th Edition, 1990), which is incorporated by reference herein.

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

(j) Effective January 1, 2015, testing to determine compliance with 25 g/L or 0.21 lb/gal VOC standard for nonaerosol "Multi-purpose Solvent" and "Paint Thinner" products sold, supplied, offered for sale, or manufactured for use in the South Coast Air Quality Management District (SCAQMD) shall be determined using ARB Method 310, with final VOC content determined as set forth in section 4.2.4. As specified in section 3.6 of Method 310, and as reproduced in section 94515(a)(2), determination of LVP-VOC status does not apply because there is no LVP-VOC exemption for these products. Section 4.2.4 is reproduced below:

4.2.4 Effective January 1, 2015, for nonaerosol "Multi-purpose Solvent" and "Paint Thinner" products sold, supplied, offered for sale, or manufactured for use in the South Coast Air Quality Management District (SCAQMD), grams of VOC per liter of material (g/L) shall be calculated using the following equation:

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

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 methyl esters with 17 or more carbon atoms.

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 C

Proposed Amendments to the Regulation for Reducing the Ozone Formed from Aerosol Coating Product Emissions

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Note: Amendments are shown in underline to indicate additions and ~~strikeout~~ to indicate deletions from the existing regulatory text

Proposed Amendments to the Regulation for Reducing the Ozone Formed from Aerosol Coating Product Emissions

SUBCHAPTER 8.5. CONSUMER PRODUCTS

Amend title 17, California Code of Regulations, sections 94520-94528 to read as follows:

Article 3. Aerosol Coating Products

§ 94520. Applicability.

This article shall apply to any person who sells, supplies, offers for sale, applies, or manufactures any aerosol coating products for use in the ~~s~~State of California, except as provided in section 94523. This means that any aerosol coating product sold, supplied, offered for sale, applied, or manufactured for sale in California must comply with the provisions of this article unless specifically exempted as set forth in section 94523.

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

§ 94521. Definitions.

(a) For the purpose of this article, the following definitions apply:

(1) "Adhesive" means a product used to bond one surface to another by attachment.

(2) "Aerosol Coating Product" means a pressurized coating product containing ~~p~~"Pigments" or ~~r~~"Resins" that dispenses product ingredients by means of a propellant, and is packaged in a disposable ~~can~~ aerosol container for hand-held application, or for use in specialized equipment for ground traffic/marking applications. An "Aerosol Coating Product" may include other "Coating Solid" ingredients. "Aerosol Coating Product" does not include products subject to the Consumer Products Regulation, sections 94507-94517 or the Antiperspirants and Deodorants Regulation, sections 94500-94506.5.

(3) "Antimicrobial Compound" means any ingredient added to an "Aerosol Coating Product" exclusively to prevent microbial growth or product spoilage.

(34) ~~"Anti-Static Spray" means a product used to prevent or inhibit the accumulation of static electricity.~~ "Anti-Static Product" means a product that is designed and labeled to eliminate, prevent, or inhibit the accumulation of static electricity.

(45) "Art Fixative or Sealant" means a clear ~~coating,~~ "Aerosol Coating Product," including art varnish, workable art fixative, and ceramic coating, which is designed and labeled exclusively for application to paintings, pencil, chalk, or pastel drawings, ceramic art pieces, or other closely related art uses, in order to provide a final protective coating or to fix preliminary stages of artwork while providing a workable surface for subsequent revisions.

(56) "ASTM" means ~~the American Society for Testing and Materials.~~ ASTM International.

(67) "Auto Body Primer" means an ~~automotive primer or primer surfacer coating~~ "Aerosol Coating Product" designed and labeled exclusively to be applied to a vehicle body substrate ~~for the purposes of~~ to provide corrosion resistance ~~and~~ or to build~~ing~~ a repair area to a condition in which, after drying, ~~it~~ can be sanded to a smooth surface.

(78) "Automotive Bumper and Trim Product" means ~~a product,~~ an "Aerosol Coating Product," including adhesion promoters and chip sealants, designed and labeled exclusively to repair and refinish automotive bumpers and automotive plastic trim parts.

~~(8) "Automotive Underbody Coating" means flexible coating which contains asphalt or rubber and is designed and labeled exclusively for use on the underbody of motor vehicles to resist rust, abrasion and vibration, and to deaden sound.~~

(9) "Aviation Propeller Coating" means ~~a coating~~ an "Aerosol Coating Product" designed and labeled exclusively to provide abrasion resistance and corrosion protection for aircraft propellers.

(10) "Aviation or Marine Primer" means ~~a coating~~ an "Aerosol Coating Product" designed and labeled exclusively to meet federal specification TT-P-1757.

(11) "Base Reactive Organic Gas Mixture" (Base ROG Mixture) means the mixture of reactive organic gases utilized in deriving the MIR scale.

(12) "Belt Dressing" means a product applied ~~on auto~~ to vehicular fan belts, water pump belting, power transmission belting, ~~and~~ or industrial and farm machinery belting to prevent slipping, ~~and~~ or to extend belt life.

(13) "Cleaner" means a product designed and labeled primarily to remove soil or other contaminants from surfaces.

(14) "Clear Coating" means ~~a coating~~ an "Aerosol Coating Product" which is colorless or transparent, containing resins but no pigments except flatting agents, and is designed and labeled to form a transparent or translucent solid film.

(15) "Coating" means a material applied onto or impregnated into a substrate for protective, decorative, or functional purposes.

(~~15~~16) "Coating Solid~~s~~" means ~~the~~ any nonvolatile ~~portion~~ ingredient of an ~~a~~"Aerosol ~~c~~Coating ~~p~~Product~~,~~." ~~consisting of the film forming ingredients, including pigments and resins.~~

(~~16~~17) "Commercial Application" means the use of an ~~a~~"Aerosol ~~c~~Coating ~~p~~Product~~s~~" in the production of goods, or the providing of services for profit, including touch-up and repair.

(~~17~~18) "Corrosion Resistant Brass, Bronze, or Copper Coating" means a clear ~~coating~~ "Aerosol Coating Product" designed and labeled exclusively to prevent tarnish and corrosion of uncoated brass, bronze, or copper metal surfaces.

(~~18~~19) "Distributor" means any person to whom an ~~a~~ "Aerosol ~~c~~Coating ~~p~~Product" is sold or supplied for the purposes of resale or distribution in commerce, except that manufacturers, retailers, and consumers are not distributors.

(~~19~~20) "Dye" means a product containing no resins which is used to color a surface or object without building a film.

(~~20~~21) "Electrical/Electronic/Conformal Coating" means ~~a coating~~ an "Aerosol Coating Product" designed and labeled exclusively ~~as such, which is used exclusively~~ to coat electrical or electronic components or devices. ~~such as wire windings on electric motors to provide insulation and protection from corrosion.~~

~~(21) "Enamel" means a coating which cures by chemical cross-linking of its base resin and is not resoluble in its original solvent.~~

(22) "Engine ~~Paint~~ Coating" means ~~a coating~~ an "Aerosol Coating Product" designed and labeled exclusively to coat engines and their components.

(23) "Exact Match Finish" means an "Aerosol Coating Product" which meets all of the following criteria: (A) the product is labeled with the manufacturer's name for which they were formulated; and (B) the product is labeled with one of the following: (1.) the original equipment manufacturer's (O.E.M.) color code number;

(2.) the color name; or (3.) other designation identifying the specific O.E.M. color to the purchaser.

(24) "Exact Match Finish, Automotive" means an "Aerosol Coating Product" which meets the definition of "Exact Match Finish" and is designed and labeled exclusively to exactly match the color of an original, factory-applied automotive coating during the touch-up of automobile finishes. Notwithstanding the foregoing, automotive clear coatings designed and labeled exclusively for use over automotive exact match finishes to replicate the original factory applied finish are "Exact Match Finish, Automotive" products.

(235) "Exact Match Finish, Engine ~~Paint~~" means ~~a coating~~ an "Aerosol Coating Product" which meets the definition of "Exact Match Finish" and ~~all of the following criteria: (A) the product~~ is designed and labeled exclusively to exactly match the color of an original, factory-applied engine ~~paint~~ coating. ~~; (B) the product is labeled with the manufacturer's name for which they were formulated; and (C) the product is labeled with one of the following: (1.) the original equipment manufacturer's (O.E.M.) color code number; (2.) the color name; or (3.) other designation identifying the specific O.E.M. color to the purchaser.~~

~~(24) "Exact Match Finish, Automotive" means a topcoat which meets all of the following criteria: (A) the product is designed and labeled exclusively to exactly match the color of an original, factory-applied automotive coating during the touch-up of automobile finishes; (B) the product is labeled with the manufacturer's name for which they were formulated; and (C) the product is labeled with one of the following: (1.) the original equipment manufacturer's (O.E.M.) color code number; (2.) the color name; or (3.) other designation identifying the specific O.E.M. color to the purchaser. Not withstanding the foregoing, automotive clear coatings designed and labeled exclusively for use over automotive exact match finishes to replicate the original factory applied finish shall be considered to be automotive exact match finishes.~~

(256) "Exact Match Finish, Industrial" means ~~a coating~~ an "Aerosol Coating Product" which meets the definition of "Exact Match Finish" and ~~all of the following criteria: (A) the product~~ is designed and labeled exclusively to exactly match the color of an original, factory-applied industrial coating during the touch-up of manufactured products. ~~; (B) the product is labeled with the manufacturer's name for which they were formulated; and (C) the product is labeled with one of the following: (1.) the original equipment manufacturer's (O.E.M.) color code number; (2.) the color name; or (3.) other designation identifying the specific O.E.M. color to the purchaser~~.

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

(28) "Extender" means an ingredient added to an "Aerosol Coating Product" to increase coating solids.

(~~27~~9) "Flat ~~Paint Products~~ Coating" means ~~a coating~~ an "Aerosol Coating Product" which, when fully dry, registers specular gloss less than or equal to 15 on an 85° gloss meter, or less than or equal to 5 on a 60° gloss meter, or which is labeled as a flat coating. A "Flat Coating" that prominently displays on the "Principal Display Panel" that the product is a dual function paint and primer, and is packaged in a single aerosol container, is a "Flat Coating."

(~~28~~30) "Flatting Agent" means ~~a compound~~ an ingredient added to a coating to reduce the gloss of the coating without adding color to the coating.

(31) "Flexible Coating" means an "Aerosol Coating Product" designed and labeled exclusively to provide a flexible coating to protect surfaces. "Flexible Coating" includes, but is not limited to, rubberized, mastic, or asphaltic products. "Flexible Coating" does not include "Undercoating" as defined in section 94508(a).

(~~29~~32) "Floral Coating ~~Spray~~" means ~~a coating~~ an "Aerosol Coating Product" designed and labeled exclusively for use on fresh flowers, dried flowers, or other items in a floral arrangement for the purposes of coloring, preserving or protecting their appearance.

(~~30~~3) "Fluorescent Coating" means ~~a coating~~ an "Aerosol Coating Product" labeled as ~~such~~ a fluorescent coating, which converts absorbed incident light energy into emitted light of a different hue.

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

(35) "General Coating" means the following aerosol coating products: "Clear Coating," "Flat Coating," "Fluorescent Coating," "Metallic Coating," "Nonflat Coating," or "Primer."

(~~31~~6) "Glass Coating" means ~~a coating~~ an "Aerosol Coating Product" designed and labeled exclusively for use on glass or other transparent material to create a soft, translucent light effect, or to create a tinted or darkened color while retaining transparency.

(~~32~~7) "Ground Traffic/Marking Coating" means ~~a coating~~ an "Aerosol Coating Product" designed and labeled exclusively to be applied to dirt, gravel, grass, concrete, asphalt, warehouse floors, or parking lots. ~~Such~~ Ground Traffic/Marking coatings must be in a container equipped with a valve and sprayhead designed to direct the spray toward the surface when the can is held in an inverted vertical position.

(338) "High Temperature Coating" means an "Aerosol Coating Product" designed and labeled exclusively for application to substrates exposed continuously or intermittently to temperatures above 204°C (400°F) ~~a coating, excluding engine paint, which is designed and labeled exclusively for use on substrates which will, in normal use, be subjected to temperatures in excess of 400°F~~. "High Temperature Coating" does not include "Engine Coating."

(349) "Hobby/Model/Craft Coating" means ~~a coating~~ an "Aerosol Coating Product" which is designed and labeled exclusively for hobby applications and is sold in aerosol containers of 6 ounces by weight or less.

(~~35~~40) "Ingredient" means a component of an "~~a~~Aerosol ~~c~~Coating ~~p~~Product."

(~~36~~41)"Ink" means a fluid or viscous substance used in the printing industry to produce letters, symbols or illustrations, but not to coat an entire surface.

~~(37) "Lacquer" means a thermoplastic film-forming material dissolved in organic solvent, which dries primarily by solvent evaporation, and is resoluble in its original solvent.~~

(42) "Label" means any written, printed, or graphic matter affixed to, applied to, attached to, blown into, formed, molded into, embossed on, or appearing upon any consumer product or consumer product package, for purposes of branding, identifying, or giving information with respect to the product or to the contents of the package.

(~~38~~43) "Layout Fluid" (or toolmaker's ink) means ~~a coating~~ an "Aerosol Coating Product" designed and labeled exclusively to be sprayed on metal, glass or plastic, to provide a glare-free surface on which to scribe designs, patterns or engineering guide lines prior to shaping the piece.

(~~39~~44) "Leather ~~p~~Preservative or ~~c~~Cleaner" means a leather treatment material applied exclusively to clean or preserve leather.

(~~40~~5) "Lubricant" means a product ~~substance such as oil, petroleum distillates, grease, graphite, silicone, lithium, etc.~~ that ~~is used to~~ reduces friction, heat, noise, or wear ~~when applied between surfaces~~ between moving parts, or loosens rusted or immovable parts or mechanisms.

(~~41~~6) "Manufacturer" means any person who imports, manufactures, assembles, produces, packages, repackages, or relabels a consumer product.

(~~42~~7) "Marine Spar Varnish" means ~~a coating~~ an "Aerosol Coating Product" designed and labeled exclusively to provide a protective sealant for marine wood products.

(438) "Maskant" means a ~~coating~~ product applied directly to a component to protect surface areas from damage during fabrication, inspection, or shipment and must not leave a residue when removed. ~~when chemical milling, anodizing, aging, bonding, plating, etching, or performing other chemical operations on the surface of the component.~~

(449) "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 O_3/g ROC). MIR values for individual compounds and hydrocarbon solvents are specified in sections 94700 and 94701, Title 17, California Code of Regulations.

(450) "Metallic Coating" means ~~a topcoat~~ an "Aerosol Coating Product" which contains at least 0.5 percent by weight ~~elemental~~ metallic pigment in the formulation, including propellant, and is labeled as "metallic," or with the name of a specific metallic finish such as "gold," "silver," or "bronze." A "Metallic Coating" that prominently displays on the "Principal Display Panel" that the product is a dual function paint and primer, and is packaged in a single aerosol container, is a "Metallic Coating."

(4651)"Mold Release Coating" means ~~a coating~~ an "Aerosol Coating Product" designed and labeled exclusively to be applied to molds to prevent products from sticking to the surfaces of the mold.

(4752)"Multi-~~C~~component Kit" means ~~an aerosol paint~~ an "Aerosol Coating Product" system which requires the application of more than one component (~~e.g.~~ for example, foundation coat and top coat), where both components are sold together in one package.

(4853) "Nonflat ~~Paint Product~~ Coating" means ~~a coating~~ an "Aerosol Coating Product" which, when fully dry, registers a specular gloss greater than 15 on an 85° gloss meter or greater than 5 ~~five~~ on a 60° gloss meter~~.~~, or which is labeled as a nonflat coating. A "Nonflat Coating" that prominently displays on the "Principal Display Panel" that the product is a dual function paint and primer, and is packaged in a single aerosol container, is a "Nonflat Coating."

(4954)"Ozone" means a colorless gas with a pungent odor, having the molecular form O_3.

(~~50~~) ~~"Percent VOC By Weight" means the ratio of the weight of VOC to the total weight of the product contents expressed as follows:~~

~~Percent VOC By Weight = $(W_{VOC} / W_{total}) \times 100$~~

~~Where:~~

~~(A) for products containing no water and no volatile compounds exempt from the definition of VOC: W_{VOC} = the weight of volatile compounds;~~

~~(B) for products containing water or exempt compounds: W_{VOC} = the weight of volatile compounds, less water, and less compounds exempt from the VOC definition in this section 94521; and~~

~~(C) W_{total} = the total weight of the product contents.~~

(5~~1~~5) "Photograph Coating" means ~~a coating~~ an "Aerosol Coating Product" designed and labeled exclusively to be applied to finished photographs to allow corrective retouching, protection of the image, changes in gloss level, or to cover fingerprints.

(56) "Pigment" means a "Coating Solid" of either natural or synthetic insoluble material added to a coating to provide color, opacity, or corrosion inhibition to a coating film.

(57) "Plasticizer" means an ingredient added to an "Aerosol Coating Product" to aid in flexibility.

(5~~2~~8) "Pleasure Craft" means privately owned vessels used for noncommercial purposes.

(5~~3~~9) "Pleasure Craft Finish Primer/Surfacer/Undercoater" means ~~a coating~~ an "Aerosol Coating Product" designed and labeled exclusively to be applied prior to the application of a ~~p~~"Pleasure ~~c~~Craft ~~t~~Topcoat" for the purpose of corrosion resistance ~~and~~ or adhesion of the topcoat, and which promotes a uniform surface by filling in surface imperfections.

(5~~4~~60) "Pleasure Craft Topcoat" means ~~a coating~~ an "Aerosol Coating Product" designed and labeled exclusively to be applied to a ~~p~~"Pleasure ~~c~~Craft" as a final coat above the waterline and below the waterline when stored out of water. ~~This category does not include clear coatings.~~

(5~~5~~61) "Polyolefin Adhesion Promoter" means ~~a coating~~ an "Aerosol Coating Product" designed and labeled exclusively to be applied to a polyolefin or polyolefin copolymer surface of ~~automotive~~ vehicular body parts, bumpers, or trim parts to provide a bond between the surface and subsequent topcoats.

(5~~6~~2) "Primer" means ~~a coating~~ an "Aerosol Coating Product" labeled as ~~such~~ a primer, which is designed and labeled to be applied to a surface to provide a bond between that surface and subsequent coats.

(63) "Principal Display Panel or Panels" means that part, or those parts of a label that are so designed as to most likely be displayed, presented, shown or examined under normal and customary conditions of display or purchase. Whenever a

principal display panel appears more than once, all requirements pertaining to the "Principal Display Panel" shall pertain to all such "Principal Display Panels."

(~~57~~64)"Product-Weighted MIR" (PWMIR) means the sum of all weighted-MIR for all ingredients in an "Aerosol Coating Product." ~~a product subject to this article~~. The PWMIR is the total product reactivity expressed to hundredths of a gram of ozone formed per gram of product (excluding container and packaging) and calculated according to the following equations:

(a) Weighted MIR (Wtd-MIR) ingredient = MI~~X~~R x Weight fraction ingredient,

and,

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

where,

MIR = ingredient MIR, as specified in section 94522(~~h~~i);

Wtd-MIR = MIR of each ingredient in a product multiplied by the weight fraction of that ingredient, as shown in (a);

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

(~~58~~65)"Propellant" means a liquefied or compressed gas that is used in whole or in part, ~~such as a cosolvent~~, to expel a liquid or any other material from the same self-pressurized container or from a separate container.

(~~59~~66)"Reactivity Limit" means the maximum ozone forming potential of ingredients ~~"product-weighted MIR" product~~ (excluding container and packaging) allowed in an ~~a~~"Aerosol ~~c~~Coating ~~p~~Product," ~~that is subject to the limits specified in section 94522(a)(3) for a specific category,~~ expressed as ~~g O_3/g product~~ the PWMIR.

(6~~0~~7) "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.

(68) "Resin" means a "Coating Solid" that comprises the film-forming ingredients in an "Aerosol Coating Product." Examples of resin ingredients include acrylic, alkyd, enamel, epoxy, lacquer, polyurethane, polyvinyl chloride, shellac, silicone, and polystyrene.

(6~~1~~9) "Responsible Party" means the company, firm, or establishment which is listed on the product's label. If the label lists two companies, firms or establishments, the responsible party is the party which the product was "manufactured for" or

"distributed by", as noted on the label.

(~~62~~70)"Retailer" means any person who sells, supplies, or offers aerosol coating products for sale directly to consumers.

(~~63~~71)"Retail Outlet" means any establishment where consumer products are sold, supplied, or offered for sale, directly to consumers.

(~~64~~72)"Rust Converter" means ~~a product~~ an "Aerosol Coating Product" designed and labeled exclusively to convert rust to an inert material and which contains a minimum acid content of ~~0.5~~ 1.0 percent by weight, and a maximum coating solids content of ~~0.5~~ 6.0 percent by weight.

(73) "Specialty Coating" means any "Aerosol Coating Product" that is not a "General Coating" unless specifically exempted as specified in section 94523. An aerosol coating that does not meet all the criteria for a specific "Specialty Coating" or an aerosol coating that is not defined in this section 94521(a) is a "General Coating."

(~~65~~74) "Shellac Sealer" means a clear or pigmented ~~coating~~ "Aerosol Coating Product" formulated solely with the resinous secretion of the lac beetle (*Laccifer lacca*), thinned with alcohol, and formulated to dry by evaporation without a chemical reaction.

(~~66~~75) "Slip-~~R~~resistant/Non-slip Grip Coating" means ~~a coating~~ an "Aerosol Coating Product" (A) designed and labeled exclusively as ~~such~~ a slip-resistant coating, which is formulated with ~~synthetic~~ grit and used as a safety coating; or (B) labeled exclusively as a non-slip grip coating designed to reduce or prevent slipping.

(~~67~~76) "Spatter ~~Coating~~/Multicolor/Stucco Coating" means ~~a coating~~ an "Aerosol Coating Product" (A) labeled exclusively as ~~such~~ a spatter coating ~~wherein~~ which produces spots, globules, or spatters of individual or contrasting colors appear on or within the surface of a contrasting or similar background; or (B) labeled exclusively as a multicolor coating; or (C) labeled exclusively as a stucco coating that is made from a mixture of Portland cement, sand, and lime.

~~(68) "Stain" means a coating which is designed and labeled to change the color of a surface but not conceal the surface.~~

(77) "Two Component Coating" means an "Aerosol Coating Product" packaged in an aerosol container with a separate integrated chamber for the hardener or activator.

(78) "Uniform Finish Coating" means an "Aerosol Coating Product" designed and labeled exclusively for application to the area adjacent to a spot repair for the purpose of blending the spot repair's color or clear coating to match the

appearance of an adjacent area's existing coating. For the purpose of this article, "Spot Repair" means repair of an area of less than 1 square foot (929 square centimeters). "Uniform Finish Coating" includes products labeled as edge blenders.

(~~6~~79) "Upper-Limit Kinetic Reactivity" (ULKR) means the maximum percentage of the emitted ROC which has reacted. For this article, the ULKR is one hundred percent and is used to calculate the ULMIR.

(~~7~~80) "Upper-Limit Mechanistic Reactivity" (ULMR) means the maximum gram(s) of ozone formed per gram of ~~reactive organic compound (~~ROC~~)~~ reacting. The ULMR is used to calculate the ULMIR.

(~~7~~81) "Upper-Limit MIR" (ULMIR) means the upper-limit kinetic reactivity (ULKR) multiplied by the upper-limit mechanistic reactivity (ULMR), as calculated using the following equation:

ULMIR = Upper Limit KR x Upper Limit MR.

The units for ULMIR are g O_3/g ROC.

(~~7~~82) "Vinyl/Fabric/Leather/Plastic~~/Polycarbonate~~ Coating" means ~~a coating~~ an "Aerosol Coating Product" (A) designed and labeled exclusively to coat vinyl, fabric, leather, or plastic~~, or polycarbonate~~ substrates; or (B) designed and labeled exclusively to repel water from fabric or leather substrates. "Vinyl/Fabric/Leather/Plastic Coating" does not include "Fabric Protectant" as defined in section 94508(a).

~~(73) "Volatile Organic Compound (VOC)" means any compound containing at least one atom of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, and excluding the following:~~

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

~~trifluoromethane (HFC-23),~~
~~1,1,2,2-tetrafluoroethane (HFC-134),~~
~~1,1,1,2-tetrafluoroethane (HFC-134a),~~
~~pentafluoroethane (HFC-125),~~
~~1,1,1-trifluoroethane (HFC-143a),~~
~~1,1-difluoroethane (HFC-152a),~~
~~cyclic, branched, or linear completely methylated siloxanes,~~
~~the following classes of perfluorocarbons:~~

~~1. cyclic, branched, or linear, completely fluorinated alkanes;~~
~~2. cyclic, branched, or linear, completely fluorinated ethers with no unsaturations;~~
~~3. cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations; and~~
~~4. sulfur-containing perfluorocarbons with no unsaturations and with the sulfur bonds to carbon and fluorine, and~~

~~(B) the following low-reactive organic compounds which have been exempted by the U.S. EPA:~~
~~acetone,~~
~~ethane,~~
~~methyl acetate~~
~~parachlorobenzotrifluoride (1-chloro-4-trifluoromethyl benzene),~~
~~perchloroethylene (tetrachloroethylene).~~

(~~74~~83)"Webbing/Veiling Coating" means ~~a coating~~ an "Aerosol Coating Product" designed and labeled exclusively to provide a stranded ~~to~~ or spider webbed appearance when applied.

(~~75~~84) "Weight Fraction" means the weight of an ingredient divided by the total net weight of the product, expressed to thousandths of a gram of ingredient per gram of product (excluding container and packaging). The weight fraction is calculated according to the following equation:

$$\text{Weight Fraction} = \frac{\text{Weight of the Ingredient}}{\text{Total Product Net Weight (excluding container and packaging).}}$$

(~~76~~85) "Weld-Through Primer" means ~~a coating~~ an "Aerosol Coating Product" designed and labeled exclusively to provide a bridging or conducting effect for corrosion protection following welding.

(~~77~~86) "Wood Stain Coating" means ~~a coating~~ an "Aerosol Coating Product" which is ~~formulated~~ designed and labeled exclusively as a wood stain and is used to

change the color of a wood surface but not conceal the ~~surface~~ grain pattern or texture.

(~~7~~87) "Wood Touch-Up/Repair/Restoration Coating" means ~~a coating~~ an "Aerosol Coating Product" designed and labeled exclusively to provide an exact color or sheen match on finished wood products.

(~~79~~88) "Working Day" means any day between Monday through Friday, inclusive, except for days that are federal holidays.

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

§ 94522. Reactivity Limits and Requirements ~~for Aerosol Coating Products.~~

~~(a)(1) Compliance with Limits. Aerosol coating products manufactured beginning June 1, 2002, for the general coating categories and beginning January 1, 2003, for the specialty coating categories shall comply with the reactivity requirements specified in 94522(a)(3). Aerosol coating products manufactured before the effective dates of the reactivity limits specified in section 94522(a)(3) shall comply with the VOC requirements specified in section 94522(a)(2), except for products that are labeled by the manufacturer with the applicable reactivity limit, as provided in section 94524(b)(1)(B). If an aerosol coating product is so labeled, then the product shall comply with the reactivity requirements specified in section 94522(a)(3), regardless of the date on which the product was manufactured.~~

~~(2) VOC Limits for Aerosol Coating Products. Except as provided in sections 94522(a)(1), 94523 (Exemptions), 94525 (Variances), 94540 through 94555 (Alternative Control Plan), and 94567(a)(1) (Hairspray Credit Program), Title 17, California Code of Regulations, no person shall sell, supply, offer for sale, apply, or manufacture for use in California, any aerosol coating product which, at the time of sale, use, 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 Compounds by Weight[1]**~~

~~Aerosol Coating Category~~	~~1/8/96~~
~~**General Coatings**~~	
~~Clear Coatings~~	~~67.0~~
~~Flat Paint Products~~	~~60.0~~

~~Fluorescent Coatings~~	~~75.0~~
~~Metallic Coatings~~	~~80.0~~
~~Nonflat Paint Products~~	~~65.0~~
~~Primers~~	~~60.0~~

~~Specialty Coatings~~

~~Art Fixatives or Sealants~~	~~95.0~~
~~Auto Body Primers~~	~~80.0~~
~~Automotive Bumper and Trim Products~~	~~95.0~~
~~Aviation or Marine Primers~~	~~80.0~~
~~Aviation Propeller Coatings~~	~~84.0~~
~~Corrosion Resistant Brass, Bronze, or Copper Coatings~~	~~92.0~~
~~Exact Match Finishes:~~	
~~Engine Enamel~~	~~80.0~~
~~Automotive~~	~~88.0~~
~~Industrial~~	~~88.0~~
~~Floral Sprays~~	~~95.0~~
~~Glass Coatings~~	~~95.0~~
~~Ground Traffic/Marking Coatings~~	~~66.0~~
~~High Temperature Coatings~~	~~80.0~~
~~Hobby/Model/Craft Coatings:~~	
~~Enamel~~	~~80.0~~
~~Lacquer~~	~~88.0~~
~~Clear or Metallic~~	~~95.0~~
~~Marine Spar Varnishes~~	~~85.0~~
~~Photograph Coatings~~	~~95.0~~
~~Pleasure Craft Finish Primers Surfacers or Undercoaters~~	~~75.0~~
~~Pleasure Craft Topcoats~~	~~80.0~~
~~Shellac Sealers:~~	
~~Clear~~	~~88.0~~
~~Pigmented~~	~~75.0~~
~~Slip-Resistant Coatings~~	~~80.0~~
~~Spatter/Multicolor Coatings~~	~~80.0~~
~~Vinyl/Fabric/Leather/Polycarbonate~~	~~95.0~~
~~Webbing/Veil Coatings~~	~~90.0~~
~~Weld-Through Primers~~	~~75.0~~
~~Wood Stains~~	~~95.0~~
~~Wood Touch-Up, Repair or Restoration Coatings~~	~~95.0~~

~~[4] As specified in section 94522(c), for aerosol coating products containing methylene chloride, the VOC standards specified in this subsection (a) shall apply to the combined percent VOC and methylene chloride by weight.~~

(a)~~(3)~~ *Reactivity Limits ~~for Aerosol Coating Products~~.*

(1) Except as provided in section 94523, any "Aerosol Coating Product" shall comply with the applicable General Coating limit specified in section 94522(a)(2) unless the "Aerosol Coating Product" meets all the requirements for the applicable Specialty Coating that is defined in section 94521. In such cases the Specialty Coating product shall comply with the applicable Specialty Coating limit specified in section 94522(a)(2).

(2) ~~(A)~~ Except as provided in sections ~~94522(a)(1),~~ 94523 (Exemptions) and 94525 (Variances), Title 17, California Code of Regulations, no person shall sell, supply, offer for sale, apply, or manufacture for use in California, any ~~aerosol coating product~~ "Aerosol Coating Product" which, at the time of sale, use, or manufacture~~, contains reactive organic compounds that have a PWMIR in excess of~~ exceeds the limits specified in the following Table of Reactivity Limits after the specified effective date.

Table of Reactivity Limits

Product-Weighted MIR in Grams Ozone per Gram Product
(g O_3 / g product)

Aerosol Coating Category

General Coatings	**06/01/2002**	**01/01/2017**
Clear Coatings	1.50	0.85
Flat ~~Paint Products~~ Coating	1.20	0.80
Fluorescent Coatings	1.75	1.30
Metallic Coatings	1.90	1.25
Nonflat ~~Paint Products~~ Coating	1.40	0.95
Primers	1.20	0.70

Specialty Coatings (A)	**01/01/2003**	**01/01/2017**
Auto Body Primer	1.55	0.95
Electrical/Electronic/Conformal Coating		2.00
Exact Match Finish:		
Automotive	1.50	0.95
Engine	1.70	0.95
Industrial	2.05	1.20

Flexible Coating		1.60
Ground Traffic/Marking Coating	1.20	0.85
Mold Release Coating		1.10
Two Component Coating		1.20
Uniform Finish Coating		1.30

Specialty Coatings (B)	**01/01/2003**	**01/01/2015**
Art Fixatives or Sealants	1.80	1.75
~~Auto Body Primers~~	~~1.55~~	
Automotive Bumper and Trim Product ~~and Trim Products~~	1.75	1.70
Aviation or Marine Primers	2.00	1.25
Aviation Propeller Coatings	2.50	1.40
Corrosion Resistant Brass, Bronze, or Copper Coatings	1.80	1.80
~~Exact Match Finishes~~:		
~~Engine Enamel~~	~~1.70~~	
~~Automotive~~	~~1.50~~	
~~Industrial~~	~~2.05~~	
Floral ~~Sprays~~ Coating	1.70	0.85
Glass Coatings	1.40	1.35
~~Ground Traffic/Marking Coatings~~	~~1.20~~	
High Temperature Coatings	1.85	1.85
Hobby/Model/Craft Coatings:	2.70	1.60
~~Enamel~~	~~1.45~~	
~~Lacquer~~	~~2.70~~	
~~Clear or Metallic~~	~~1.60~~	
Marine Spar Varnishes	0.90	0.90
Photograph Coatings	1.00	0.75
Pleasure Craft Finish Primers~~,~~/ Surfacers ~~or~~/Undercoaters	1.05	0.90
Pleasure Craft Topcoats	0.60	0.60
Polyolefin Adhesion Promoters	2.50	2.50
Rust Converter		1.10
Shellac Sealers~~:~~	1.00	1.00
~~Clear~~	~~1.00~~	
~~Pigmented~~	~~0.95~~	
Slip-~~R~~resistant/Non-slip Grip Coatings	2.45	2.10
Spatter/Multicolor/Stucco Coatings	1.05	1.05
Vinyl/Fabric/Leather/Plastic/~~Polycarbonate~~ Coatings	1.55	1.45
Webbing/Veiling Coatings	0.85	0.75
Weld-Through Primers~~-~~	1.00	1.00
Wood Stains Coating	1.40	0.90
Wood Touch-Up~~,~~/Repair ~~or~~/Restoration Coatings	1.50	1.45

~~or Restoration Coatings~~

(~~4~~b) If an a"Aerosol cCoating pProduct" is subject to both a gGeneral cCoating limit and a sSpecialty cCoating limit, as listed in the Table of Reactivity Limits in section 94522(a)(2) ~~or (a)(3)~~, and the product meets all the criteria of the applicable sSpecialty cCoating category as defined in section 94521, then the sSpecialty cCoating limit shall apply instead of the gGeneral cCoating limit.

~~(5) Notwithstanding the provisions of sections 94522(a)(4) or 94524(a), high-temperature coatings that contain at least 0.5 percent by weight of an elemental metallic pigment in the formulation, including propellant, shall be subject to the limit specified for metallic coatings.~~

(~~6~~c) The Alternative Control Plan Regulation (sections 94540-94555) ~~may not be used for~~ does not apply to aerosol coating products ~~subject to the reactivity limits specified in section 94522(a)(3)~~.

(~~b~~d) *Sell-Through of Products* ~~**Subject to the VOC Limits Specified in Section 94522(a)(2).**~~

~~Notwithstanding the provisions of section 94522(a)(1) and (a)(3), an aerosol coating product manufactured prior to each of the effective dates specified for that product in section 94522(a)(3) may be sold, supplied, offered for sale, or applied for up to three years after each of the specified effective dates, provided that the product complies with the limit specified in section 94522(a)(2). This subsection (b) does not apply to any product which does not display on the product container or package the date on which the product was manufactured, or a code indicating such date. (c)~~

(1) Notwithstanding the provisions of section 94522(a)(2), an aerosol coating product manufactured prior to each of the effective dates specified for that product in the Table of Reactivity Limits may be sold, supplied, offered for sale, or applied for up to three years after each of the specified effective dates. This subsection does not apply to:

(A) any aerosol coating product that does not display on the product container or package the date on which the product was manufactured, or a code indicating such date, or

(B) any aerosol coating product on which the manufacturer has used a code indicating the date of manufacture that is different than the code specified in section 94524(b)(2)(B), but an explanation of the code has not been filed with the ARB Executive Officer by the deadlines specified in section 94524(b)(2)(E)1. or section 94524(b)(2)(E)2., or

(C) Products contained in multi-unit packages, as specified below:

1. Subsection (d)(1) does not apply to any individual aerosol coating product unit contained within a multi-unit package that is produced or assembled after January 1, 2015, where the multi-unit package does not display the date(s) or date-code(s) of the individual product units, or display the date of assembly, such that the displayed information is not readily observable without irreversibly disassembling any portion of the container or packaging.

2. For the purposes of this section, "date of assembly" means the date that the individual product units are assembled into the finished multi-unit package.

3. For multi-unit packages that display the "date of assembly" instead of the date(s) or date-code(s) of the individual product units, the "date of assembly" shall be the "date of manufacture" for all of the product units contained within the multi-unit package. In other words, all of the product units shall be deemed to have been manufactured on the date these units are assembled into the multi-unit package, even if the individual product units show different date(s) or date-code(s).

(2) *Notification for products sold during the sell-through period.* Any person who sells or supplies an aerosol coating product subject to the Table of Reactivity Limits in section 94522(a) must notify the purchaser of the product in writing of the date on which the sell-through period for that product will end, provided, however, that this notification must be given only if all of the following conditions are met:

(A) the product is being sold or supplied to a distributor or retailer;

(B) the sell-through period for the product will expire 6 months or less from the date the product is sold or supplied;

(C) the product does not comply with the lowest Reactivity Limit that applies on the date the sell-through period ends.

(~~e~~e) ~~*Products Containing*~~ *Prohibition on use of Methylene Chloride, Perchloroethylene, or Trichloroethylene.*

~~(1) Requirements for Products Subject to the VOC Limits Specified in Section 94522(a)(2).~~

~~For any aerosol coating product containing methylene chloride, the VOC standards specified in section 94522(a)(2) shall apply to the combined percent by weight of both volatile organic compounds, and methylene chloride, calculated as follows:~~

~~(Percent by weight VOC + Percent by weight methylene chloride) must be less than or equal to the applicable VOC standard.~~

~~(2) Requirements for Products Subject to the Reactivity Limits Specified in Section 94522(a)(3).~~

(A1) ~~For any aerosol coating product subject to the reactivity limits specified in section 94522(a)(3), n~~No person shall sell, supply, offer for sale, apply, or manufacture for use in California any ~~a~~"Aerosol ~~c~~Coating ~~p~~Product" which contains methylene chloride, perchloroethylene, or trichloroethylene.

(B2) The requirements of section 94522(~~c~~e)(21) shall not apply to any ~~a~~ "Aerosol ~~c~~Coating ~~p~~Product" containing methylene chloride, perchloroethylene, or trichloroethylene that is present ~~as an impurity~~ in a combined amount equal to or less than 0.01% by weight of the product.

(df) ~~*Products Containing Perchloroethylene or*~~ *Prohibition on use of Ozone Depleting Substances.*

~~(1) Requirements for Products Subject to the VOC Limits Specified in Section 94522(a)(2).~~

~~For any aerosol coating product subject to the VOC limits specified in section 94522(a)(2), no person shall sell, supply, offer for sale, apply, or manufacture for use in California any aerosol coating product which contains perchloroethylene, or an ozone depleting substance identified by the United States Environmental Protection Agency in the Code of Federal Regulations, 40 CFR Part 82, Subpart A, under Appendices A and B, July 1, 1998. The requirements of this section 94522(d)(1) shall not apply to (A) any existing product formulation that complies with the Table of Standards and was sold in California during calendar year 1992, or (B) any product formulation that was sold in California during calendar year 1992 that is reformulated to meet the Table of Standards, as long as the content of perchloroethylene, or ozone depleting substances, as identified in this section 94522(d), in the reformulated product does not increase.~~

~~(2) Requirements for Products Subject to the Reactivity Limits Specified in Section 94522(a)(3).~~

~~(A) Perchloroethylene~~

~~For any aerosol coating product subject to the reactivity limits specified in section 94522(a)(3), no person shall sell, supply, offer for sale, apply, or manufacture for use in California any aerosol coating product which contains perchloroethylene.~~

~~(B) Ozone Depleting Substances~~

(1) ~~For any aerosol coating product subject to the reactivity limits specified in section 94522(a)(3),~~ nNo person shall sell, supply, offer for sale, apply, or manufacture for use in California any a "Aerosol cCoating pProduct" which contains an ozone depleting substance identified by the United States Environmental Protection Agency in the Code of Federal Regulations, 40 CFR Part 82, Subpart A, under Appendices A and B, July 1, 1998. ~~The requirements of this section 94522(d)(2) shall not apply to (1.) any existing product formulation containing an ozone depleting substance that complies with the Table of Limits and was sold in California during calendar year 1997, or (2.) any product formulation containing an ozone depleting substance that was sold in California during calendar year 1997 that is reformulated to meet the Table of Limits, as long as the content of ozone depleting substances, as identified in this section 94522(d)(2), in the reformulated product does not increase.~~

(32) The requirements of section 94522(~~d~~f)(1) ~~and (d)(2)~~ shall not apply to any aerosol coating product containing ~~perchloroethylene, or~~ an ozone depleting substance as identified in section 94522(~~d~~f)(1) ~~or (d)(2),~~ that ~~are~~ is present ~~as impurities~~ in a combined amount equal to or less than 0.01% by weight of the product.

(e~~g~~) *Multi-component Kits.*

~~(1) Requirements for Products Subject to the VOC Limits Specified in Section 94522(a)(2).~~

~~No person shall sell, supply, offer for sale, apply, or manufacture for use in California any multi-component kit, as defined in section 94521, in which the total weight of VOC and methylene chloride contained in the multi-component kit $(Total\ VOC + MC)_{actual}$ is greater than the total weight of VOC and methylene chloride that would be allowed in the multi-component kit if each component product in the kit had separately met the applicable VOC standards $(Total\ VOC + MC)_{standard}$ as calculated below:~~

$$(Total\ VOC + MC)_{actual} = (VOC_1 \times W_1) + (MC_1 \times W_1) + (VOC_2 \times W_2) + (MC_2 \times W_2) + (VOC_n \times W_n) + (MC_n \times W_n)$$

$$(Total\ VOC + MC)_{standard} = (STD_1 \times W_1) + (STD_2 \times W_2) + (STD_n \times W_n)$$

~~Where:~~

~~VOC = the percent by weight VOC of the component product~~
~~MC = the percent by weight methylene chloride of the component product~~
~~STD = the VOC standard specified in section 94522(a) which applies to the component product~~

~~W = the weight of the product contents (excluding container)~~
~~Subscript 1 denotes the first component product in the kit~~
~~Subscript 2 denotes the second component product in the kit~~
~~Subscript n denotes any additional component product~~

~~(2) Requirements for Products Subject to the Reactivity Limits Specified in Section 94522(a)(3).~~

No person shall sell, supply, offer for sale, apply, or manufacture for use in California any ~~m~~"Multi-component ~~k~~Kit," as defined in section 94521, in which the Kit PWMIR is greater than the Total Reactivity Limit. The Total Reactivity Limit represents the limit that would be allowed in the ~~m~~"Multi-component ~~k~~Kit" if each component product in the kit had separately met the applicable Reactivity Limit. The Kit PWMIR and Total Reactivity Limit are calculated as in equations (1), (2), and (3) below:

(1) $\text{Kit PWMIR} = (\text{PWMIR}_{(1)} \times W_1) + (\text{PWMIR}_{(2)} \times W_2) + \ldots + (\text{PWMIR}_{(n)} \times W_n)$

(2) $\text{Total Reactivity Limit} = (RL_1 \times W_1) + (RL_2 \times W_2) + \ldots + (RL_n \times W_n)$

(3) $\text{Kit PWMIR} \leq \text{Total Reactivity Limit}$

Where:

W = the weight of the product contents (excluding container)
RL = the Reactivity Limit specified in section 94522(a)(~~3~~)
Subscript 1 denotes the first component product in the kit
Subscript 2 denotes the second component product in the kit
Subscript n denotes any additional component product

(~~f~~h) *Products Assembled by Adding Bulk Paint to Aerosol Containers of Propellant.* No person shall sell, supply, offer for sale, apply, or manufacture for use in the ~~s~~State of California any a~~"A~~erosol ~~c~~Coating ~~p~~Product" assembled by adding bulk paint to aerosol containers of ~~p~~"Propellant," unless such products comply ~~with the VOC standards specified in section 94522(a)(2), or~~ with the applicable reactivity limits specified in section 94522(a)(~~3~~) ~~for products subject to those limits.~~

~~**(g) Requirements for Lacquer Aerosol Coating Products Subject to the VOC Limits Specified in Section 94522(a)(2).**~~

~~(1) Notwithstanding the provisions of Section 94522(a)(2), lacquer aerosol coating products may be sold, supplied, offered for sale, applied, or manufactured for use in California with a combined VOC and methylene chloride content of up to 80 percent by weight until January 1, 1998.~~

~~(2) On or after January 1, 1998, all lacquer aerosol coating products sold,~~

~~supplied, offered for sale, applied, or manufactured for use in California shall comply with the provisions of section 94522(a)(2), except that lacquer aerosol coating products manufactured prior to January 1, 1998 may be sold, supplied, offered for sale, or applied until January 1, 2001, as long as the product displays on the product container or package the date on which the product was manufactured or a code indicating such date~~.

~~(3) This subsection (g) does not apply to: (A) any lacquer coating product not clearly labeled as such, or (B) any lacquer coating product which is sold, supplied, offered for sale, applied, or manufactured for use in the Bay Area Air Quality Management District (BAAQMD) and is subject to BAAQMD Rule 8-49, or (C) any lacquer coating product that meets the definition of "clear coating" specified in section 94521~~.

(~~h~~i) *Assignment of Maximum Incremental Reactivity (MIR) Values.*

(1) All ingredients in an amount equal to or exceeding 0.1 percent by weight shall be used to calculate the PWMIR.

(~~1~~2) In order to calculate the PWMIR of an ~~a~~ "Aerosol ~~c~~Coating ~~p~~Products" as specified in section 94521(a)(~~57~~64), the MIR values of product ingredients are assigned as follows:

(A) Any ingredient which does not contain carbon is assigned a MIR value of 0.0.

(B) ~~Any aerosol coating solid, including but not limited to resins, pigments, fillers, plasticizers, and extenders is assigned a MIR value of 0.0.~~ "Coating Solid," "Extender," and "Plasticizer" ingredients are assigned a MIR value of 0.0. "Antimicrobial Compound" ingredients in an amount of up to 0.25 percent by weight and "Fragrance" in an amount of up to 0.25 percent by weight are assigned a MIR value of 0.0.

(C) For any ROC not covered under (~~1~~2)(A) and (~~1~~2)(B) of this subsection (~~h~~i), each ROC is assigned the MIR value for that ROC as set forth in Subchapter 8.6, Article 1, sections 94700 ~~and~~ or 94701, Title 17, California Code of Regulations.

(D) If a ROC is not listed in section 94700, Title 17, California Code of Regulations, but an isomer(s) of the ROC is listed, then the MIR value for the isomer shall be used. If more than one isomer is listed, the listed MIR value for the isomer with the highest MIR value shall be used.

(~~D~~E) Except as provided in subsection (~~h~~i)(~~34~~), ~~only ROCs listed in sections 94700 and 94701, Title 17, California Code of Regulations, can be used to comply with the reactivity limits specified in section 94522(a)(3)~~ if a ROC or its isomer(s) is not listed in section 94700 or an aliphatic hydrocarbon solvent is not listed in section 94701, Title 17, California Code of Regulations, the MIR value for 1,2,3-trimethyl benzene shall be used to determine the weighted MIR of the ROC to calculate the PWMIR.

(F) "Fragrance" present in an aerosol coating in an amount exceeding 0.25 percent by weight shall use the MIR value for terpinolene to determine the weighted MIR of the "Fragrance" to calculate the PWMIR.

(~~E~~) ~~All individual compounds in an amount equal to or exceeding 0.1 percent shall be considered ingredients in calculating the PWMIR. Such individual compounds shall be considered ingredients whether or not they are reported by the manufacturer pursuant to section 94526(b).~~

(~~23~~) (A) (1) For products manufactured before [Effective Date INSERT SECRETARYOF STATE FILING DATE]: The MIR values dated July 18, 2001, shall be used to calculate the PWMIR for aerosol coating products~~, and these MIR values shall not be changed until June 1, 2007~~.

(2) For products manufactured on or after [Effective Date INSERT SECRETARYOF STATE FILING DATE]: The MIR values dated October 2, 2010, shall be used to calculate the PWMIR for aerosol coating products, and these MIR values shall not be changed until at least January 1, 2020.

(B) If a new ROC is added to section 94700 or 94701, ~~then the new ROC may be used in aerosol coating products, and~~ the MIR value for the new ROC shall be used instead of the value specified in section 94522(i)(2)(D) or (E) to calculate the PWMIR after the effective date of the MIR value.

(~~34~~) The MIR value for any aromatic hydrocarbon solvent with a boiling range different from the ranges specified in section 94701(b) shall be assigned as follows:

(A) ~~i~~If the solvent dry point is lower than or equal to 420º ~~degrees~~ F, the MIR value specified in section 94701(b) for bin 23 shall be used.

(B) ~~i~~If the solvent initial boiling point is higher than 420º ~~degrees~~ F, the MIR value specified in section 94701(b) for bin 24 shall be used.

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

§ 94523. Exemptions.

(a) ~~(1) For products manufactured before December 31, 2008: This article shall not apply to aerosol lubricants, mold releases, automotive underbody coatings, electrical coatings, cleaners, belt dressings, anti-static sprays, layout fluids and removers, adhesives, maskants, rust converters, dyes, inks, cosmetics or any other products used on the human body, and leather preservatives or cleaners.~~

~~(2) For products manufactured on or after December 31, 2008:~~ This article ~~shall~~ does not apply to ~~aerosol lubricants, mold releases, automotive underbody coatings, electrical coatings, cleaners, belt dressings, anti-static sprays, layout fluids and removers, adhesives, maskants, rust converters, dyes, inks,~~ products that meet the definitions for "Adhesive," "Anti-Static Product," Belt Dressing," "Cleaner," "Dye," "Ink," "Layout Fluid," "Leather Preservative or Cleaner," "Lubricant," or Maskant," cosmetics or any ~~other~~ products used on the human body, ~~leather preservatives or cleaners,~~ and products ~~for~~ applied to vehicle tires. This article also does not apply to "Rubber/Vinyl Protectants," "Undercoating," ~~as defined in section~~ 94508, ~~and~~ or "Fabric Protectants" as defined in section 94508(a).

(b) This article shall not apply to any aerosol coating product manufactured in California for shipment and use outside of California.

(c) The provisions of this article shall not apply to a manufacturer, distributor, or responsible party who sells, supplies, or offers for sale in California an aerosol coating product that does not comply with the limits specified in section 94522(a)(2) ~~or (a)(3)~~, as long as the manufacturer, distributor, or responsible party can demonstrate both that the aerosol coating product is intended for shipment and use outside of California, and that the manufacturer, distributor, or responsible party has taken reasonable prudent precautions to assure that the aerosol coating product is not distributed to California. This subsection (c) does not apply to aerosol coating products that are sold, supplied, or offered for sale by any person to retail outlets in California.

(d) The requirements in section~~s~~ 94522(a)(2) ~~and (a)(3)~~ prohibiting the application of aerosol coating products that exceed the limits specified in ~~the~~ sections 94522(a)(2) ~~or (a)(3)~~ shall apply only to commercial application of aerosol coating products.

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

§ 94524. Administrative Requirements.

(a) *Most Restrictive Limit.*

Except as otherwise provided in section 94522(ab)~~(4)~~, if anywhere on the container of any aerosol coating product subject to the specified limits in section 94522(a)(2) ~~or (a)(3),~~ or on any sticker or label affixed thereto, or in any sales or advertising literature, any representation is made that the product may be used as, or is suitable for use as a product for which a lower limit is specified, then the lowest applicable limit shall apply.

(b) *Labeling Requirements.*

(1) ~~Both~~ Each ~~the~~ manufacturer ~~and responsible party for each~~ of an ~~a~~ "Aerosol ~~c~~Coating ~~p~~Product" subject to this article ~~section 94522~~ shall ~~ensure that all products~~ clearly display~~s~~ the following information on each product container which is manufactured ~~90 days or later~~ on or after the earliest effective date ~~of this article~~ for the applicable Reactivity Limit for an aerosol coating category.

~~(A) Products subject to the VOC limits specified in section 94522(a)(2) shall display:~~

~~1. the applicable VOC standard for the product that is specified in section 94522(a)(2), expressed as a percentage by weight unless the product is included in an alternative control plan approved by the Executive Officer, as provided in Article 4. Section 94540-94555, Title 17, California Code of Regulations, and the product exceeds the applicable VOC standard;~~

~~2. if the product is included in an alternative control plan approved by the Executive Officer, and the product exceeds the applicable VOC standard specified in section 94522(a)(2), the product shall be labeled with the term "ACP" or "ACP product";~~

~~3. the aerosol coating category as defined in section 94521, or an abbreviation of the coating category; and~~

~~4. the day, month, and year on which the product was manufactured, or a code indicating such date.~~

~~(B) Products subject to the reactivity limits specified in section 94522(a)(3) shall display:~~

~~1~~(A) the applicable ~~r~~Reactivity ~~l~~Limit for the product that is specified in section 94522(a)~~(3)~~; and

~~2~~(B) the aerosol coating category as defined in section 94521, or an abbreviation of the coating category.~~; and~~

~~3. the day, month, and year on which the product was Manufactured or a code indicating such date.~~

(2) *Product Dating Requirements*

(A) In addition to the labeling requirements specified in section 94524(b)(1), each manufacturer of an aerosol coating product subject to section 94522 shall clearly display on each aerosol coating product container or package, the day, month, and year on which the product was manufactured, or a code indicating such date.

Codes that represent a sequential batch number or that otherwise cannot be attributed to a specific day, month, and year, do not satisfy this requirement.

(B) A manufacturer who uses the following code to indicate the date of manufacture shall not be subject to the requirements of section 94524(b)(2)(E), if the code is represented separately from other codes on the product container so that it is easily recognizable:

YY DDD = year year day day day

Where: "YY" = two digits representing the year in which the product was manufactured, and

"DDD" = three digits representing the day of the year on which the product was manufactured, with "001" representing the first day of the year, "002" representing the second day of the year, and so forth (i.e. the "Julian date").

(C) The date of manufacture or code indicating the date of manufacture shall be displayed on each aerosol coating product container or package no later than twelve months prior to the effective date of the applicable limit specified in section 94522(a)(2).

(D) *Products Sold in Multi-unit Packages.*

1. Products sold, supplied, or offered for sale in multi-unit packages are not

required to comply with subsection (b)(2)(E)3.

2. If a multi-unit package does not comply with subsection (b)(2)(E)3., the "sell-through" provisions of section 94522(d) shall not apply to the individual product units contained within the multi-unit package. In other words, if any multi-unit package produced or assembled after January 1, 2015, does not display the date(s) or date-code(s) of the product units, such that the displayed information is readily observable without irreversibly disassembling any portion of the container or packaging, the individual product units shall be subject to the Reactivity Limit in effect when the multi-unit package is sold, supplied, or offered for sale, regardless of the date on which the product units were manufactured.

3. A multi-unit package may comply with subsection (b)(2)(E)3. by displaying the date of assembly instead of the date(s) or date-code(s) of the individual product units, so long as the date of assembly is readily observable without irreversibly disassembling any portion of the container or packaging. The "date of assembly" means the date that the individual product units are assembled into the finished multi-unit package. If the date of assembly is displayed instead of the individual date(s) or date-code(s), the "date of assembly" shall be the "date of manufacture" for all of the product units contained within the multi-unit package. In other words, all of the product units shall be deemed to have been manufactured on the date these units are assembled into the multi-unit package, even if the individual product units show different date(s) or date-code(s), and the "date of assembly" shall be "date of manufacture" of each product unit for the purposes of applying the "sell-through" provisions of section 94522(d).

(E) *Additional Product Dating Requirements*

1. If a manufacturer uses a code indicating the date of manufacture, for any aerosol coating product subject to section 94522 an explanation of the code must be filed with the Executive Officer of the ARB no later than twelve months prior to use of the code or abbreviation. Thereafter, manufacturers using a code must file an explanation of the code with the Executive Officer on an annual basis, beginning January 1, 2015.

   The explanation of the code must be received by the Executive Officer on or before January 31st of each year, with the first explanation due on or before January 31, 2015.

2. If a manufacturer changes any code indicating the date of manufacture for any aerosol coating product subject to subsection (b)(2)(E)1., an explanation of the modified code must be received by the Executive Officer before any products displaying the modified code are sold, supplied, or offered for sale in California.

3. Except as provided (b)(2)(D), ~~T~~the information required in section 94524(b)(1) and (b)(2), shall be displayed on the product container such that it is readily observable without removing or disassembling any portion of the product container or packaging. For the purposes of this subsection, information may be displayed on the bottom of a container as long as it is clearly legible without removing any product packaging.

(~~3~~) 4. ~~No person shall remove, alter, conceal, or deface the information required in section 94524(b)(1) prior to final sale of the product.~~ No person shall erase, alter, deface, or otherwise remove or make illegible any date or code indicating the date of manufacture from any regulated product container without the express authorization of the manufacturer.

~~(4) For any aerosol coating product subject to section 94522(a), if the manufacturer or responsible party uses a code indicating the date of manufacture or an abbreviation of the coating category as defined in section 94521, an explanation of the code or abbreviation must be filed with the Executive Officer prior to the use of the code or abbreviation.~~

5. Codes indicating the date of manufacture are public information and shall not be claimed as confidential.

(c) *Reporting Requirements.*

(1) Any ~~r~~Responsible ~~p~~Party for an aerosol coating product subject to this article which is sold, supplied, or offered for sale in California, must supply the Executive Officer ~~of the Air Resources Board~~ with the following information within 90 days of the earliest effective date ~~of this article~~ for the applicable Reactivity Limit for an aerosol coating category: the company name, mailing address, contact person, email address, and the telephone number of the contact person.

For a ~~r~~Responsible ~~p~~Partyies who ~~do~~ does not manufacture their own aerosol coating products, the ~~r~~Responsible ~~p~~Party shall also supply the information specified in this subsection (c)(1) for those manufacturers which produce products for the ~~r~~Responsible ~~p~~Party.

The ~~r~~Responsible ~~p~~Party shall also notify the Executive Officer within 90 days of any change in the information supplied to the Executive Officer pursuant to this subsection (c)(1).

(2) Upon 90 days written notice, each manufacturer or ~~r~~Responsible ~~p~~Party subject to this article shall submit to the Executive Officer a written report with all of the following information for each product they manufacture under their name or another company's name:

(A) the brand name of the product;
(B) ~~upon request,~~ a copy of the product label;
(C) the owner of the trademark or brand names;
(D) the product category as defined in section 94521;
(E) the annual California sales in pounds per year and the method used to calculate California annual sales;
~~(F) product formulation data:~~
(~~G~~F) the weight fraction of each ROC present in amount greater than or equal to 0.1 percent by weight along with its corresponding MIR value as specified in sections 94700 or 94701;
(~~H~~G) the weight fraction of ingredients listed in 94522(i)(2)(A) and 94522(i)(2)(B);
(~~I~~H) the weight fraction of any other ingredient that is present in an amount greater than or equal to 0.1 percent by weight.

~~1. for products subject to the VOC limits specified in section 94522(a)(2), the percent by weight VOC, water, solids, propellant, and any compounds exempt from the definition of VOC as specified in section 94521;~~

~~2. for products subject to the reactivity limits specified in section 94522(a)(3), the PWMIR and the weight fraction of all ingredients including: water, solids, each ROC, and any compounds assigned a MIR value of zero as specified in sections 94522(h), 94700, or 94701 [Each ROC must 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 aerosol coatings formulation. If an individual ROC is present in an amount less than 0.1 percent by weight, then it does not need to be reported as an ingredient. In addition, an impurity that meets the following definition does not need to be reported as an ingredient.~~

~~For the purpose of this section, an "impurity" means an individual chemical compound present in a raw material which is incorporated into the final aerosol coatings formulation, if the compound is present below the following amounts in the raw material:~~

~~(i) for individual compounds that are carcinogens, as defined in 29 CFR section 1910.1200(d)(4), each compound must be present in an amount less than 0.1 percent by weight in order to be considered an "impurity."~~

~~(ii) for all other compounds present in a raw material,~~

~~a compound must be present in an amount less than 1 percent by weight in order to be considered an "impurity"];~~

~~(G) an identification of each product brand name as a "household," "industrial," or "both" product; and~~

(~~H~~I) any other information necessary to determine the emissions or the ~~product-weighted~~ PWMIR ~~from~~ of an a"Aerosol cCoating pProducts."

~~The information requested in this section (c)(2) may be supplied as an average for a group of aerosol coating products within the same coating category when the products do not vary in VOC content by more than two percent (by weight), and the coatings are based on the same resin type, or the products are color variations of the same product (even if the coatings vary by more than 2 percent in VOC content).~~

~~(3) Upon written request, the responsible party for aerosol coating products subject to this article shall supply the Executive Officer with a list of all exempt compounds contained in any aerosol coating product within 15 working days.~~

(d) *Treatment of Confidential Information.*

All information submitted by manufacturers pursuant to section 94524 and 94526 shall be handled in accordance with the procedures specified in Title 17, California Code of Regulations, sections 91000-91022.

~~(e) **Special Reporting Requirements for Perchloroethylene-Containing Aerosol Coatings.**~~

~~(1) The requirements of this subsection shall apply to all responsible parties for perchloroethylene-containing aerosol coatings sold or offered for sale in California on or after January 1, 1996. For the purposes of this subsection, "perchloroethylene-containing aerosol coating" means any aerosol coating that is required to comply with any limit specified in section 94522(a)(2) or (a)(3) and contains 1.0 percent or more by weight (exclusive of the container or packaging) of perchloroethylene (tetrachloroethylene).~~

~~(2) Reporting Requirements to Establish Baseline. On or before March 1, 1997, or 60 days after the effective date of this subsection (e) (whichever date occurs later), all responsible parties for perchloroethylene-containing aerosol coatings shall report to the Executive Officer the following information for each product:~~

(A) the product brand name and a copy of the product label with legible usage instructions;

(B) the product category to which the aerosol coating belongs;

(C) the total amount of the aerosol coating sold in California between January 1, 1996 and December 31, 1996, to the nearest pound (exclusive of the container or packaging), and the method used for calculating the California sales;

(D) the weight percent, to the nearest 0.10 percent, of perchloroethylene in the aerosol coating.

(3) Annual Reporting Requirements. On or before March 1, 1998, March 1, 1999, March 1, 2000, March 1, 2001, and March 1, 2002, all responsible parties subject to the requirements of this subsection shall provide to the Executive Officer an update which reports, for the previous calendar year, any changes in the annual California sales, perchloroethylene content, or any other information provided pursuant to subsections (e)(2)(A) through (e)(2)(D). After March 1, 2002, responsible parties are not required to submit this information unless specifically requested to do so by the Executive Officer.

(4) Upon request, the Executive Officer shall make the information submitted pursuant to this subsection available to publicly-owned treatment works in California, in accordance with the procedures for handling of confidential information specified in Title 17, California Code of Regulations, sections 91000-91022.

(A) On or before July 1, 2002, the Executive Officer shall evaluate the information, along with data on influent and effluent levels of perchloroethylene as reported by publicly-owned treatments works and any other relevant information, to determine if it is likely that publicly-owned treatment works are experiencing increased levels of perchloroethylene, relative to 1996 levels, that can be attributed to aerosol coatings which contain perchloroethylene.

(B) If the Executive Officer determines that it is likely that increased perchloroethylene levels at the publicly-owned treatment works are caused by increased levels of perchloroethylene in aerosol coatings subject to this regulation, then the Executive Officer shall, in conjunction with the publicly-owned treatment works, implement measures which are feasible, appropriate, and necessary for reducing perchloroethylene levels at the publicly-owned treatment works.

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

§ 94525. Variances.

(a) Any person who cannot comply with the requirements set forth in Ssection 94522, because of extraordinary reasons beyond the person's reasonable control may apply in writing to the Executive Officer for a variance. The variance application shall set forth:

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

(2) the proposed date(s) by which compliance with the provisions of Ssection 94522 will be achieved, and

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

(b) Upon receipt of a variance application containing the information required in subsection (a), the Executive Officer shall hold a public hearing to determine whether, under what conditions, and to what extent, a variance from the requirements in Ssection 94522 is necessary and will be permitted. A hearing shall be initiated no later than 75 working days after receipt of a variance application. Notice of the time and place of the hearing shall be sent to the applicant by certified mail not less than 30 days prior to the hearing. Notice of the hearing shall also be submitted for publication in the California Regulatory Notice Register and sent to every person who requests such notice, not less than 30 days prior to the hearing. The notice shall state that the parties may, but need not be, represented by counsel at the hearing. At least 30 days prior to the hearing, the variance application shall be made available to the public for inspection. Information submitted to the Executive Officer by a variance applicant may be claimed as confidential, and such information shall be handled in accordance with the procedures specified in Title 17, California Code of Regulations, Ssections 91000-91022. The Executive Officer may consider such confidential information in reaching a decision on a variance application. Interested members of the public shall be allowed a reasonable opportunity to testify at the hearing and their testimony shall be considered.

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

(1) that, because of reasons beyond the reasonable control of the applicant, requiring compliance with Ssection 94522 would result in extraordinary economic hardship.

(2) that the public interest in mitigating the extraordinary hardship to the applicant by issuing the variance outweighs the public interest in avoiding

any increased emissions of air contaminants which would result from issuing the variance.

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

(d) Any variance order shall specify a final compliance date by which the requirements of ~~S~~section 94522 will be achieved. Any variance order shall contain a condition that specifies increments of progress necessary to assure timely compliance, and such other conditions that the Executive Officer, in consideration of the testimony received at the hearing, finds necessary to carry out the purposes of Division 26 of the Health and Safety Code.

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

(f) Upon the application of any person, the Executive Officer may review, and for good cause, modify or revoke a variance from the requirements of ~~S~~section 94522 after holding a public hearing in accordance with the provisions of subsection 94525(b).

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

§ 94526. Test Methods and Compliance Verification.

(a) *Test Methods*

Compliance with the requirements of this article shall be determined by using the following test methods, which are incorporated by reference herein. Alternative test methods which are shown to accurately determine the ~~VOC Content~~ PWMIR, ingredient name and weight percent of each ingredient, ~~exempt compound content,~~ metal content, specular gloss, or acid content may also be used after approval in writing by the Executive Officer:

~~(a) Testing for Products Subject to the VOC Limits Specified in Section 94522(a)(2).~~

~~(1) VOC Content. The VOC content of all aerosol coating products subject to the provisions of this article shall be determined by the procedures set forth in "Air Resources Board Method 310, Determination of Volatile Organic Compounds (VOC) in Consumer Products and Reactive Organic Compounds in Aerosol Coating Products", adopted September 25, 1997 and as last amended on May 5, 2005.~~

~~(2) In sections 3.5 and 3.7 of Air Resources Board (ARB) Method 310, a process is specified for the "Initial Determination of VOC Content"~~

and the "Final Determination of VOC Content". This process is an integral part of testing procedure set forth in ARB Method 310, and is reproduced below:

Sections 3.5 and 3.7 of Air Resources Board Method 310

3.5 *Initial Determination of VOC Content.* The Executive Officer will determine the VOC content pursuant to section 3.2 and 3.3. Only those components with concentrations equal to or greater than 0.1 percent by weight will be reported.

3.5.1 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 ARB regulations. If initial results show that the products does not meet the applicable VOC standards, the Executive Officer may perform additional testing to confirm the initial results.

3.5.2 If the results obtained under section 3.5.1 show that the products 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 ARB Executive Officer may be claimed as confidential; such information will be handled in accordance with the confidentiality procedures specified in Title 17, California Code of Regulations, sections 91000 to 91022.

3.5.3 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.

3.5.4 If the manufacturer or responsible party fails to provide formulation data as specified in section 3.5.2, the initial determination of VOC content under this section 3.5 shall determine if the product is in compliance with the applicable VOC standards. This determination may be used to establish a violation of ARB regulations.

3.7 *Final Determination of VOC Content.* If a product's compliance status is not satisfactorily resolved under section 3.5 and 3.6, the Executive Officer will conduct further analyses and testing as necessary to verify the formulation data.

~~3.7.1 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.~~

~~3.7.2 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.~~

~~3.7.3 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 ARB regulations.~~

~~(b) *Testing for Products Subject to the Reactivity Limits Specified in Section 94522(a)(3).*~~

(1) The ingredients and the amount of each ingredient of all aerosol coating products subject to the provisions of this article shall be determined 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 ~~May 5, 2005~~ [effective date] which is incorporated herein by reference. Only ingredients present in amount equal to or greater than 0.1 percent by weight will be reported.

~~(2) Upon written notification from the Executive Officer, the aerosol coating manufacturer shall have 10 working days to provide to the Executive Officer the following information for products selected for testing:~~

~~(A) the product category as defined in section 94521(a);~~

~~(B) the PWMIR;~~

~~(C) the weight fraction of all ingredients including: water, solids, each ROC, and any compounds assigned a MIR value of zero as specified in sections 94522(h), 94700, or 94701. [Each ROC must 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 aerosol coatings formulation. If an individual ROC is present in an amount less than~~

0.1 percent by weight, then it does not need to be reported as an ingredient. In addition, an impurity that meets the following definition does not need to be reported as an ingredient

For the purpose of this section, an "impurity" means an individual chemical compound present in a raw material which is incorporated into the final aerosol coatings formulation, if the compound is present below the following amounts in the raw material:

(i) for individual compounds that are carcinogens, as defined in 29 CFR section 1910.1200(d)(4), each compound must be present in an amount less than 0.1 percent by weight in order to be considered an "impurity."

(ii) for all other compounds present in a raw material, a compound must be present in an amount less than 1 percent by weight in order to be considered an "impurity."];

(D) any other information necessary to determine the PWMIR of the aerosol coating products to be tested.

(3) Final determination of the PWMIR of the aerosol coatings shall be determined using the information obtained from section 94526(b)(1) and (2).

(c) Exempt Compounds from Products Subject to the VOC Limits Specified in Section 94522(a)(2). Compounds exempt from the definition of VOC shall be analyzed according to the test methods listed below:

(1) the exempt compound content of aerosol coating products shall be determined by "Air Resources Board Method 310, Determination of Volatile Organic Compounds (VOC) in Consumer Products," adopted September 25, 1997 and as last amended on May 5, 2005, which is incorporated herein by reference.

(2) the following classes of compounds will be analyzed as exempt compounds only if manufacturers specify which individual compounds are used in the product formulations and identify the test methods, which prior to such analysis, have been approved by the Executive Officer of the ARB, and can be used to quantify the amounts of each exempt compound: cyclic, branched, or linear, completely fluorinated alkanes; cyclic, branched, or linear, completely fluorinated ethers with no unsaturations; cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations; and sulfur-containing perfluorocarbons with

~~no unsaturations and with sulfur bonds only to carbon and fluorine.~~

~~(d) Metal Content. The metal content of metallic aerosol coating products shall be determined by South Coast Air Quality Management District (SCAQMD) Test Method 318-95 "Determination of Weight Percent Elemental Metal in Coatings by X-ray Diffraction" July 1996, which is incorporated herein by reference.~~

~~(e) Specular Gloss. Specular gloss of flat and nonflat coatings shall be determined by ASTM Method D-523-89, March 31, 1989, which is incorporated herein by reference.~~

~~(f) Acid Content. The acid content of rust converters shall be determined by ASTM Method D-1613-96, "Standard Test Method for Acidity in Volatile Solvents and Chemical Intermediates Used in Paint, Varnish, Lacquer, and Related Products, May 10, 1996, which is incorporated herein by reference.~~

~~(g) Lacquers. Lacquer aerosol coating products shall be identified according to the procedures specified in ASTM Method D-5043-90, "Standard Test Methods for Field Identification of Coatings," April 27, 1990, which is incorporated herein by reference.~~

(b) *Compliance Verification*

(1) Upon written notification from the Executive Officer, the Responsible Party shall have 25 working days from the date of mailing to provide to the Executive Officer the exact product formulation and any other information necessary to determine compliance for products selected for testing:

(A) For the purpose of this subsection, formulation means the exact weight fraction of all ingredients including: each ROC, water, "Antimicrobial Compound," "Coating Solid," "Extender," "Plasticizer," and any compounds assigned a MIR value of zero as specified in section 94522(i).

1. Each ROC must 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 aerosol coating formulation. If an individual ROC is present in an amount less than 0.1 percent by weight, then it does not need to be reported as an ingredient.

2. Each hydrocarbon solvent must 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 aerosol coating formulation. The solvent Bin number must be specified.

3. Any ROC constituent of any raw material must 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 aerosol coating formulation. This means, for example, that any ROC included in a resin or other raw material must be reported as part of the formulation.

4. Hydrocarbon propellant ingredients must be specified and reported separately. In other words, the portion of the hydrocarbon propellant that is propane, butane, isobutane, or any other ROC must be reported as an ingredient.

5. A material safety data sheet (MSDS) does not constitute a product's formulation.

(B) the product category as defined in section 94521(a);

(C) the PWMIR of the "Aerosol Coating Product;"

(D) any other information necessary to determine the PWMIR of the aerosol coating product to be tested including the MIR value for each individual ingredient or hydrocarbon solvent(s) used to calculate the PWMIR;

(E) Failure to provide the required information within 25 working days or providing incomplete or inaccurate formulation data are violations and subject to penalties.

(2) The Responsible Party must supply the contact person, mailing address, email address, and phone number for the party who is to be contacted to provide the information specified in (b)(1).

(3) The information specified in (b)(2) shall be supplied to the Executive Officer before January 1, 2015, and anytime thereafter that the information changes.

(~~3~~4) Final determination of the PWMIR of the ~~a~~"Aerosol ~~c~~Coatings Product" shall be determined using the information obtained from section 94526(~~b~~a)~~(1) and (2)~~.

(A) If an aerosol coating product contains one or more Hydrocarbon Solvent(s), the following MIR values shall be used to determine the weighted MIR for each Hydrocarbon Solvent fraction:

Table 94526(b)(4)(A)

Hydrocarbon Solvent Fraction	MIR Value (October 2, 2010)
Alkanes	
Alkane(s) containing 5 carbons	1.45
Alkane(s) containing 6 carbons	1.27
Alkane(s) containing 7 carbons	1.41
Alkane(s) containing 8 carbons	1.27
Alkane(s) containing 9 carbons	1.09
Alkane(s) containing 10 carbons	0.90
Alkane(s) containing 11+ carbons	0.66
Aromatic Compounds	
Xylene isomers, Ethyl benzene	7.64
Aromatics containing 9 carbons	7.99
Aromatics containing C10+carbons	6.95

(B) 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 be used to determine if the product is in compliance with the applicable Reactivity Limit, and may be used to establish a violation of this article.

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.

§ 94527. Severability.

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

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

§ 94528. Federal Enforceability.

For purposes of federal enforceability of this article, the United States Environmental Protection Agency is not subject to approval determinations made by the Executive Officer under sections 94525 and 94526. Within 180 days of a request from a person who has been granted a variance under Ssection 94525, a

variance meeting the requirements of the Clean Air Act shall be submitted by the Executive Officer to the Environmental Protection Agency for inclusion in the applicable implementation plan approved or promulgated by the Environmental Protection Agency pursuant to Ssection 110 of the Clean Air Act, 42 U.S.C., Section 7410.

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

Appendix D

Proposed Repeal of the Hairspray Credit Program

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[Note: Amendments are shown in ~~strikeout~~ to indicate deletions.]

Proposed Repeal of the Hairspray Credit Program

SUBCHAPTER 8.5. CONSUMER PRODUCTS

Repeal title 17, California Code of Regulations, sections 94560, 94561, 94562, 94563, 94564, 94565, 94566, 94567, 94568, 94569, 94570, 94571, 94572, 94573, 94574, and 94575, in their entirety to read as follows:

~~**Article 5. Hairspray Credit Program**~~

~~**§ 94560. Purpose.**~~

~~The purpose of this article is to provide a voluntary program, the Hairspray Credit Program, that rewards and provides an incentive for early compliance, and over compliance, with the second-tier hairspray standard of 55 percent volatile organic compounds (VOC) which is effective June 1, 1999, as specified in section 94509(a), Title 17, California Code of Regulations. The goal of the program is to benefit both the environment and the regulated entities. This program allows responsible parties for hairspray products to voluntarily generate surplus VOC emission reductions which may be certified by the Executive Officer as Hairspray Emission Reduction Credits (HERCs). HERCs may be used as an alternative method to comply with certain requirements of the California regulations for consumer products (sections 94500-94555, Title 17, California Code of Regulations).~~

~~This article is intended to ensure that all HERCs represent verified emission reductions that are real, permanent, quantifiable, enforceable, and surplus.~~

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

History

1. New article 5 (sections 94560—94575) and section filed 8-24-98; operative 8-24-98 pursuant to Government Code section 11343.4(d) (Register 98, No. 35).

~~**§ 94561. Applicability.**~~

~~(a) This article applies to the following:~~

~~(1) the calculation, certification, issuance, registration, transfer, use, retirement, and expiration of HERCs; and~~

(2) any person who applies for, is issued, holds, transfers, or uses HERCs.

(b) Only a responsible party for a hairspray product may submit an application to request HERCs. Applications to use HERCs may be submitted only by responsible ACP (Alternative Control Plan) parties and responsible parties for antiperspirant and deodorant, aerosol coating products, and other consumer products that are subject to the VOC standards in sections 94500-94555, Title 17, California Code of Regulations.

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

History

1. New section filed 8-24-98; operative 8-24-98 pursuant to Government Code section 11343.4(d)(Register 98, No.35).

§ 94562. Definitions.

For the purposes of this article, the following definitions shall apply in addition to the definitions set forth in sections 94501, 94508, 94521, and 94542, Title 17, California Code of Regulations:

(a) "Air Quality Plan" includes, but is not limited to, attainment, rate-of-progress, and maintenance plans adopted by a California air pollution control or air quality management district (district) pursuant to State requirements specified in Chapter 10 (commencing with section 40910) of Part 3, Division 26 of the Health and Safety Code, and federal requirements specified in the Clean Air Act governing the State Implementation Plan.

(b) "Applicable Hairspray Product" means a hairspray product listed in an application to request HERCs submitted pursuant to section 94563(b)(2)(B).

(c) "Applicable Consumer Product" means an antiperspirant, deodorant, aerosol coating product, or other consumer product listed in an application to use HERCs submitted pursuant to section 94568(b)(2)(D).

(d) "Credit Generation Period" means the period of time, in days, during which an applicable hairspray product will be manufactured that will generate surplus VOC emission reductions. The dates on which a specified credit generation period will begin and end must be in one of the following: (1) for early compliance, which may include over compliance, with the second-tier hairspray standard, the time period between January 1, 1998, and May 31, 1999, or (2) for over compliance with the second-tier

hairspray standard on and after its effective date of June 1, 1999, the time period between June 1, 1999, and January 1, 2005. The credit generation period may be divided into installment periods for issuance of HERCs.

(e) "Delayed Compliance Period" means the period of time, in days, during which a consumer product will be manufactured that does not comply with its applicable VOC limit in sections 94502, 94509, or 94522, Title 17, California Code of Regulations. The date on which a specified delayed compliance period will end must be on or prior to January 1, 2010.

(f) "Documented Sales" means the total amount of the following products, as applicable, sold for use in California:

(1) *For the Purpose of Credit Generation.* The applicable hairspray product that was manufactured during the credit generation period as specified in an application submitted to the Executive Officer in accordance with section 94563, or

(2) *For the Purpose of Credit Use.* The applicable consumer product that was manufactured during the following time periods:

(A) the most recent twelve-month period (for which documented sales records are available) prior to the delayed compliance period as specified in the application submitted to the Executive Officer in accordance with section 94568, and

(B) the delayed compliance period as specified in the application submitted to the Executive Officer in accordance with section 94568.

"Documented Sales" shall be determined through documented sales records (expressed to the nearest pound, excluding product container and packaging).

(g) "Documented Sales Record" means a written, point-of-sale record, or any other Executive Officer-approved system of documentation, from which the mass, in pounds (less product container and packaging), of a product manufactured during an applicable time period and sold for use in California can be accurately documented. For the purposes of this article, "documented sales record" may include, but is not limited to, the following types of records:

(1) accurate records of direct retail or other outlet sales;

(2) accurate compilations made by independent market surveying services, using methods consistent with widely accepted practices

~~of the business, scientific, or regulatory communities, of direct retail or other outlet sales, provided that a detailed method which can be used to verify any data comprising such summaries is submitted by the responsible party and approved by the Executive Officer;~~

~~(3) accurate manufacturing records in combination with any other data or information that permits determination of California sales; or~~

~~(4) for pesticides only, accurate mill assessment records for economic poisons, verified by the California Department of Pesticide Regulations, which cover the sales of the pesticide product.~~

~~(h) "Hairspray" means a consumer product designed primarily for the purpose of dispensing droplets of resin on and into a hair coiffure which will impart sufficient rigidity to the coiffure to establish or retain the style for a period of time.~~

~~(i) "Reformulated or Reformulation" means a change in the formulation of a hairspray product for the primary purpose of lowering the product's VOC content to 55 percent or less, as determined pursuant to section 94515, Title 17, California Code of Regulations.~~

~~(j) "Responsible Party" means the company, firm or establishment which is listed on the product's label. If the label lists two companies, firms or establishments, the responsible party is the party which the product was "manufactured for" or "distributed by", as noted on the label.~~

~~(k) "State Implementation Plan" means the California State Implementation Plan approved by the United States Environmental Protection Agency (U.S. EPA), in accordance with requirements of the Clean Air Act.~~

~~(l) "Stock Keeping Unit" means the classification used by consumer product manufacturers to identify products that have the same brand name, formulation, net weight, and other distinguishing characteristics.~~

~~(m) "Surplus" means VOC emission reductions not required by any hairspray standard in section 94509, Title 17, California Code of Regulations; Alternative Control Plan approved pursuant to section 94543, Title 17, California Code of Regulations; or air quality plan. For the purposes of this article only, surplus emission reductions shall include emission reductions resulting from compliance with the second-tier hairspray standard of 55 percent VOC between January 1, 1998, and June 1, 1999. Surplus VOC emission reductions shall not include emission reductions occurring prior to January 1, 1998.~~

(n) "VOC Content" shall have the same meaning in this article as it has in sections 94500-94555, Title 17, California Code of Regulations, as applicable.

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

History

1. New section filed 8-24-98; operative 8-24-98 pursuant to Government Code section 11343.4(d) (Register 98, No. 35).

§ 94563. Application Process to Request Hairspray Emission Reduction Credits.

(a) A responsible party for a hairspray product who is requesting HERCs for a specified credit generation period must submit a written, two-part application to the Executive Officer. Any information in the custody of the California Air Resources Board that has been submitted as confidential by a responsible party (or by a person acting on behalf of the responsible party) pursuant to this section shall be handled by the Air Resources Board in accordance with the procedures specified in sections 91000-91022 (Disclosure of Public Records), Title 17, California Code of Regulations, provided that such information is clearly identified as being confidential.

(b) *Application Requirements: Part One.* The first part of an application to request HERCs must be submitted in accordance with the following requirements:

(1) *Timing of Application Submittal.* For a hairspray product initially manufactured for sale in California on or after July 1, 1998, or a hairspray product reformulated after June 1, 1999, the first part of the application must be submitted before the start of the credit generation period, and no later than six months after the product's initial date of manufacture for sale in California. For all other hairspray products, the first part of the application must be submitted before the mid-point of the credit generation period;

(2) *Application Contents.* The first part of the application must include the following information:

(A) the responsible party's company name, street and mailing address, telephone number, and designated contact person for the application;

(B) a list of the hairspray products for which the responsible party is requesting HERCs (i.e., the applicable hairspray products);

(C) a list of all stock keeping units for each applicable hairspray product, including any product identification numbers used by the responsible party to identify the stock keeping units;

(D) the credit generation period (in days) for which the responsible party is requesting HERCs for the applicable hairspray product, including the dates on which the credit generation period will begin and end (If the responsible party is requesting HERCs to be issued in more than one installment, the application must include the number of installments and the ending date of each installment period.);

(E) product labels for each stock keeping unit for each applicable hairspray product;

(F) speciated formulation data for the applicable hairspray product, and for the product prior to its reformulation, if applicable, (aggregated data may be submitted for the different stock keeping units) including percent by weight values to the nearest 0.1 percent for the following:

1. VOC content (for aggregated data, the applicant shall submit the highest VOC content or a sales-weighted average VOC content) and

2. each compound present in the formulation, except compounds that amount to a combined concentration of one percent by weight;

(G) the approximate date on which sales in California began (or will begin) for each applicable hairspray product;

(H) the list of contact persons, telephone numbers, and street and mailing addresses of all persons and businesses who will provide information that will be used to determine documented sales for the applicable hairspray products;

(I) a demonstration, which will be subject to Executive Officer approval, of the validity of the methodology that will be used to calculate documented sales, based on the documented

sales records, that will be provided pursuant to section 94563(c)(2)(A);

(J) for a hairspray product initially manufactured for sale in California on or after July 1, 1998, or a hairspray product reformulated after June 1, 1999, a statement that the hairspray product is formulated for the primary purpose of generating emission reductions for credits;

(K) for a credit generation period greater than 365 days, a proposed schedule for the annual submittal of test results required pursuant to section 94563(c)(2)(B); and

(L) a signed declaration as specified in section 94563(e).

(c) *Application Requirements: Part Two.* The second part of an application to request HERCs must be submitted in accordance with the following requirements:

(1) *Timing of Application Submittal.* The second part of the application must be submitted after the conclusion of the credit generation period, and any installment period, if applicable.

(2) *Application Contents.* The second part of the application must include the following information for each applicable hairspray product:

(A) documented sales for the installment period or credit generation period, as applicable, and supporting documentation that shows how sales were calculated using documented sales records and a methodology previously approved by the Executive Officer;

(B) test results, using a method(s) specified in section 94515, Title 17, California Code of Regulations, that verify the VOC content information provided for the applicable hairspray product in the first part of the application; the units that were tested must come from three different batches that were manufactured during the credit generation period (If the credit generation period is greater than 365 days, such verification shall be performed at least annually and the test results submitted to the Executive Officer);

(C) the responsible party's own calculation of the quantity of HERCs for each applicable hairspray product for the credit generation period, or installment period, if applicable,

calculated by using the protocol specified in section 94564; and

(D) a signed declaration as specified in section 94563(e).

(d) *Applicable Time Periods and Procedures for Review and Approval of Application.* The following time periods and procedures shall apply to the Executive Officer's review of Parts One and Two of the application:

(1) *Application Completeness Determination.* Within 30 days after receiving either a Part One or Part Two application submittal, the Executive Officer shall inform the applicant in writing that the submittal is complete, or that it is deficient and shall identify the specific information required to make the submittal complete.

(2) *Application Completeness Determination After Receiving Additional Information.* Within 15 days after receiving additional information submitted in response to a determination by the Executive Officer that Part One or Part Two of the application is deficient, the Executive Officer shall inform the applicant in writing, either that the new information is sufficient to make the application complete, or that the application is deficient and shall identify the specific information required to make it complete.

(3) *Approval Determination for Part One of Application.* Within 45 days after determining that Part One of the application is complete, the Executive Officer shall inform the applicant in writing whether the information provided in Part One is approved for the purposes of calculating HERCs in accordance with the protocol specified in section 94564. The Executive Officer's determination, through an Executive Order, shall include, but not be limited to the following:

(A) whether the VOC content for each applicable hairspray product is verified by the speciated formulation data submitted pursuant to section 94563(b)(2)(F), and

(B) whether the applicant's proposed methodology for calculating documented sales is approved.

(4) *Approval Determination for Part Two of Application.* Within 90 days of determining that Part Two of the application (or the information required by this part of the application for installment issuance of HERCs) is complete, the Executive Officer shall determine whether to issue and certify the HERCs in accordance with section 94565.

(5) *Extension of Time Periods.* For any of the time periods specified in this subsection (d), the Executive Officer and the applicant may agree to a longer time period for the Executive Officer to make a decision.

(e) Declaration by Responsible Party. Parts One and Two of the application, and any additional information submitted, must include a declaration, signed by a legal representative of the responsible party, that the submittal contains true, accurate, and complete information based on information and belief formed after reasonable inquiry. Any person submitting information directly (i.e., the information is not reviewed by or submitted through the responsible party) to the Executive Officer on behalf of the responsible party must also make such a declaration.

(f) *Specified VOC Limit for a Hairspray Product in the Hairspray Credit Program.* No applicable hairspray product manufactured during a credit generation period shall exceed the VOC content for the product specified in the Executive Order approving the application to request HERCs and issuing the HERCs.

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

History

1. New section filed 8-24-98; operative 8-24-98 pursuant to Government Code section 11343.4(d) (Register 98, No. 35).

§ 94564. Protocol for Calculating Hairspray Emission Reduction Credits.

(a) The following equation shall be used to calculate the quantity of HERCs generated for either early compliance or over compliance for an applicable hairspray product manufactured during a specified credit generation period (or installment period, if applicable) expressed to the nearest pound of surplus VOC emission reductions:

$$HERCs = (Documented\ Sales_{HCP})([VOC\ Content]_{Baseline} - [VOC\ Content]_{Hairspray})/100$$

where,

"Documented Sales $_{HCP}$" means the documented sales, in pounds, of the applicable hairspray product manufactured during the credit generation period (or installment period, if applicable) as specified in the application pursuant to section 94563(c)(2)(A).

"[VOC Content]$_{Baseline}$" means the following:

For an applicable hairspray product initially offered for sale in California after January 1, 1993, the lower of the following:

(1) if the applicable hairspray product is a reformulated product, the VOC content, in percent, of the product before it was reformulated, as reported in the application and verified by the speciated formulation data required pursuant to section 94563(b)(2)(F), or

(2) 80 percent for a credit generation period between January 1, 1998, and May 31, 1999, and 55 percent for a credit generation period between June 1, 1999, and January 1, 2005.

For an applicable hairspray product initially offered for sale in California between October 11, 1990, and January 1, 1993: 80 percent for a credit generation period between January 1, 1998, and May 31, 1999, and 55 percent for a credit generation period between June 1, 1999, and January 1, 2005.

For an applicable hairspray product initially offered sale in California before October 11, 1990, that has not been reformulated after October 11, 1990, the condition in section 94564(b)(5) shall apply.

"[VOC Content]$_{Hairspray}$" means the VOC content, in percent, of the applicable hairspray product as reported in the application and verified by the speciated formulation data required pursuant to section 94563(b)(2)(F).

(b) For the purposes of the calculation protocol specified in section 94564(a), the following conditions shall apply:

(1) HERCs shall only be calculated if the Executive Officer has approved the methodology used to calculate documented sales in accordance with section 94563(d)(3)(B).

(2) HERCs shall only be calculated if the "[VOC Content]$_{Hairspray}$" reported in the application is verified by speciated formulation data and test results required pursuant to sections 94563(b)(2)(F) and 94563(c)(2)(B). If the test results do not verify the reported "[VOC Content]$_{Hairspray,}$" the Executive Officer and the responsible party may agree to an alternative "[VOC Content]$_{Hairspray}$" provided it is

~~supported by testing or demonstrations specified in section 94515, Title 17, California Code of Regulations.~~

~~(3) HERCs shall equal zero for any credit generation period after June 1, 1999, unless either of the following circumstances applies:~~

~~(A) the applicable hairspray product has generated surplus emission reductions prior to June 1, 1999, and the surplus emission reductions have been, or will be, certified by the Executive Officer as HERCs, or~~

~~(B) the applicable hairspray product was initially manufactured for sale in California, or reformulated, after June 1, 1999, in which case paragraph (4) of this subsection (b) shall apply.~~

~~(4) For an applicable hairspray product initially manufactured for sale in California on or after July 1, 1998, or reformulated after June 1, 1999, HERCs shall be zero unless all of the following circumstances have occurred:~~

~~(A) Pursuant to section 94563(b)(1), the responsible party has submitted to the Executive Officer an application to request HERCs before the start of the credit generation period, and no later than six months after the applicable hairspray product's initial date of manufacture for sale in California.~~

~~(B) Pursuant to section 94563(b)(2)(J), the responsible party has provided a statement that the hairspray product is formulated for the primary purpose of generating emission reductions for credits.~~

~~(C) For a reformulated hairspray product, the "[VOC Content]$_{Baseline}$" for the calculation of HERCs shall equal the product's lowest VOC content prior to its reformulation.~~

~~(5) For an applicable hairspray product initially offered for sale in California before October 11, 1990, that has not been reformulated after October 11, 1990, HERCs shall be zero.~~

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

History

1. New section filed 8-24-98; operative 8-24-98 pursuant to Government Code section 11343.4(d) (Register 98, No. 35).

~~§ 94565. Issuance of Hairspray Emission Reduction Credits.~~

~~(a) After evaluating an application to request HERCs in accordance with the requirements specified in section 94563, the Executive Officer shall determine whether HERCs should be issued to the responsible party. In addition, the Executive Officer shall issue and certify the HERCs only if the Executive Officer is satisfied that the application provides sufficient and verifiable information to assure that surplus emission reductions have been generated. The Executive Officer shall issue HERCs by means of an Executive Order that certifies the HERCs as follows:~~

~~(1) Each HERC has been calculated in accordance with the protocol specified in section 94564 and is otherwise in compliance with this article and any applicable federal requirements.~~

~~(2) Each HERC is for surplus emission reductions.~~

~~(3) Each HERC is expressed as a pound of surplus VOC emission reductions.~~

~~(4) Each HERC has been assigned an expiration date that is five years after the issuance date of the Executive Order or a January 1, 2005, expiration date, whichever is later, after which the ability to use the HERC ceases.~~

~~(b) On January 1, 2010, all outstanding HERCs shall expire, and may no longer be used.~~

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

History

1. New section filed 8-24-98; operative 8-24-98 pursuant to Government Code section 11343.4(d) (Register 98, No. 35).

~~§ 94566. HERC Account Registry.~~

~~(a) The Executive Officer shall maintain a HERC Registry listing all HERCs held in HERC Accounts by each person. Each HERC Account will list information on the holder, quantities, credit generation periods and expiration dates of HERCs. The HERC Registry shall constitute the official and controlling record of all HERC holdings. HERCs shall not constitute instruments, securities, or any other form of property. Information contained in the HERC Registry shall be available to the public upon request, except that HERC Account information in the custody of the California Air Resources Board, and claimed as confidential by the~~

responsible party, shall be handled by the Air Resources Board in accordance with the procedures specified in sections 91000-91022 (Disclosure of Public Records), Title 17, California Code of Regulations.

(b) The Executive Officer shall modify the account information in the HERC Registry upon any of the following actions:

(1) the issuance of HERCs in accordance with section 94565;

(2) the transfer of HERCs to an existing or a newly created HERC Account in accordance with sections 94566(c) and 94566(d);

(3) the use of HERCs in accordance with sections 94567, 94570, and 94571;

(4) a credit or debit to a HERC Account to correct for differences between "Projected Excess Emissions" and "Actual Excess Emissions", including any additional amount of HERCs required pursuant to section 94567(h), in accordance with section 94571(c);

(5) a change of name, ownership, or other pertinent information for a HERC Account holder;

(6) a HERC Account holder's written request that HERCs be retired for an environmental benefit pursuant to section 94567(d); or

(7) the expiration of HERCs as required by sections 94565(a)(4) or 94565(b).

(c) Any person may acquire HERCs through purchase, trade or other means of transfer from any HERC Account holder. The transfer of HERCs shall be effective only upon amendment of the HERC Registry by the Executive Officer.

(d) Any person who requests a transfer of HERCs must provide the following information in writing to the Executive Officer:

(1) the contact persons, names of the companies, street and mailing addresses, and telephone numbers of the parties involved in the transfer (For some transfers, the provider and recipient may be the same.);

(2) information on the HERCs to be transferred, including quantities, credit generation periods, and expiration dates;

(3) the date the transfer is proposed to become effective; and

(4) a statement, signed by both the provider and the recipient, that both parties fully understand the conditions and limitations of the HERCs being transferred and accept full responsibility for the appropriate use of the HERCs as provided in this article.

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

History

1. New section filed 8-24-98; operative 8-24-98 pursuant to Government Code section 11343.4(d) (Register 98, No. 35).

§ 94567. Allowable Uses of Hairspray Emission Reduction Credits.

Except as provided in subsections (f), (g), and (h) of this section, HERCs may be used as follows upon approval by the Executive Officer:

(a) A responsible party for a consumer product regulated by the Air Resources Board pursuant to sections 94500-94528, Title 17, California Code of Regulations who is also a HERC Account holder may use HERCs to obtain additional time (i.e., a delayed compliance period) for a product to comply with an applicable VOC standard set forth in sections 94502, 94509 or 94522, Title 17, California Code of Regulations, provided the product has been manufactured for sale in California for at least 12 months before the submittal of an application in accordance with section 94568. During a delayed compliance period, the responsible party must comply with the following:

(1) the specified VOC content for the product reported in the HERC use application, and approved by the Executive Officer, instead of the applicable VOC standard specified in sections 94502, 94509, or 94522, Title 17, California Code of Regulations, and

(2) except as provided in paragraph (1) of this subsection (a), with all other applicable requirements specified in sections 94500-94528, Title 17, California Code of Regulations.

(b) In accordance with section 94514(h), Title 17, California Code of Regulations, a responsible party for a hairspray product who is also a HERC Account holder may use HERCs to mitigate excess emissions that result from the granting of a variance.

(c) In accordance with sections 94543(a)(7)(J) and 94548, Title 17, California Code of Regulations, a "responsible ACP party" who is also a HERC

~~Account holder may use HERCs to reconcile any shortfalls occurring in a compliance period for an Alternative Control Plan.~~

~~(d) Any person who is a HERC Account holder may retire HERCs to provide an environmental benefit.~~

~~(e) For purposes of this article, high volatility organic compounds (HVOCs) and medium volatility organic compounds (MVOCs) in antiperspirants and deodorants shall be treated the same as other VOCs for HERC use.~~

~~(f) The use of HERCs shall not result in any greater emissions of toxic air contaminants, as defined per Health and Safety Code section 39657(b), than would otherwise have occurred if HERCs were not used.~~

~~(g) All outstanding HERCs shall expire on January 1, 2010, after which HERCs may no longer be used.~~

~~(h) On or before December 31, 2002, the Executive Officer shall determine whether the Hairspray Credit Program has demonstrated an environmental benefit. For the purposes of this article, the Hairspray Credit Program has demonstrated an environmental benefit if, during the time period from the start of the program until December 31, 2002, the total amount of HERCs generated under the program is five percent greater than the total amount of HERCs used. If the Executive Officer determines that the Hairspray Credit Program has not demonstrated an environmental benefit by December 31, 2002, then all HERCs will be discounted by an amount of five percent upon use.~~

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

History

1. New section filed 8-24-98; operative 8-24-98 pursuant to Government Code section 11343.4(d) (Register 98, No. 35).

~~§ 94568. Application Process for Use of Hairspray Emission Reduction Credits.~~

~~(a) Any HERC Account holder who wishes to use HERCs as specified in sections 94567(a), 94567(b), or 94567(c) must submit a written application to the Executive Officer. Any information in the custody of the California Air Resources Board that has been submitted as confidential by a responsible party (or a person acting on behalf of the responsible party) pursuant to this section shall be handled by the Air Resources Board in accordance with the procedures specified in sections 91000-91022~~

(Disclosure of Public Records), Title 17, California Code of Regulations, provided that such information is clearly identified as being confidential.

(b) *Application Requirements for HERC Use Pursuant to Section 94567(a).* An application to use HERCs for a delayed compliance period pursuant to section 94567(a) must be submitted in accordance with the following requirements:

(1) *Timing of Application Submittal.* An application must be submitted and approved by the Executive Officer before the start of the proposed delayed compliance period.

(2) *Application Contents.* The application must contain all of the following information:

(A) the responsible party's company name, street and mailing address, telephone number, and designated contact person for the application;

(B) information on the HERCs to be used, including HERC Account Holder, quantities, credit generation periods, and expiration dates;

(C) the amount of excess emissions the HERCs will be used to offset (i.e., "Projected Excess Emissions" calculated using the protocol specified in section 94569);

(D) the list of the consumer products (i.e., applicable consumer products) for which the responsible party is requesting additional time to comply with the VOC standard identified in paragraph (E) of this subsection;

(E) the VOC standard specified in sections 94502, 94509, or 94522, Title 17, California Code of Regulations, for which the responsible party is requesting additional time to comply;

(F) the list of stock keeping units for each applicable consumer product, including any product identification numbers used by the responsible party to identify the stock keeping units;

(G) product labels for each stock keeping unit for each applicable consumer product;

(H) the responsible party's most recent speciated formulation data for each applicable consumer product (aggregated data may be submitted for the different stock keeping units)

~~including percent by weight values to the nearest 0.1 percent for the following:~~

~~1. VOC content (for aggregated data, the applicant shall submit the highest VOC content or a sales-weighted average VOC content) and~~

~~2. each compound present in the formulation, except compounds that amount to a combined concentration of one percent by weight or less;~~

~~(I) documented sales for each applicable consumer product for the most recent twelve-month period (for which documented sales records are available) prior to the delayed compliance period, and supporting documentation that shows how sales were calculated using the documented sales records and a methodology which will be subject to Executive Officer approval pursuant to section 94568(b)(2)(K) and section 94570(a)(2);~~

~~(J) the list of contact persons, telephone numbers, and street and mailing addresses of all persons and businesses who have provided, or will provide, information for the determination of documented sales for all the applicable consumer products;~~

~~(K) a demonstration to the satisfaction of the Executive Officer of the validity of the methodology(ies) used, or to be used, to calculate documented sales pursuant to sections 94568(b)(2)(I), 94569, and 94571(b), based on the documented sales records provided by the responsible party or the contact persons listed in paragraph (J) of this subsection (b)(2);~~

~~(L) test results, using a method(s) specified in sections 94506, 94515 or 94526, Title 17, California Code of Regulations, as applicable, that verify the VOC content information for the applicable consumer product as specified in paragraph (H) of this subsection (b)(2); the units that were tested must have come from three different batches that were manufactured less than one calendar year before the beginning of the proposed delayed compliance period;~~

~~(M) the proposed delayed compliance period, in days, requested by the responsible party, including the dates on which the delayed compliance period would begin and end;~~

(N) for a proposed delayed compliance period greater than 365 days, a proposed schedule for annual submittal of information on "Documented Sales$_{\text{Delayed Compliance Period}}$" and "Actual Excess Emissions" as defined in section 94569 and required pursuant to section 94571(b); and

(O) a signed declaration as specified in section 94568(e).

(c) *Application Requirements for HERC Use Pursuant to Sections 94567(b) or 94567(c).* For HERC use as specified in sections 94567(b) or 94567(c), an application must be submitted in accordance with the following requirements:

(1) *Timing of Application Submittal.* The application must be submitted to and approved by the Executive Officer prior to the use of HERCs as specified in sections 94567(b) or 94567(c).

(2) *Application Contents.* The application must contain all of the following information:

(A) the responsible party's company name, street and mailing address, telephone number, and designated contact person for the application;

(B) information on the HERCs to be used, including HERC Account Holder, quantities, credit generation periods, and expiration dates;

(C) the amount of excess emissions the HERCs will be used to offset; and

(D) a signed declaration as specified in section 94568(e).

(d) *Applicable Time Periods and Procedures for Review of HERC Use Applications.* The following time periods and procedures shall apply to the Executive Officer's review of a HERC use application:

(1) *Application Completeness Determination.* Within 30 days after receiving an application, the Executive Officer shall inform the applicant in writing that the application is complete, or that the application is deficient and shall identify the specific information required to make the application complete.

(2) *Application Completeness Determination After Receiving Additional Information.* Within 15 days after receiving additional information

provided in response to a determination by the Executive Officer that an application is deficient, the Executive Officer shall inform the applicant in writing, either that the new information is sufficient to make the application complete, or that the application is deficient and shall identify the specific information required to make the application complete.

(3) *Approval Determination for Application.* Within 90 days after determining that the HERC use application is complete, the Executive Officer shall determine whether to approve the use of HERCs.

(4) *Extension of Time Periods.* For any of the time periods specified in this subsection (d), the Executive Officer and the applicant may agree to a longer time period for the Executive Officer to make a decision.

(e) *Declaration by Responsible Party.* The application, and any additional information submitted, must include a declaration, signed by a legal representative of the responsible party, that the submittal contains true, accurate, and complete information based on information and belief formed after reasonable inquiry. Any person submitting information directly (i.e., the information is not reviewed or submitted through the responsible party) to the Executive Officer on behalf of the responsible party must also make such a declaration.

(f) *Specified VOC Limit for a Consumer Product in the Hairspray Credit Program.* No applicable consumer product manufactured during a delayed compliance period shall exceed the VOC content for that product specified in the Executive Order approving the application to use HERCs.

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

History

1. New section filed 8-24-98; operative 8-24-98 pursuant to Government Code section 11343.4(d) (Register 98, No. 35).

§ 94569. Protocol for Calculation of Excess Emissions During a Delayed Compliance Period.

The following equations shall be used to determine the amount of excess emissions from an applicable consumer product manufactured during a delayed compliance period (or a portion of a period, if applicable):

Projected Excess Emissions =

~~$([VOC\ Content]_{Product} - [VOC\ Standard]_{Product})(Projected\ Sales)$~~

~~$Actual\ Excess\ Emissions =$~~

~~$([VOC\ Content]_{Product} - [VOC\ Standard]_{Product})(Documented\ Sales_{Delayed\ Compliance\ Period})$~~

~~where,~~

~~"Projected Excess Emissions" and "Actual Excess Emissions" shall be expressed to the nearest pound of VOC (if the product is an antiperspirant or deodorant, the nearest pound of HVOC or MVOC, as applicable).~~

~~"Projected Sales" shall be determined with the following equation:~~

~~$Projected\ Sales =$~~

~~$(Delayed\ Compliance\ Period/365)(Documented\ Sales_{Previous\ Year})$~~

~~where,~~

~~"Delayed Compliance Period" shall be expressed in days.~~

~~"$Documented\ Sales_{Previous\ Year}$" means the documented sales, in pounds, (determined using methodology approved by the Executive Officer) for the applicable consumer product for the most recent twelve-month period (for which documented sales records are available) prior to the delayed compliance period, as reported in the HERC use application submitted in accordance with section 94568.~~

~~"$[VOC\ Content]_{Product}$" means the VOC content, in percent, of the applicable consumer product as reported in the HERC use application. (If the product is an antiperspirant or deodorant, the VOC Content shall be expressed as HVOC or MVOC, as applicable.)~~

~~"$[VOC\ Standard]_{Product}$" means the VOC standard, in percent, for the consumer product category as set forth by sections 94502, 94509 or 94522, Title 17, California Code of Regulations.~~

~~"$Documented\ Sales_{Delayed\ Compliance\ Period}$" means the documented sales, in pounds, (determined using methodology approved by the Executive Officer) for the applicable consumer product manufactured during the delayed compliance period, or a portion of the delayed compliance period, if applicable, as reported pursuant to section 94571(b).~~

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

History

1. New section filed 8-24-98; operative 8-24-98 pursuant to Government Code section 11343.4(d) (Register 98, No. 35).

~~**§ 94570. Approval of Application for Use of Hairspray Emission Reduction Credits.**~~

~~The Executive Officer shall, by means of Executive Order, approve the use of HERCs only after making the following determinations:~~

~~(a) For HERC use as specified in section 94567(a), the Executive Officer shall determine the following:~~

~~(1) "Projected Excess Emissions" have been calculated in accordance with the protocol specified in section 94569;~~

~~(2) the methodology(ies) used pursuant to sections 94568(b)(2)(I),94569, and 94571(b) is appropriate for determining accurate documented sales information;~~

~~(3) the VOC content specified for the applicable consumer product, as reported in the application, has been verified by speciated formulation data submitted pursuant to section 94568(b)(2)(H) and test results in accordance with sections 94506, 94515 or 94526, Title 17, California Code of Regulations, as applicable; and~~

~~(4) the use of HERCs is consistent with the State Implementation Plan and federal requirements;~~

~~(b) For HERC use specified in sections 94567(a), 94567(b), and 94567(c), the Executive Officer shall determine that the responsible party's HERC account contains a sufficient quantity of HERCs to offset the projected excess emissions (which may consist of VOC, HVOC, or MVOC), to mitigate excess emissions that result from the granting of a variance, or to reconcile any shortfall occurring in a compliance period for an Alternative Control Plan, as applicable. The Executive Officer shall also determine if the responsible party's HERC account contains a sufficient quantity of HERCs to provide the additional amount of HERCs required pursuant to section 94567(h), if applicable.~~

~~(c) For HERC use specified in sections 94567(a), 94567(b), and 94567(c), the Executive Officer shall determine that the use of HERCs will not result in~~

~~any greater emissions of toxic air contaminants, as defined per Health and Safety Code section 39657(b), than would otherwise have occurred if HERCs were not used.~~

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

History

1. New section filed 8-24-98; operative 8-24-98 pursuant to Government Code section 11343.4(d) (Register 98, No. 35).

~~§ 94571. Modification and Reconciliation of Account Balance for HERC Use.~~

~~(a) *Modification of Account Balance After Approval of HERC Use.* When an application for HERC use is approved, the Executive Officer shall modify the applicant's HERC account to remove the amount of HERCs necessary to offset the excess emissions, as specified in the application (e.g., for use pursuant to section 94567(a), "Projected Excess Emissions" calculated pursuant to section 94569) and, if applicable, to provide the additional amount of HERCs required pursuant to section 94567(h).~~

~~(b) *Requirement to Submit Information on Documented Sales and Actual Excess Emissions.* For HERC use pursuant to section 94567(a) only, the responsible party (i.e, the applicant for HERC use or the HERC Account holder) must submit to the Executive Officer, within 120 days after the conclusion of the delayed compliance period, documented sales for the delayed compliance period and "Actual Excess Emissions" calculated in accordance with section 94569. For a delayed compliance period of more than 365 days, information on documented sales and actual excess emissions must be submitted annually in accordance with the time schedule specified in the Executive Order approving the application to use HERCs.~~

~~(c) *Correction of Account Balance.* The Executive Officer shall debit or credit the HERC Account accordingly to correct for any difference between the "Projected Excess Emissions" and the "Actual Excess Emissions" during the delayed compliance period (or portion of the period, if applicable), including any additional amount of HERCs required pursuant to section 94567(h), based on the documented sales information submitted in accordance with section 94571(b).~~

~~(d) *Reconciliation of Negative Balance.* If correction of the HERC Account pursuant to section 94571(c) results in an overall negative balance in the HERC Account, the responsible party must completely reconcile the negative balance within 180 days of the conclusion of the delayed~~

~~compliance period (or portion of the period, if applicable) or within the time period specified in the Executive Order.~~

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

History

1. New section filed 8-24-98; operative 8-24-98 pursuant to Government Code section 11343.4(d) (Register 98, No. 35).

~~§ 94572. Recordkeeping and Availability of Requested Information.~~

~~(a) All information specified in the Executive Order approving an application to request HERCs or an application to use HERCs must be maintained by the responsible party for a minimum of five years after the approval date of the Executive Order, or the date such records are generated, whichever is later.~~

~~(b) The records specified in subsection (a) of this section shall be made available to the Executive Officer or his or her authorized representative within the following time periods:~~

~~(1) immediately upon request, during an on-site visit to the responsible party for a product participating in the Hairspray Credit Program,~~

~~(2) within 7 days after receipt of a written request from the Executive Officer, or~~

~~(3) within a time period agreed upon by both the Executive Officer and the responsible party.~~

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.

History

1. New section filed 8-24-98; operative 8-24-98 pursuant to Government Code section 11343.4(d) (Register 98, No. 35).

~~§ 94573. Violations.~~

~~(a) *Violations in General.* Any person who commits a violation of this article is subject to the penalties specified in Health and Safety Code section 42400 *et seq.* Failure to meet any requirement of this article or any condition of an applicable Executive Order shall constitute a single, separate violation of this article for each day until such requirement or condition is satisfied,~~

except as otherwise provided in subsections (b), (c), (d), (e) and (f) of this section.

(b) *Exceedances of Specified VOC Content.* Any exceedance during the applicable compliance period of the VOC content specified for a hairspray product or other consumer product in the Executive Order approving (1) Part Two of an application to request HERCs pursuant to section 94563 or (2) an application to use HERCs pursuant to section 94568 shall constitute a single, separate violation of the requirements of this article for each product unit manufactured during the applicable compliance period for sale in California which exceeds the specifiedVOC content.

(c) *False Reporting of Information.*

(1) False reporting of any information contained in an application to request HERCs pursuant to section 94563, or in any supporting documentation or amendments to an application, shall constitute a single, separate violation of the requirements of this article for each day of the credit generation period for the HERCs.

(2) False reporting of any information contained in an application to use HERCs pursuant to section 94568, or in any supporting documentation or amendments to an application, shall constitute a single, separate violation of the requirements of this article for each day during the time period in which the HERCs are to be used.

(3) False reporting of any information submitted to satisfy the requirements of section 94571(b) for documented sales information during a delayed compliance period shall constitute a single, separate violation of the requirements of this article for each day of the delayed compliance period.

(d) *Failure to Meet Applicable Deadlines.* Any of the following actions shall each constitute a single, separate violation of the requirements of this article for each day after the applicable deadline until the requirement is satisfied:

(1) Failure to submit accurate documented sales for a delayed compliance period (or a portion of the period, if applicable) within 120 days after conclusion of this period, as specified in section 94571(b), or within the time schedule specified in the Executive Order approving the application to use HERCs.

(2) Failure to completely reconcile a negative balance for a HERC account within 180 days after the conclusion of the applicable delayed compliance period (or portion of the period, if applicable)

as specified in section 94571(d), or within the time schedule specified in the Executive Order approving the application to use HERCs.

(e) *Negative Balances in HERC Accounts at End of Delayed Compliance Period.* Except as provided in subsection (f) of this section, any overall negative balance that occurs in a HERC Account after the Executive Officer has made the correction specified in section 94571(c) for the difference between "Projected Excess Emissions" and "Actual Excess Emissions" at the end of a delayed compliance period (or portion of the period, if applicable) shall constitute a single, separate violation of the requirements of this article for each day of the delayed compliance period, or portion of the period.

(f) *Number of Violations Resulting from Negative Balances.* If a violation specified in subsection (e) of this section occurs, the responsible party may, pursuant to this subsection (f), establish a number of violations less than that set forth in subsection (e) as calculated according to the following equation:

$$\text{Number of Violations} = \text{Days}_{\text{Delayed}} - \text{Days}_{\text{Covered}}$$

where,

"$\text{Days}_{\text{Delayed}}$" means the number of days in the delayed compliance period (or portion of the period, if applicable)

"$\text{Days}_{\text{Covered}}$" means the number of days in the delayed compliance period (or portion of the period, if applicable) for which there are sufficient HERCs to offset excess emissions as calculated using the following equation:

$$\text{Days}_{\text{Covered}} =$$

$$(\text{HERCs}_{\text{Provided}} + \text{HERCs}_{\text{Correction}})(\text{Days}_{\text{Delayed}}/\text{Actual Excess Emissions})$$

where,

"$\text{HERCs}_{\text{Provided}}$" means the amount of HERCs, expressed as pounds, removed from the applicant's HERC Account upon approval of a HERC use application pursuant to section 94571(a);

"$\text{HERCs}_{\text{Correction}}$" means the amount of HERCs, expressed as pounds, removed from the applicant's HERC Account to correct for a difference in "Projected Excess Emissions" and "Actual Excess Emissions" pursuant to section 94571(c); and

"Actual Excess Emissions" means the amount of excess emissions, expressed as pounds, from a consumer product manufactured during a delayed compliance period (or portion of the period, if applicable) as calculated pursuant to section 94569 and reported by the responsible party pursuant to section 94571(b).

The responsible party may determine the number of violations pursuant to this subsection (f) only if it has provided all required information for the applicable delayed compliance period (or portion of the period, if applicable) as specified in the Executive Order approving the HERC use. By choosing this option, the responsible party waives any and all legal objections to the calculation of the number of violations pursuant to this subsection (f).

(g) *Assessment of Penalties.* In assessing the amount of penalties for any violation occurring pursuant to subsections (a)-(f) of this section, the circumstances identified in Health and Safety Code section 42403(b) shall be taken into consideration.

(h) *Statute of Limitations.* Any limitation of time applicable to actions brought pursuant to this article shall be deemed to accrue on the date(s) when the records establishing a violation are received by the Executive Officer.

(i) *Liability of Responsible Parties and HERC Account Holders.* A responsible party or HERC Account holder is fully liable for compliance with the requirements of this article, even if the responsible party or HERC account holder contracts with or otherwise relies on another person to carry out some or all of the requirements of this article.

NOTE: Authority cited: Sections 39600, 39601 and 41712, Health and Safety Code. Reference: Sections 39002, 39600, 40000, 41712, 42400-42403 and 42404.5, Health and Safety Code; and section 338(k), Code of Civil Procedure

History

1. New section filed 8-24-98; operative 8-24-98 pursuant to Government Code section 11343.4(d) (Register 98, No. 35).

§ 94574. Federal Enforceability.

For purposes of federal enforceability of this article, the United States Environmental Protection Agency (U.S. EPA) is not subject to approval determinations made by the Executive Officer under this article. Within 180 days of a request from a responsible party who has received approval of an application to use HERCs, a HERC use approval meeting the requirements of the Clean Air Act shall be submitted by the Executive Officer to the U.S. EPA for inclusion in the applicable implementation plan approved or promulgated by the

~~U.S. EPA pursuant to section 110 of the Clean Air Act, 42 U.S.C., section 7410. Prior to submitting a HERC use approval as a revision to the applicable implementation plan, the Executive Officer shall hold a public hearing on the revision. Notice of the time and place of the hearing shall be sent to the applicant by certified mail not less than 30 days prior to the hearing. Notice of the hearing shall also be submitted for publication in the California Regulatory Notice Register and sent to the U.S. EPA, every person who requests such notice, and any person or group of persons whom the Executive Officer believes may be interested in the application. Within 30 days of the hearing, the Executive Officer shall notify the applicant of the decision in writing. The decision may approve, disapprove, or modify a HERC use approval previously granted pursuant to section 94568.~~

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

History

1. New section filed 8-24-98; operative 8-24-98 pursuant to Government Code section 11343.4(d) (Register 98, No. 35).

~~§ 94575. Program Evaluation.~~

~~On an ongoing basis the Executive Officer shall evaluate the implementation of the Hairspray Credit Program, and track program results in terms of both actual emission reductions, and, to the extent practicable, cost savings relative to traditional regulatory programs. This program evaluation shall include an annual analysis of credit generation and use activities, and a description of any significant problems in the implementation of the program.~~

~~At least once every three years, the Executive Officer shall provide to the United States Environmental Protection Agency (U.S. EPA) a report on the program evaluation, including a comparison of credit generation and use activities for the previous three years, an assessment of the benefit to the environment which has resulted from the program, and a description of any significant problems that have occurred.~~

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

History

1. New section filed 8-24-98; operative 8-24-98 pursuant to Government Code section 11343.4(d) (Register 98, No. 35).

Appendix E

Proposed Amendments to the Tables of Maximum Incremental Reactivity (MIR) Values

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[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.]

Proposed Amendments to the Tables of Maximum Incremental Reactivity (MIR) Values

SUBCHAPTER 8.6. Maximum Incremental Reactivity

Article 1. Tables of Maximum Incremental Reactivity (MIR) Values

§ 94700. MIR Values for Compounds.

	Organic Compound	*MIR Value (July 18, 2001)*	*New MIR Value (October 2, 2010)*
*****			
	~~*Oxygenated Organics*~~		
~~619~~	~~carbon monoxide~~	~~0.06~~	~~0.056~~
~~620~~	~~formaldehyde~~	~~8.97~~	~~9.46~~
~~621~~	~~methanol~~	~~0.71~~	~~0.67~~
~~622~~	~~formic acid~~	~~0.08~~	~~0.07~~
~~623~~	~~ethylene oxide~~	~~0.04~~	~~0.04~~
~~624~~	~~acetaldehyde~~	~~6.84~~	~~6.54~~
~~625~~	~~ethanol~~	~~1.69~~	~~1.53~~
~~626~~	~~dimethyl ether~~	~~0.93~~	~~0.81~~
~~627~~	~~glyoxal~~	~~14.22~~	~~12.50~~
~~628~~	~~methyl formate~~	~~0.06~~	~~0.06~~
~~629~~	~~acetic acid~~	~~0.50~~	~~0.68~~
~~630~~	~~glycolaldehyde*~~	~~4.96~~	~~5.10~~
~~631~~	~~ethylene glycol~~	~~3.36~~	~~3.13~~
~~632~~	~~glycolic acid~~	~~2.67~~	~~2.38~~
~~633~~	~~peroxyacetic acid~~	~~12.62~~	~~0.54~~
~~634~~	~~acrolein~~	~~7.60~~	~~7.45~~
~~635~~	~~trimethylene oxide~~	~~5.22~~	~~4.56~~
~~636~~	~~propylene oxide~~	~~0.32~~	~~0.29~~
~~637~~	~~propionaldehyde~~	~~7.89~~	~~7.08~~
~~638~~	~~acetone~~	~~0.43~~	~~0.36~~
~~639~~	~~isopropyl alcohol~~	~~0.71~~	~~0.61~~
~~640~~	~~n-propyl alcohol~~	~~2.74~~	~~2.50~~
~~641~~	~~acrylic acid~~	~~11.66~~	~~11.38~~
~~642~~	~~methyl glyoxal~~	~~16.21~~	~~16.56~~
~~643~~	~~1,3-dioxolane~~	~~5.47~~	~~4.96~~
~~644~~	~~ethyl formate~~	~~0.52~~	~~0.48~~
~~645~~	~~methyl acetate~~	~~0.07~~	~~0.07~~
~~646~~	~~propionic acid~~	~~0.79~~	~~1.22~~

647	hydroxy acetone	3.08	3.23
648	propylene glycol	2.75	2.58
649	dimethoxy methane	1.04	0.94
650	2-methoxy ethanol	2.98	2.93
651	dimethyl carbonate; DMC	0.06	0.06
652	dihydroxy acetone	4.02	3.99
653	glycerol	3.27	3.15
654	furan	16.54	9.15
655	crotonaldehyde	10.07	9.39
656	methacrolein	6.23	6.01
657	cyclobutanone	0.68	0.62
658	methylvinyl ketone	8.73	9.65
659	tetrahydrofuran	4.95	4.31
660	1,2-epoxy butane	1.02	0.91
661	2-methyl propanal	5.87	5.25
662	butanal	6.74	5.97
663	C4 aldehydes	6.74	5.97
664	methyl ethyl ketone	1.49	1.48
665	isobutyl alcohol	2.24	2.51
666	n-butyl alcohol	3.34	2.88
667	sec-butyl alcohol	1.60	1.36
668	tert-butyl alcohol	0.45	0.41
669	diethyl ether	4.01	3.76
670	gamma-butyrolactone	1.15	0.96
671	methacrylic acid	18.78	18.50
672	methyl acrylate	12.24	11.48
673	vinyl acetate	3.26	3.20
674	hydroxyl-methacrolein	6.61	6.24
675	biacetyl; diacetyl; butanedione	20.73	20.09
676	1,4-dioxane	2.71	2.62
677	ethyl acetate	0.64	0.63
678	methyl propionate	0.71	0.66
679	n-propyl formate	0.93	0.78
680	isopropyl formate	0.42	0.37
681	isobutyric acid	1.22	1.20
682	butanoic acid	1.78	1.82
683	methoxy-acetone	2.14	2.03
684	1,3-butanediol*	3.21	3.36
685	1,2-butandiol	2.21	2.52
686	1,4-butanediol	3.22	2.72
687	2,3-butanediol*	4.23	4.38
688	1-methoxy-2-propanol	2.62	2.44
689	2-ethoxy-ethanol	3.78	3.71
690	2-methoxy-1-propanol	3.01	3.01
691	3-methoxy-1-propanol	4.01	3.84
692	propylene carbonate	0.25	0.28

693	methyl lactate	2.75	2.67
694	diethylene glycol	3.55	3.35
695	malic acid	7.51	6.94
696	2-methyl furan*	8.02	8.30
697	3-methyl furan*	6.64	6.90
698	cyclopentanone	1.43	1.15
699	C5 cyclic ketones	1.43	1.15
700	cyclopentanol	1.96	1.72
701	α-methyl tetrahydrofuran	4.62	3.97
702	tetrahydropyran	3.81	3.22
703	2-methyl-3-butene-2-ol	5.12	4.91
704	2,2-dimethylpropanal; pivaldehyde	5.40	4.89
705	3-methylbutanal; isovaleraldehyde	5.52	4.97
706	pentanal; valeraldehyde	5.76	5.08
707	C5 aldehydes	5.76	5.08
708	2-pentanone	3.07	2.81
709	3-pentanone	1.45	1.24
710	C5 ketones	3.07	2.81
711	methyl isopropyl ketone	1.64	1.65
712	2-pentanol	1.74	1.61
713	3-pentanol	1.73	1.63
714	pentyl alcohol	3.35	2.83
715	isoamyl alcohol; 3-methyl-1-butanol	2.73	3.16
716	2-methyl-1-butanol	2.60	2.40
717	ethyl isopropyl ether	3.86	3.74
718	methyl n-butyl ether	3.66	3.15
719	methyl tert-butyl ether; MTBE	0.78	0.73
720	ethyl acrylate	8.78	7.77
721	methyl methacrylate	15.84	15.61
722	glutaraldehyde	4.79	4.31
723	lumped C5+ unsaturated carbonyl species*	6.18	6.38
724	2,4-pentanedione	1.02	1.01
725	tetrahydro-2-furanmethanol; tetrahydrofurfuryl alcohol	3.54	3.31
726	ethyl propionate	0.79	0.77
727	isopropyl acetate	1.12	1.07
728	methyl butyrate	1.18	1.09
729	methyl isobutyrate	0.70	0.61
730	n-butyl formate	0.95	0.83
731	propyl acetate	0.87	0.78
732	3-methyl butanoic acid	4.26	4.23
733	2,2-dimethoxy-propane	0.52	0.48
734	1-ethoxy-2-propanol	3.25	3.09
735	2-propoxy-ethanol	3.52	3.30
736	3-ethoxy-1-propanol	4.24	4.09
737	3-methoxy-1-butanol	0.97	3.87
738	2-methoxyethyl acetate	1.18	1.15

739	ethyl lactate	2.71	2.48
740	methyl isopropyl carbonate	0.69	0.62
741	2-(2-methoxyethoxy) ethanol	2.90	2.66
742	pentaerythritol	2.42	2.17
743	phenol	1.82	2.76
744	2-ethyl furan*	6.85	7.09
745	2,5-dimethyl furan*	7.60	7.88
746	cyclohexanone	1.61	1.35
747	C6 cyclic ketones	1.61	1.35
748	mesityl oxide; 2-methyl-2-penten-4-one	17.37	6.51
749	cyclohexanol	2.25	1.95
750	hexanal	4.98	4.35
751	C6 aldehydes	4.98	4.35
752	4-methyl-2-pentanone	4.31	3.88
753	methyl n-butyl ketone	3.55	3.14
754	methyl tert-butyl ketone	0.78	0.65
755	C6 ketones	3.55	3.14
756	1-hexanol	2.74	2.69
757	2-hexanol	2.46	2.08
758	4-methyl-2-pentanol; methyl isobutyl carbinol	2.89	2.64
759	di-n-propyl ether	3.24	3.08
760	ethyl n-butyl ether	3.86	3.48
761	ethyl tert-butyl ether	2.11	2.01
762	methyl tert-amyl ether; TAME	2.14	1.69
763	diisopropyl ether	3.56	3.52
764	ethyl methacrylate*	12.15	12.47
765	ethyl butyrate	1.25	1.17
766	isobutyl acetate	0.67	0.62
767	methyl pivalate	0.39	0.35
768	n-butyl acetate	0.89	0.83
769	n-propyl propionate	0.93	0.84
770	sec-butyl acetate	1.43	1.32
771	tert-butyl acetate; tBAc	0.20	0.18
772	diacetone alcohol	0.68	0.60
773	methyl pentanoate; methyl valerate*	1.00	1.05
774	1,2-dihydroxyhexane	2.75	2.55
775	2-methyl-2,4-pentanediol	1.04	1.45
776	ethylene glycol diethyl ether; 1,2-diethoxyethane	2.84	2.95
777	acetal (1,1-diethoxyethane)	3.68	3.58
778	1-propoxy-2-propanol; propylene glycol n-propyl ether	2.86	2.68
779	2-butoxy-ethanol	2.90	2.90
780	3-methoxy-3-methyl-butanol	1.74	2.88
781	n-propoxy-propanol	3.84	3.77
782	hydroxypropyl acrylate	5.56	4.90
783	1-methoxy-2-propyl acetate	1.71	1.70

784	2-ethoxyethyl acetate	1.90	1.84
785	2-methoxy-1-propyl acetate	1.12	1.12
786	methoxypropanol acetate	1.97	1.86
787	2-(2-ethoxyethoxy) ethanol	3.19	3.26
788	dipropylene glycol isomer (1-[2-hydroxypropyl]-2-propanol)	2.48	2.31
789	dimethyl succinate	0.23	0.23
790	ethylene glycol diacetate	0.72	0.66
791	adipic acid; hexanedioic acid	3.37	3.08
792	triethylene glycol	3.41	3.25
793	benzaldehyde	0.00	0.00
794	C7 alkyl phenols	2.34	2.40
795	*m*-cresol	2.34	2.40
796	*p*-cresol	2.34	2.40
797	*o*-cresol	2.34	2.40
798	benzyl alcohol*	4.98	5.11
799	methoxybenzene; anisole*	6.49	6.66
800	C7 cyclic ketones	1.41	1.18
801	heptanal	4.23	3.69
802	C7 aldehydes	4.23	3.69
803	2-methyl-hexanal	3.97	3.54
804	2-heptanone	2.80	2.36
805	2-methyl-3-hexanone	1.79	1.53
806	di-isopropyl ketone	1.63	1.31
807	C7 ketones	2.80	2.36
808	5-methyl-2-hexanone	2.10	2.41
809	3-methyl-2-hexanone	2.81	2.55
810	1-heptanol	2.21	1.84
811	dimethylpentanol; 2,3-dimethyl-1-pentanol	2.51	2.23
812	4,4-diethyl-3-oxahexane; *tert*-amyl ethyl ether; TAEE	2.03	1.95
813	n-butyl acrylate	5.52	5.02
814	isobutyl acrylate	5.05	4.72
815	butyl propionate	0.89	0.84
816	amyl acetate; n-pentyl acetate	0.96	0.84
817	n-propyl butyrate	1.17	1.05
818	isoamyl acetate; 3-methyl-butyl acetate	1.18	1.09
819	2-methyl-1-butyl acetate	1.17	1.08
820	methyl hexanoate*	0.96	1.02
821	1-tert-butoxy-2-propanol	1.71	1.61
822	2-tert-butoxy-1-propanol	1.81	1.81
823	n-butoxy-2-propanol; propylene glycol n-butyl ether	2.70	2.72
824	ethyl 3-ethoxy propionate	3.61	3.58
825	diisopropyl carbonate	1.04	0.98
826	2-(2-propoxyethoxy) ethanol	3.00	2.85
827	dipropylene glycol methyl ether; 1-methoxy-2-(2-hydroxypropoxy) propane	2.21	1.98

828	dipropylene glycol methyl ether; 2-(2-methoxypropoxy)-1-propanol	2.70	2.58
829	1,2-propylene glycol diacetate	0.94	0.61
830	dimethyl glutarate	0.51	0.42
831	2-[2-(2-methoxyethoxy) ethoxy] ethanol	2.62	2.58
832	tolualdehyde	0.00	0.00
833	4-vinyl phenol*	1.43	1.50
834	2,4-dimethyl phenol*	2.07	2.12
835	2,5-dimethyl phenol*	2.07	2.12
836	3,4-dimethyl phenol*	2.07	2.12
837	2,3-dimethyl phenol*	2.07	2.12
838	2,6-dimethyl phenol*	2.07	2.12
839	C8 alkyl phenols	2.07	2.12
840	β-phenethyl alcohol; 2-phenyl ethyl alcohol*	4.41	4.53
841	C8 cyclic ketones	1.25	1.05
842	2-butyl tetrahydrofuran	2.53	2.13
843	octanal	3.65	3.16
844	C8 aldehydes	3.65	3.16
845	2-octanone	1.66	1.40
846	C8 ketones	1.66	1.40
847	1-octanol	2.01	1.43
848	2-ethyl-1-hexanol	2.20	2.00
849	2-octanol	2.16	1.97
850	3-octanol	2.57	2.28
851	4-octanol	3.07	2.23
852	5-methyl-1-heptanol	1.95	1.79
853	di-isobutyl ether	1.29	1.20
854	di-n-butyl ether	3.17	2.84
855	2-phenoxyethanol; ethylene glycol phenyl ether	3.61	4.49
856	butyl methacrylate	9.09	8.70
857	isobutyl methacrylate	8.99	8.62
858	hexyl acetates*	0.74	0.80
859	2,3-dimethylbutyl acetate	0.84	0.75
860	2-methylpentyl acetate	1.11	0.98
861	3-methylpentyl acetate	1.31	1.07
862	4-methylpentyl acetate	0.92	0.82
863	isobutyl isobutyrate	0.61	0.60
864	n-butyl butyrate	1.12	1.08
865	n-hexyl acetate	0.87	0.69
866	methyl amyl acetate; 4-methyl-2-pentanol acetate	1.46	1.35
867	n-pentyl propionate	0.79	0.71
868	2-ethyl hexanoic acid	3.49	3.32
869	methyl heptanoate*	0.76	0.82
870	2-ethyl-1,3-hexanediol	2.62	2.05
871	2-n-hexyloxyethanol	2.45	2.09
872	2,2,4-trimethyl-1,3-pentanediol	1.74	1.54

873	phthalic anhydride*	2.50	2.58
874	methylparaben; 4-hydroxybenzoic acid, methyl ester*	1.66	1.71
875	2-butoxyethyl acetate	1.67	1.62
876	2-methoxy-1-(2-methoxy-1-methylethoxy)-propane; dipropylene glycol dimethyl ether	2.09	2.02
877	2-(2-butoxyethoxy)-ethanol	2.87	2.39
878	dipropylene glycol ethyl ether	2.75	2.72
879	dimethyl adipate	1.95	1.80
880	2-(2-ethoxyethoxy) ethyl acetate	1.50	1.48
881	2-[2-(2-ethoxyethoxy) ethoxy] ethanol	2.66	2.46
882	tetraethylene glycol	2.84	2.51
883	cinnamic aldehyde*	4.68	4.84
884	cinnamic alcohol*	0.84	0.89
885	2,3,5-trimethyl phenol*	1.86	1.90
886	2,3,6-trimethyl phenol*	1.86	1.90
887	C9 alkyl phenols	1.86	1.90
888	isophorone; 3,5,5-trimethyl-2-cyclohexenone	10.58	4.63
889	C9 cyclic ketones	1.13	0.94
890	2-propyl cyclohexanone	1.71	1.54
891	4-propyl cyclohexanone	2.08	1.85
892	1-nonene-4-one	3.39	3.14
893	trimethyl cyclohexanol	2.17	1.86
894	2-nonanone	1.30	1.08
895	di-isobutyl ketone; 2,6-dimethyl-4-heptanone	2.94	2.68
896	C9 ketones	1.30	1.08
897	dimethyl heptanol; 2,6-dimethyl-2-heptanol	1.07	0.94
898	2,6-dimethyl-4-heptanol	2.37	2.09
899	1-phenoxy-2-propanol	1.73	1.60
900	2,4-dimethylpentyl acetate	0.98	0.92
901	2-methylhexyl acetate	0.89	0.69
902	3-ethylpentyl acetate	1.24	1.10
903	3-methylhexyl acetate	1.01	0.89
904	4-methylhexyl acetate	0.91	0.82
905	5-methylhexyl acetate	0.79	0.59
906	isoamyl isobutyrate	0.89	0.82
907	n-heptyl acetate	0.73	0.65
908	methyl octanoate*	0.64	0.69
909	1-(butoxyethoxy)-2-propanol	2.08	1.93
910	dipropylene glycol n-propyl ether isomer #1	2.13	2.00
911	dipropylene glycol methyl ether acetate isomer #1	1.41	1.38
912	dipropylene glycol methyl ether acetate isomer #2	1.58	1.52
913	dipropylene glycol methyl ether acetate isomers	1.49	1.45
914	2-[2-(2-propoxyethoxy) ethoxy] ethanol	2.46	2.17
915	tripropylene glycol*	2.07	2.18
916	2,5,8,11-tetraoxatridecan-13-ol	2.15	1.97
917	glyceryl triacetate	0.57	0.55

918	anethol; *p*-propenyl-anisole*	0.76	0.80
919	C10 alkyl phenols	1.68	1.73
920	camphor*	0.45	0.49
921	α-terpineol	5.16	4.63
922	citronellol; 3,7-dimethyl-6-octen-1-ol*	5.63	5.79
923	hydroxycitronella*; hydroxycitronellal	2.50	2.61
924	C10 cyclic ketones	1.02	0.86
925	menthol	1.70	1.43
926	linalool*	5.28	5.43
927	2-decanone	1.06	0.90
928	C10 ketones	1.06	0.90
929	8-methyl-1-nonanol; isodecyl alcohol	1.23	1.06
930	1-decanol	1.22	1.06
931	3,7-dimethyl-1-octanol	1.42	1.20
932	di-n-pentyl ether	2.64	2.15
933	1,2-diacetyl benzene*	2.17	2.25
934	2,4-dimethylhexyl acetate	0.93	0.76
935	2-ethyl-hexyl acetate	0.79	0.66
936	3,4-dimethyl-hexyl acetate	1.16	0.87
937	3,5-dimethyl-hexyl acetate	1.09	0.99
938	3-ethyl-hexyl acetate	1.03	0.91
939	3-methyl-heptyl acetate	0.76	0.67
940	4,5-dimethyl-hexyl acetate	0.86	0.68
941	4-methyl-heptyl acetate	0.72	0.66
942	5-methyl-heptyl acetate	0.73	0.61
943	n-octyl acetate	0.64	0.57
944	geraniol*	4.97	5.12
945	methyl nonanoate*	0.54	0.59
946	2-(2-ethylhexyloxy) ethanol	1.71	1.55
947	propylparaben*; 4-hydroxybenzoic acid, propyl ester	1.40	1.44
948	2-(2-hexyloxyethoxy) ethanol	2.03	1.84
949	glycol ether DPnB; dipropylene glycol n-butyl ether; 1-(2-butoxy-1-methylethoxy)-2-propanol)	1.96	1.83
950	2-(2-butoxyethoxy) ethyl acetate	1.38	1.38
951	2-[2-(2-butoxyethoxy) ethoxy] ethanol	2.24	1.96
952	tripropylene glycol monomethyl ether	1.90	1.92
953	C11 alkyl phenols	1.54	1.58
954	2-ethyl hexyl acrylate	2.42	2.52
955	2,3,5-trimethyl-hexyl acetate	0.86	0.85
956	2,3-dimethyl-heptyl acetate	0.84	0.71
957	2,4-dimethyl-heptyl acetate	0.88	0.68
958	2,5-dimethyl-heptyl acetate	0.86	0.78
959	2-methyloctyl acetate	0.63	0.52
960	3,5-dimethyl-heptyl acetate	1.01	0.81
961	3,6-dimethyl-heptyl acetate	0.87	0.78
962	3-ethyl heptyl acetate	0.71	0.63

963	4,5-dimethyl-heptyl acetate	0.96	0.69
964	4,6-dimethyl-heptyl acetate	0.83	0.78
965	4-methyloctyl acetate	0.68	0.61
966	5-methyloctyl acetate	0.67	0.56
967	n-nonyl acetate	0.58	0.52
968	methyl decanoate*	0.48	0.53
969	C12 alkyl phenols	1.42	1.46
970	2,6,8-trimethyl-4-nonanone; isobutyl heptyl ketone	1.86	1.66
971	trimethylnonanol, threo+erythro; 2,6,8-trimethyl-4-nonanol	1.55	1.33
972	3,6-dimethyl-octyl acetate	0.88	0.79
973	3-isopropyl-heptyl acetate	0.71	0.54
974	4,6-dimethyl-octyl acetate	0.85	0.76
975	methyl undecanoate*	0.45	0.50
976	1-hydroxy-2,2,4-trimethylpentyl-3-isobutyrate	0.92	0.89
977	3-hydroxy-2,2,4-trimethylpentyl-1-isobutyrate	0.88	0.77
978	2,2,4-trimethyl-1,3-pentanediol monoisobutyrate and isomers (texanol®)	0.89	0.81
979	substituted C7 ester (C12)	0.92	0.81
980	substituted C9 ester (C12)	0.89	0.81
981	diethylene glycol mono-(2-ethylhexyl) ether*	1.46	1.56
982	diethyl phthalate*	1.56	1.62
983	dimethyl sebacate	0.48	0.43
984	diisopropyl adipate	1.42	1.28
985	3,6,9,12-tetraoxa-hexadecan-1-ol	1.90	1.72
986	triethyl citrate*	0.66	0.70
987	3,5,7-trimethyl-octyl acetate	0.83	0.66
988	3-ethyl-6-methyl-octyl acetate	0.80	0.63
989	4,7-dimethyl-nonyl acetate	0.64	0.50
990	methyl dodecanoate; methyl laurate	0.53	0.47
991	tripropylene glycol n-butyl ether*	1.55	1.64
992	amyl cinnamal*	3.06	3.16
993	isobornyl methacrylate	8.64	5.51
994	2,3,5,7-tetramethyl-octyl acetate	0.74	0.62
995	3,5,7-trimethyl-nonyl acetate	0.76	0.62
996	3,6,8-trimethyl-nonyl acetate	0.72	0.59
997	methyl tridecanoate*	0.40	0.45
998	hexyl cinnamal*	2.86	2.96
999	2,6-di-tert-butyl-*p*-cresol *	1.15	1.18
1000	2-ethyl-hexyl benzoate*	0.93	0.98
1001	2,4,6,8-tetramethyl-nonyl acetate	0.63	0.51
1002	3-ethyl-6,7-dimethyl-nonyl acetate	0.76	0.61
1003	4,7,9-trimethyl-decyl acetate	0.55	0.42
1004	methyl myristate; methyl tetradecanoate	0.47	0.43
1005	methyl *cis*-9-pentadecenoate*	1.63	1.80
1006	methyl *cis*-9-hexadecenoate; methyl palmitoleate*	1.63	1.70

~~1007~~	~~methyl pentadecanoate*~~	~~0.42~~	~~0.47~~
~~1008~~	~~2,3,5,6,8-pentamethyl-nonyl acetate~~	~~0.74~~	~~0.65~~
~~1009~~	~~3,5,7,9-tetramethyl-decyl acetate~~	~~0.58~~	~~0.48~~
~~1010~~	~~5-ethyl-3,6,8-trimethyl-nonyl acetate~~	~~0.77~~	~~0.77~~
~~1011~~	~~dibutyl phthalate*~~	~~1.20~~	~~1.25~~
~~1012~~	~~2,2,4-trimethyl-1,3-pentanediol diisobutyrate*~~	~~0.34~~	~~0.38~~
~~1013~~	~~methyl hexadecanoate; methyl palmitate*~~	~~0.40~~	~~0.44~~
~~1014~~	~~methyl *cis*-9-heptadecenoate*~~	~~1.56~~	~~1.62~~
~~1015~~	~~methyl heptadecanoate; methyl margarate*~~	~~0.38~~	~~0.42~~
~~1016~~	~~methyl linolenate; methyl *cis*,*cis*,*cis*-9,12,15-octadecatrienoate*~~	~~1.77~~	~~2.32~~
~~1017~~	~~methyl linoleate; methyl *cis*,*cis*-9,12-octadecadienoate*~~	~~1.48~~	~~1.84~~
~~1018~~	~~methyl *cis*-9-octadecenoate; methyl oleate*~~	~~1.48~~	~~1.54~~
~~1019~~	~~methyl octadecanoate; methyl stearate*~~	~~0.36~~	~~0.40~~
	Oxygenated Organics		
	Alcohols		
619	methanol	0.71	0.67
620	ethanol	1.69	1.53
621	isopropyl alcohol	0.71	0.61
622	n-propyl alcohol	2.74	2.50
623	isobutyl alcohol	2.24	2.51
624	n-butyl alcohol	3.34	2.88
625	sec-butyl alcohol	1.60	1.36
626	tert-butyl alcohol	0.45	0.41
627	cyclopentanol	1.96	1.72
628	2-pentanol	1.74	1.61
629	3-pentanol	1.73	1.63
630	n-pentyl alcohol	3.35	2.83
631	isoamyl alcohol; 3-methyl-1-butanol	2.73	3.16
632	2-methyl-1-butanol	2.60	2.40
633	cyclohexanol	2.25	1.95
634	1-hexanol	2.74	2.69
635	2-hexanol	2.46	2.08
636	4-methyl-2-pentanol; methyl isobutyl carbinol	2.89	2.64
637	1-heptanol	2.21	1.84
638	dimethylpentanol; 2,3-dimethyl-1-pentanol	2.51	2.23
639	1-octanol	2.01	1.43
640	2-ethyl-1-hexanol	2.20	2.00
641	2-octanol	2.16	1.97
642	3-octanol	2.57	2.28
643	4-octanol	3.07	2.23
644	5-methyl-1-heptanol	1.95	1.79
645	trimethyl cyclohexanol	2.17	1.86
646	dimethylheptanol; 2,6-dimethyl-2-heptanol	1.07	0.94
647	2,6-dimethyl-4-heptanol	2.37	2.09

648	menthol	1.70	1.43
649	8-methyl-1-nonanol; isodecyl alcohol	1.23	1.06
650	1-decanol	1.22	1.06
651	3,7-dimethyl-1-octanol	1.42	1.20
652	trimethylnonanol,threo +erythro; 2,6,8-trimethyl-4-nonanol	1.55	1.33
	Aldehydes		
653	formaldehyde	8.97	9.46
654	acetaldehyde	6.84	6.54
655	propionaldehyde	7.89	7.08
656	2-methyl propanal	5.87	5.25
657	butanal	6.74	5.97
658	C4 aldehydes	6.74	5.97
659	2,2-dimethylpropanal; pivaldehyde	5.40	4.89
660	3-methylbutanal; isovaleraldehyde	5.52	4.97
661	pentanal; valeraldehyde	5.76	5.08
662	C5 aldehydes	5.76	5.08
663	glutaraldehyde	4.79	4.31
664	hexanal	4.98	4.35
665	C6 aldehydes	4.98	4.35
666	heptanal	4.23	3.69
667	C7 aldehydes	4.23	3.69
668	2-methyl-hexanal	3.97	3.54
669	octanal	3.65	3.16
670	C8 aldehydes	3.65	3.16
671	glyoxal	14.2	12.5
672	methyl glyoxal	16.2	16.5
673	acrolein	7.60	7.45
674	crotonaldehyde	10.0	9.39
675	methacrolein	6.23	6.01
676	hydroxyl-methacrolein	6.61	6.24
677	benzaldehyde	0.00	0.00
678	tolualdehyde	0.00	0.00
	Carboxylic Acids and Oxides		
679	carbon monoxide	0.06	0.05
680	ethylene oxide	0.04	0.03
681	propylene oxide	0.32	0.29
682	1,2-epoxy butane	1.02	0.91
683	formic acid	0.08	0.06
684	acetic acid	0.50	0.68
685	glycolic acid	2.67	2.38
686	peroxyacetic acid	12.6	0.54
687	acrylic acid	11.6	11.3
688	propionic acid	0.79	1.22
689	methacrylic acid	18.7	18.5
690	isobutyric acid	1.22	1.20

691	butanoic acid	1.78	1.82
692	malic acid	7.51	6.94
693	3-methyl butanoic acid	4.26	4.23
694	adipic acid; hexanedioic acid	3.37	3.08
695	2-ethyl hexanoic acid	3.49	3.32
696	methyl acrylate	12.2	11.4
697	vinyl acetate	3.26	3.20
698	2-methyl-3-butene-2-ol	5.12	4.91
699	ethyl acrylate	8.78	7.77
700	methyl methacrylate	15.8	15.6
701	ethyl methacrylate*	12.1	12.4
702	hydroxypropyl acrylate	5.56	4.90
703	n-butyl acrylate	5.52	5.02
704	isobutyl acrylate	5.05	4.72
705	butyl methacrylate	9.09	8.70
706	isobutyl methacrylate	8.99	8.62
707	α-terpineol	5.16	4.63
708	2-ethyl-hexyl acrylate	2.42	2.52
709	isobornyl methacrylate	8.64	5.51
710	furan	16.5	9.15
711	2-methyl furan*	8.02	8.30
712	3-methyl furan*	6.64	6.90
713	2-ethyl furan*	6.85	7.09
714	2,5-dimethyl furan*	7.60	7.88
	Esters of Carboxylic Acids		
715	methyl formate	0.06	0.06
716	ethyl formate	0.52	0.48
717	methyl acetate	0.07	0.07
718	gamma-butyrolactone	1.15	0.96
719	ethyl acetate	0.64	0.63
720	methyl propionate	0.71	0.66
721	n-propyl formate	0.93	0.78
722	isopropyl formate	0.42	0.37
723	ethyl propionate	0.79	0.77
724	isopropyl acetate	1.12	1.07
725	methyl butyrate	1.18	1.09
726	methyl isobutyrate	0.70	0.61
727	n-butyl formate	0.95	0.83
728	propyl acetate	0.87	0.78
729	ethyl butyrate	1.25	1.17
730	isobutyl acetate	0.67	0.62
731	methyl pivalate	0.39	0.35
732	n-butyl acetate	0.89	0.83
733	n-propyl propionate	0.93	0.84
734	sec-butyl acetate	1.43	1.32
735	tert-butyl acetate; tBAc	0.20	0.18

736	methyl pentanoate; methyl valerate*	1.00	1.05
737	butyl propionate	0.89	0.84
738	amyl acetate; n-pentyl acetate	0.96	0.84
739	n-propyl butyrate	1.17	1.05
740	isoamyl acetate; 3-methyl-butyl acetate	1.18	1.09
741	2-methyl-1-butyl acetate	1.17	1.08
742	methyl hexanoate*	0.96	1.02
743	ethyl 3-ethoxy propionate	3.61	3.58
744	hexyl acetates*	0.74	0.80
745	2,3-dimethylbutyl acetate	0.84	0.75
746	2-methylpentyl acetate	1.11	0.98
747	3-methylpentyl acetate	1.31	1.07
748	4-methylpentyl acetate	0.92	0.82
749	isobutyl isobutyrate	0.61	0.60
750	n-butyl butyrate	1.12	1.08
751	n-hexyl acetate	0.87	0.69
752	methyl amyl acetate; 4-methyl-2-pentanol acetate	1.46	1.35
753	n-pentyl propionate	0.79	0.71
754	methyl heptanoate*	0.76	0.82
755	2,4-dimethylpentyl acetate	0.98	0.92
756	2-methylhexyl acetate	0.89	0.69
757	3-ethylpentyl acetate	1.24	1.10
758	3-methylhexyl acetate	1.01	0.89
759	4-methylhexyl acetate	0.91	0.82
760	5-methylhexyl acetate	0.79	0.59
761	isoamyl isobutyrate	0.89	0.82
762	n-heptyl acetate	0.73	0.65
763	methyl octanoate*	0.64	0.69
764	2,4-dimethylhexyl acetate	0.93	0.76
765	2-ethyl-hexyl acetate	0.79	0.66
766	3,4-dimethyl-hexyl acetate	1.16	0.87
767	3,5-dimethyl-hexyl acetate	1.09	0.99
768	3-ethyl-hexyl acetate	1.03	0.91
769	3-methyl-heptyl acetate	0.76	0.67
770	4,5-dimethyl-hexyl acetate	0.86	0.68
771	4-methyl-heptyl acetate	0.72	0.66
772	5-methyl-heptyl acetate	0.73	0.61
773	n-octyl acetate	0.64	0.57
774	methyl nonanoate*	0.54	0.59
775	2,3,5-trimethyl-hexyl acetate	0.86	0.85
776	2,3-dimethyl-heptyl acetate	0.84	0.71
777	2,4-dimethyl-heptyl acetate	0.88	0.68
778	2,5-dimethyl-heptyl acetate	0.86	0.78
779	2-methyloctyl acetate	0.63	0.52
780	3,5-dimethyl-heptyl acetate	1.01	0.81
781	3,6-dimethyl-heptyl acetate	0.87	0.78

782	3-ethyl-heptyl acetate	0.71	0.63
783	4,5-dimethyl-heptyl acetate	0.96	0.69
784	4,6-dimethyl-heptyl acetate	0.83	0.78
785	4-methyloctyl acetate	0.68	0.61
786	5-methyloctyl acetate	0.67	0.56
787	n-nonyl acetate	0.58	0.52
788	methyl decanoate*	0.48	0.53
789	3,6-dimethyl-octyl acetate	0.88	0.79
790	3-isopropyl-heptyl acetate	0.71	0.54
791	4,6-dimethyl-octyl acetate	0.85	0.76
792	methyl undecanoate*	0.45	0.50
793	3,5,7-trimethyl-octyl acetate	0.83	0.66
794	3-ethyl-6-methyl-octyl acetate	0.80	0.63
795	4,7-dimethyl-nonyl acetate	0.64	0.50
796	methyl dodecanoate; methyl laurate	0.53	0.47
797	2,3,5,7-tetramethyl-octyl acetate	0.74	0.62
798	3,5,7-trimethyl-nonyl acetate	0.76	0.62
799	3,6,8-trimethyl-nonyl acetate	0.72	0.59
800	methyl tridecanoate*	0.40	0.45
801	2,4,6,8-tetramethyl-nonyl acetate	0.63	0.51
802	3-ethyl-6,7-dimethyl-nonyl acetate	0.76	0.61
803	4,7,9-trimethyl-decyl acetate	0.55	0.42
804	methyl myristate; methyl tetradecanoate	0.47	0.43
805	methyl cis-9-pentadecenoate*	1.63	1.80
806	methyl cis-9-hexadecenoate; methyl palmitoleate*	1.63	1.70
807	methyl pentadecanoate*	0.42	0.47
808	2,3,5,6,8-pentamethyl-nonyl acetate	0.74	0.65
809	3,5,7,9-tetramethyl-decyl acetate	0.58	0.48
810	5-ethyl-3,6,8-trimethyl-nonyl acetate	0.77	0.77
811	dimethyl carbonate; DMC	0.06	0.06
812	propylene carbonate	0.25	0.28
813	methyl lactate	2.75	2.67
814	2-methoxyethyl acetate	1.18	1.15
815	ethyl lactate	2.71	2.48
816	methyl isopropyl carbonate	0.69	0.62
817	1-methoxy-2-propyl acetate	1.71	1.70
818	2-ethoxyethyl acetate	1.90	1.84
819	2-methyoxy-1-propyl acetate	1.12	1.12
820	methoxypropanol acetate	1.97	1.86
821	dimethyl succinate	0.23	0.23
822	ethylene glycol diacetate	0.72	0.66
823	1,2-propylene glycol diacetate	0.94	0.61
824	diisopropyl carbonate	1.04	0.98
825	dimethyl glutarate	0.51	0.42
826	2-butoxyethyl acetate	1.67	1.62
827	dimethyl adipate	1.95	1.80

828	2-(2-ethoxyethoxy) ethyl acetate	1.50	1.48
829	dipropylene glycol n-propyl ether isomer #1	2.13	2.00
830	dipropylene glycol methyl ether acetate isomer #1	1.41	1.38
831	dipropylene glycol methyl ether acetate isomer #2	1.58	1.52
832	dipropylene glycol methyl ether acetate isomers	1.49	1.45
833	glyceryl triacetate	0.57	0.55
834	2-(2-butoxyethoxy) ethyl acetate	1.38	1.38
835	substituted C7 ester (C12)	0.92	0.81
836	1-hydroxy-2,2,4-trimethylpentyl-3-isobutyrate	0.92	0.89
837	3-hydroxy-2,2,4-trimethylpentyl-1-isobutyrate	0.88	0.77
838	2,2,4-trimethyl-1,3-pentanediol monoisobutyrate and isomers (texanol®)	0.89	0.81
839	substituted C9 ester (C12)	0.89	0.81
840	dimethyl sebacate	0.48	0.43
841	diisopropyl adipate	1.42	1.28
	Glycols, Ethers, and Glycol Ethers		
842	dimethyl ether	0.93	0.81
843	ethylene glycol	3.36	3.13
844	propylene glycol	2.75	2.58
845	dimethoxy methane	1.04	0.94
846	glycerol	3.27	3.15
847	1,3-butanediol*	3.21	3.36
848	1,2-butanediol	2.21	2.52
849	1,4-butanediol	3.22	2.72
850	2,3-butanediol*	4.23	4.38
851	pentaerythritol	2.42	2.17
852	1,2-dihydroxyhexane	2.75	2.55
853	2-methyl-2,4-pentanediol	1.04	1.45
854	2-ethyl-1,3-hexanediol	2.62	2.05
855	trimethylene oxide	5.22	4.56
856	1,3-dioxolane	5.47	4.96
857	2-methoxy ethanol	2.98	2.93
858	tetrahydrofuran	4.95	4.31
859	diethyl ether	4.01	3.76
860	1,4-dioxane	2.71	2.62
861	1-methoxy-2-propanol	2.62	2.44
862	2-ethoxy-ethanol	3.78	3.71
863	2-methoxy-1-propanol	3.01	3.01
864	3-methoxy-1-propanol	4.01	3.84
865	diethylene glycol	3.55	3.35
866	α-methyl tetrahydrofuran	4.62	3.97
867	tetrahydropyran	3.81	3.22
868	ethyl isopropyl ether	3.86	3.74
869	methyl n-butyl ether	3.66	3.15
870	methyl t-butyl ether	0.78	0.73
871	tetrahydro-2-furanmethanol; tetrahydrofurfuryl alcohol	3.54	3.31

872	2,2-dimethoxy-propane	0.52	0.48
873	1-ethoxy-2-propanol	3.25	3.09
874	2-propoxy-ethanol	3.52	3.30
875	3-ethoxy-1-propanol	4.24	4.09
876	3-methoxy-1-butanol	0.97	3.87
877	2-(2-methoxyethoxy) ethanol	2.90	2.66
878	di-n-propyl ether	3.24	3.08
879	ethyl n-butyl ether	3.86	3.48
880	ethyl tert-butyl ether	2.11	2.01
881	methyl tert-amyl ether; TAME	2.14	1.69
882	diisopropyl ether	3.56	3.52
883	ethylene glycol diethyl ether; 1,2-diethoxyethane	2.84	2.95
884	acetal (1,1-diethoxyethane)	3.68	3.58
885	1-propoxy-2-propanol; propylene glycol n-propyl ether	2.86	2.68
886	2-butoxy-ethanol	2.90	2.90
887	3-methoxy-3-methyl-butanol	1.74	2.88
888	n-propoxy-propanol	3.84	3.77
889	2-(2-ethoxyethoxy) ethanol	3.19	3.26
890	dipropylene glycol isomer (1-[2-hydroxypropyl]-2-propanol)	2.48	2.31
891	triethylene glycol	3.41	3.25
892	4,4-diethyl-3-oxahexane; tert-amyl ethyl ether; TAEE	2.03	1.95
893	1-tert-butoxy-2-propanol	1.71	1.61
894	2-tert-butoxy-1-propanol	1.81	1.81
895	n-butoxy-2-propanol; propylene glycol n-butyl ether	2.70	2.72
896	2-(2-propoxyethoxy) ethanol	3.00	2.85
897	dipropylene glycol methyl ether; 1-methoxy-2-(2-hydroxypropoxy)-propane	2.21	1.98
898	dipropylene glycol methyl ether; 2-(2-methoxypropoxy)-1-propanol	2.70	2.58
899	2-[2-(2-methoxyethoxy) ethoxy] ethanol	2.62	2.58
900	2-butyl tetrahydrofuran	2.53	2.13
901	di-isobutyl ether	1.29	1.20
902	di-n-butyl ether	3.17	2.84
903	2-n-hexyloxyethanol	2.45	2.09
904	2,2,4-trimethyl-1,3-pentanediol	1.74	1.54
905	2-methoxy-1-(2-methoxy-1-methylethoxy)-propane; dipropylene glycol dimethyl ether	2.09	2.02
906	2-(2-butoxyethoxy)-ethanol	2.87	2.39
907	dipropylene glycol ethyl ether	2.75	2.72
908	2-[2-(2-ethoxyethoxy) ethoxy] ethanol	2.66	2.46
909	tetraethylene glycol	2.84	2.51
910	2-(2-ethylhexyloxy) ethanol	1.71	1.55
911	1-(butoxyethoxy)-2-propanol	2.08	1.93
912	2-[2-(2-propoxyethoxy) ethoxy] ethanol	2.46	2.17
913	tripropylene glycol*	2.07	2.18

914	2,5,8,11-tetraoxatridecan-13-ol	2.15	1.97
915	di-n-pentyl ether	2.64	2.15
916	2-(2-hexyloxyethoxy) ethanol	2.03	1.84
917	glycol ether DPnB; dipropylene glycol n-butyl ether; 1-(2-butoxy-1-methylethoxy)-2-propanol)	1.96	1.83
918	2-[2-(2-butoxyethoxy) ethoxy] ethanol	2.24	1.96
919	tripropylene glycol monomethyl ether	1.90	1.92
920	diethylene glycol mono-(2-ethylhexyl) ether*	1.46	1.56
921	tripropylene glycol n-butyl ether*	1.55	1.64
	Ketones		
922	acetone	0.43	0.36
923	cyclobutanone	0.68	0.62
924	methyl ethyl ketone	1.49	1.48
925	cyclopentanone	1.43	1.15
926	C5 cyclic ketones	1.43	1.15
927	2-pentanone	3.07	2.81
928	3-pentanone	1.45	1.24
929	C5 ketones	3.07	2.81
930	methyl isopropyl ketone	1.64	1.65
931	2,4-pentanedione	1.02	1.01
932	cyclohexanone	1.61	1.35
933	C6 cyclic ketones	1.61	1.35
934	4-methyl-2-pentanone; methyl isobutyl ketone	4.31	3.88
935	methyl n-butyl ketone	3.55	3.14
936	methyl tert-butyl ketone	0.78	0.65
937	C6 ketones	3.55	3.14
938	C7 cyclic ketones	1.41	1.18
939	2-heptanone	2.80	2.36
940	2-methyl-3-hexanone	1.79	1.53
941	di-isopropyl ketone	1.63	1.31
942	C7 ketones	2.80	2.36
943	5-methyl-2-hexanone	2.10	2.41
944	3-methyl-2-hexanone	2.81	2.55
945	C8 cyclic ketones	1.25	1.05
946	2-octanone	1.66	1.40
947	C8 ketones	1.66	1.40
948	C9 cyclic ketones	1.13	0.94
949	2-propyl cyclohexanone	1.71	1.54
950	4-propyl cyclohexanone	2.08	1.85
951	2-nonanone	1.30	1.08
952	di-isobutyl ketone; 2,6-dimethyl-4-heptanone	2.94	2.68
953	C9 ketones	1.30	1.08
954	C10 cyclic ketones	1.02	0.86
955	2-decanone	1.06	0.90
956	C10 ketones	1.06	0.90
957	2,6,8-trimethyl-4-nonanone; isobutyl heptyl ketone	1.86	1.66

958	biacetyl; diacetyl; butanedione	20.7	20.0
959	methylvinyl ketone	8.73	9.65
960	mesityl oxide; 2-methyl-2-penten-4-one	17.3	6.51
961	isophorone; 3,5,5-trimethyl-2-cyclohexenone	10.5	4.63
962	1-nonene-4-one	3.39	3.14
963	hydroxy acetone	3.08	3.23
964	dihydroxy acetone	4.02	3.99
965	methoxy-acetone	2.14	2.03
966	diacetone alcohol	0.68	0.60
	Phenols		
967	phenol	1.82	2.76
968	C7 alkyl phenols	2.34	2.40
969	m-cresol	2.34	2.40
970	p-cresol	2.34	2.40
971	o-cresol	2.34	2.40
972	4-vinyl phenol*	1.43	1.50
973	2,4-dimethyl phenol*	2.07	2.12
974	2,5-dimethyl phenol*	2.07	2.12
975	3,4-dimethyl phenol*	2.07	2.12
976	2,3-dimethyl phenol*	2.07	2.12
977	2,6-dimethyl phenol*	2.07	2.12
978	C8 alkyl phenols	2.07	2.12
979	2,3,5-trimethyl phenol*	1.86	1.90
980	2,3,6-trimethyl phenol*	1.86	1.90
981	C9 alkyl phenols	1.86	1.90
982	C10 alkyl phenols	1.68	1.73
983	C11 alkyl phenols	1.54	1.58
984	C12 alkyl phenols	1.42	1.46
985	2-phenoxyethanol; ethylene glycol phenyl ether	3.61	4.49
986	1-phenoxy-2-propanol	1.73	1.60
987	2,6-di-tert-butyl-p-cresol*	1.15	1.18
	Other Oxygenated Organics		
988	glycolaldehyde*	4.96	5.10
989	lumped C5+ unsaturated carbonyl species*	6.18	6.38
990	benzyl alcohol*	4.98	5.11
991	methoxybenzene; anisole*	6.49	6.66
992	β-phenethyl alcohol; 2-phenyl ethyl alcohol*	4.41	4.53
993	phthalic anhydride*	2.50	2.58
994	methylparaben; 4-hydroxybenzoic acid, methyl ester*	1.66	1.71
995	cinnamic aldehyde*	4.68	4.84
996	cinnamic alcohol*	0.84	0.89
997	anethol; p-propenyl-anisole*	0.76	0.80
998	camphor*	0.45	0.49
999	citronellol; 3,7-dimethyl-6-octen-1-ol*	5.63	5.79
1000	hydroxycitronella*; hydroxycitronellal	2.50	2.61
1001	linalool*	5.28	5.43

1002	1,2-diacetyl benzene*	2.17	2.25
1003	geraniol*	4.97	5.12
1004	propylparaben*; 4-hydroxybenzoic acid, propyl ester	1.40	1.44
1005	diethyl phthalate*	1.56	1.62
1006	3,6,9,12-tetraoxa-hexadecan-1-ol	1.90	1.72
1007	triethyl citrate*	0.66	0.70
1008	amyl cinnamal*	3.06	3.16
1009	hexyl cinnamal*	2.86	2.96
1010	2-ethyl-hexyl benzoate*	0.93	0.98
1011	dibutyl phthalate*	1.20	1.25
1012	2,2,4-trimethyl-1,3-pentanediol diisobutyrate*	0.34	0.38
1013	methyl hexadecanoate; methyl palmitate*	0.40	0.44
1014	methyl cis-9-heptadecenoate*	1.56	1.62
1015	methyl heptadecanoate; methyl margarate*	0.38	0.42
1016	methyl linolenate; methyl cis,cis,cis-9,12,15-octadecatrienoate*	1.77	2.32
1017	methyl linoelate; methyl cis,cis-9,12-octadecadienoate*	1.48	1.84
1018	methyl cis-9-octadecenoate; methyl oleate*	1.48	1.54
1019	methyl octadecanoate; methyl stearate*	0.36	0.40
*****			

* This reactive organic compound was added to the Table of MIR Values on October 2, 2010, and may be used in aerosol coating products after this date, as specified in section 94522(~~h~~i)(2~~7~~3)(B), title 17, California Code of Regulations

** ULMIR (as defined in section 94521(a)(~~7~~81), title 17, California Code of Regulations.)

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

Appendix F

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

(Including Appendices A and B)

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: [INSERT DATE OF AMENDMENT]

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[Note: Amendments are shown in underline to indicate additions 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 Appendixces A ~~and B~~)

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, ~~and aerosol coatings 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 ~~(3) the~~ maximum incremental reactivity (PWMIR) of ~~reactive organic compounds (ROC's)~~ aerosol coating products, as that term is defined in Title 17, CCR, section 94521.

1.23 Method 310 determines the total volatile material in a product and the presence of any compounds prohibited by ARB regulations ("prohibited compounds"). Components of the product that do not meet the definition of a VOC or are exempted by ARB 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 ROCs 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 Coatings Products Regulation").

1.34 Method 310 does not apply to the determination of the composition or concentration of fragrance components in products.

1.45 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 TEST METHODS

Method 310 incorporates by reference the following ~~American Society for Testing and Materials~~ (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 D 2369-01: Standard Test Method for Volatile Content of Coatings (January 10, 2001).

2.2 ASTM D 1426-98: Standard Test Methods for Ammonia Nitrogen in Water (December 10, 1998).

2.3 ASTM D 4017-96a: Standard Test Method for Water in Paints and Paint Materials by the Karl Fisher Titration Method (July 10, 1996).

2.4 ASTM D 3792-99: Standard Test Method for Water Content of Water-Reducible Paints by Direct Injection Into a Gas Chromatograph (May 10, 1999).

2.5 ASTM D 859-00: Standard Test Method for Silica in Water (determination of polymethylsiloxanes after digestion) (June 10, 2000).

2.6 ASTM D 3074-94: 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 D 3063-94: 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 D 3064-97: 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 (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).

2.10.1 US EPA Method 8240B, September 1994, Revision 2, 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, SW-846, September 1994.

2.10.2 US EPA Method 8260B, December 1996, Revision 2, 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, SW-846, December 1996.

2.11 US EPA Reference Method 24, Determination of Volatile Matter Content, Water Content, Density, Volume Solids, and Weight Solids of Surface Coatings: 40 Code of Federal Regulations (CFR) Part 60, Appendix A, as it existed on September 11, 1995.

2.12 US EPA Reference Method 24A, Determination of Volatile Matter Content and Density of Printing Inks and Related Coatings: 40 CFR Part 60, Appendix A, as it existed on July 1, 1994.

2.13 US EPA Reference Method 18, Measurement of Gaseous Organic Compound Emissions by Gas Chromatography: 40 CFR Part 60, Appendix A, as it existed on September 25, 1996.

2.14 US EPA Method 300.7, March 1986. Dissolved Sodium, Ammonium, Potassium, and Calcium in Wet Deposition by Chemically Suppressed Ion Chromatography.

2.15 ASTM D 86-01: Standard Test Methods for Distillation of Petroleum Products (August 10, 2001).

2.16 ASTM D 850-00: Standard Test Methods for Distillation of Industrial Aromatic Hydrocarbons and Related Materials (December 10, 2000).

2.17 ASTM D 1078-01: Standard Test Methods for Distillation Range of Volatile Liquids (June 10, 2001).

2.18 ASTM D 2879-97: Standard Test Method for Vapor-Pressure-Temperature Relationship and Initial Decomposition Temperature of Liquids by Isoteniscope (April 10, 1997) ~~with the modifications found in Appendix B to this Method 310~~.

2.19 ASTM D 2887-01: Standard Test Method for Boiling Range Distribution of Petroleum Fractions by Gas Chromatography (May 10, 2001).

2.20 ASTM E 1719-97: Standard Test Method for Vapor Pressure of Liquids by Ebulliometry (March 10, 1997).

2.21 ASTM D 3257-06: Standard Test Methods for Aromatics in Mineral Spirits by Gas Chromatography (April 1, 2006).

2.22 ASTM D 3606-07: Standard Test Method for Determination of Benzene and Toluene in Finished Motor and Aviation Gasoline by Gas Chromatography (Nov. 1, 2007).

2.23 ASTM D 3710-95 (Reapproved 2004): Standard Test Method for Boiling Range Distribution of Gasoline and Gasoline Fractions by Gas Chromatography (Nov. 1, 2004).

2.24 ASTM D 5443-04: Standard Test Method for Paraffin, Naphthene, and Aromatic Hydrocarbon Type Analysis in Petroleum Distillates Through 200° C by Multi-Dimensional Gas Chromatography (Nov. 1, 2004).

2.25 ASTM D 5580-02 (Reapproved in 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 (Nov. 1, 2007).

2.26 ASTM E 1782-08: Standard Test Method for Determining Vapor Pressure by Thermal Analysis (March 1, 2008).

2.27 US EPA Method 602: Purgable Aromatics, 40 CFR 136 Appendix A, Method for Organic Chemical Analysis of Municipal and Industrial Wastewater (January 2008).

2.28 US EPA Method 625: Base/Neutrals and Acids, 40 CFR 136 Appendix A, Method for Organic Chemical Analysis of Municipal and Industrial Wastewater (January 2008).

2.29 US EPA SW-846 Method 8015B: Non-Halogenated Organics Using GC/FID (Rev 2, December 1996).

2.30 US EPA SW-846 Method 8020A: Aromatic Volatile Organics by Gas Chromatography (Rev 1, September 1994).

2.31 US EPA SW-846 Method 8270D: Semivolatile Organic Compounds by Gas Chromatography / Mass Spectroscopy (GC/MS) (Rev. 4, January 1998).

2.32 ASTM D5381-93 (Reapproved 2009): Standard Guide for X-Ray Fluorescence (XRF) Spectroscopy of Pigments and Extenders.

2.33 ASTM D523-08: Standard Test Method for Specular Gloss (June 1, 2008).

2.34 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).

3 CONSUMER PRODUCTS TESTING 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 D 3074-94 (as modified in Appendix A for metal aerosol container) or ASTM D 3063-94 (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, ASTM D 2369-01.

3.3.2 Determination of sample water content. For determination of water content either ASTM D 4017-96a, or ASTM D 3792-99 may be used, or results from both procedures may be averaged and that value reported.

3.3.3 Determination of ammonium content using ASTM D 1426-98 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 D 859-00, NIOSH Method 1400). Effective January 1, 2015, for nonaerosol "Multi-purpose Solvent" and "Paint Thinner" products sold, supplied, offered for sale, or manufactured for sale in the South Coast Air Quality Management

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

District, analysis of exempt and prohibited compounds shall include analysis for methyl palmitate, 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 3.5.2.

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 D 859-00, NIOSH Method 1400.

3.3.8 For aromatic 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 D 5443-04, ASTM D 3257-06, ASTM D 3710-95, ASTM D3606-07, ASTM D 5580-02.

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.

3.5 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.

3.5.1 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 ARB 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.

3.5.2 If the results obtained under section 3.5.1 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 ARB Executive Officer may be claimed as confidential; such information will be handled in accordance with the confidentiality procedures specified in Title 17, California Code of Regulations, sections 91000 to 91022.

3.5.3 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.

3.5.4 If the manufacturer or responsible party fails to provide formulation data as specified in section 3.5.2, the initial determination of VOC content under this section 3.5 shall determine if the product is in compliance with the applicable VOC standards. This determination may be used to establish a violation of ARB regulations.

3.6 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 nonaerosol "Multi-purpose Solvent" and "Paint Thinner" products sold, supplied, offered for sale, or manufactured for sale in the South Coast Air Quality Management District. ~~because t~~There is no LVP-VOC exemption for these products.

3.6.1 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 D 86-01~~,~~ (Aug. 10, 2001), ASTM D 850-00~~,~~ (Dec. 10, 2000), ASTM D 1078-01~~,~~ (June 10, 2001), ASTM D 2879-97~~, as modified in Appendix B to this Method 310,~~ (April 10, 1997), ASTM D 2887-01 (May 10, 2001) and ASTM E 1719-97~~,~~ (March 10, 1997).

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 ~~5~~ 1 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.

~~3.6.3 Reference method for identification of LVP-VOC compounds and mixtures. If a product does not qualify as an LVP-VOC under 3.6.2, the Executive Officer will test a sample of the compound or mixture used in a product's formulation utilizing one or both of the following: ASTM D 2879-97, as modified in Appendix B to this Method 310, and ASTM E 1719-97, to determine if the compound or mixture meets the definition of LVP-VOC as specified in Title 17, CCR, section 94508(a).~~

3.7 Final Determination of VOC Content

If a product's compliance status is not satisfactorily resolved under sections 3.5 and 3.6, the Executive Officer will conduct further analyses and testing as necessary to verify the formulation data.

3.7.1 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.

3.7.2 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.

3.7.3 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 ARB 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 nonaerosol "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:

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

Where[2]:

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

TV = weight fraction of non-propellant total volatile material.

A = weight fraction of ammonia (as NH_4) in the non-propellant portion.

H = weight fraction of water in the non-propellant portion.

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

EL = weight fraction of exempt compounds in the non-propellant portion.

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

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

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

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

Where:

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

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:

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

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

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

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

Total Grams VOC per Sheet ~~$= \frac{S-R}{S}\times D$~~ *(TV-A-H-EL) x WS*

Total Grams VOC per Sheet with LVP = [(1-H) x (1-LVP)-EL] x WS

Where:

~~S = mass, in grams, of the dryer sheet sample.~~

~~R = mass, in grams, of sample residue by gravimetric analysis.~~

~~D = mass, in grams, of the single dryer sheet.~~

WS = weight of single dryer sheet in grams

4.2.4 Effective January 1, 2015, for nonaerosol "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:

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

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 methyl palmitate.

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:

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

Where:

V = weight fraction of non-exempted ~~volatile organic compounds~~ VOCs in the non-propellant portion.

n = number of non-exempted ~~volatile organic compounds~~ VOCs in the non-propellant portion.

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

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

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

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

$$\%\,VOC = \left[\sum V_n\right] \times 100$$

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 Coatings 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, section 94526(b)(~~2~~1). The manufacturer or responsible party shall supply the requested information within ~~10~~ 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.

5.2 Initial Testing of the Propellant Portion of Aerosol Coating Products

The aerosol propellant is separated from the non-propellant portion of the product by using ASTM D 3074-94 (as modified in Appendix A for metal aerosol container) or ASTM D 3063-94 (as modified in Appendix A for glass aerosol container). The propellant portion is analyzed for ~~reactive organic compounds~~ 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 the Non-Propellant Portion of Aerosol Coating Products

The non-propellant portion of the product sample is analyzed to determine the ~~reactive organic compounds~~ 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, ASTM D 2369-01.

5.3.2 Determination of sample water content. For determination of water content either ASTM D 4017-96a, or ASTM D 3792-99 may be used, or results from both procedures may be averaged and that value reported.

5.3.3 Determination of ammonium content using ASTM D 1426-98 or US EPA Method 300.7.

5.3.4 Determination of ketones and alcohol content using NIOSH Method 1400.

5.3.5 ~~Analysis~~ Direct determination of ~~reactive organic compounds~~ ROCs and, if present, prohibited compounds (US EPA Reference Method 18, US EPA Method 8240B, US EPA Method 8260B, ASTM D 859-00, NIOSH Method 1400, and modified ASTM D 5443-04).

5.3.6 Determination of metal content using ASTM D5381-93 (2009).

5.3.7 Determination of specular gloss using ASTM D523-08.

5.3.8 Determination of acid content using ASTM D1613-06.

5.4 Prohibited Compounds

If the sample is found to contain compounds prohibited by the Aerosol Coatings 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.

5.5 Initial Determination and Verification of ~~Reactive Organic Compound~~ ROC Content

The Executive Officer will determine the ~~reactive organic compound~~ 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.

5.5.1 Based on manufacturer's formulation data and the analysis conducted under section 5, the Executive Officer will make an initial determination of whether

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

the product meets the applicable requirements specified in the Aerosol Coatings 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.

5.6 Final Determination of ~~Reactive Organic Compound~~ ROC Content

If a product's status is not satisfactorily resolved under section 5.1 - 5.5, the Executive Officer may conduct additional analyses and testing as necessary to verify the formulation data.

5.6.1 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.

5.6.2 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.

5.6.3 If the manufacturer or responsible party fails to provide additional information as specified in section 5.6.1, the initial determination of ~~reactive organic compound~~ ROC content under section 5.1 – 5.5 shall determine if the product is in compliance with the applicable ~~reactive organic compound~~ reactivity limits. This determination may be used to establish a violation of the Aerosol Coatings Products Regulation.

5.6.4 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 the Aerosol Coatings 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 D 3074-94 and D 3063-94 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 D 3064-97.

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 contaminante in the system prior to sample collection. This is eliminated by sweeping out any connecting lines to the Tedlar bag with product before starting sample collection. This procedure will eliminate or reduce nitrogen contamination to less than 0.1% 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 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/cm^3

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] ~~The metal piercing adaptor is available from Mid-West Screw Products, Inc., 3523 North Kenton Ave., Chicago, IL 60641. Interim Part Number: 8013A-3/4 45TAPER REV. The gasket is available from Alltech Associate 2051 Waukegan road, Deerfield, IL 60015, part number 80-16.~~ See SOP SAS05, Figures 3 and 4.

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.

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 bag from output 1. Density is determined from this same Tedlar bag, as necessary.

4.1.6 After the propellant is collected, close and remove the Tedlar 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 ~~gm~~ 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 ~~gm~~.

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

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[2] ~~The glass aerosol tapered adaptor is available from Armstrong Technologies, Inc. 12780 Earhart Ave., Auburn, CA 95602.~~ See SOP SAS05, Figure 7.

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 bag. Density is determined from this same Tedlar bag, as necessary.

4.2.5 After the propellant is collected, close and remove the Tedlar 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 in no visiable propellant flowing from the sampling tube.

4.2.7 Remove the container from the platform.

4.2.8 ~~Loosen and remove~~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 ~~gm~~ 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

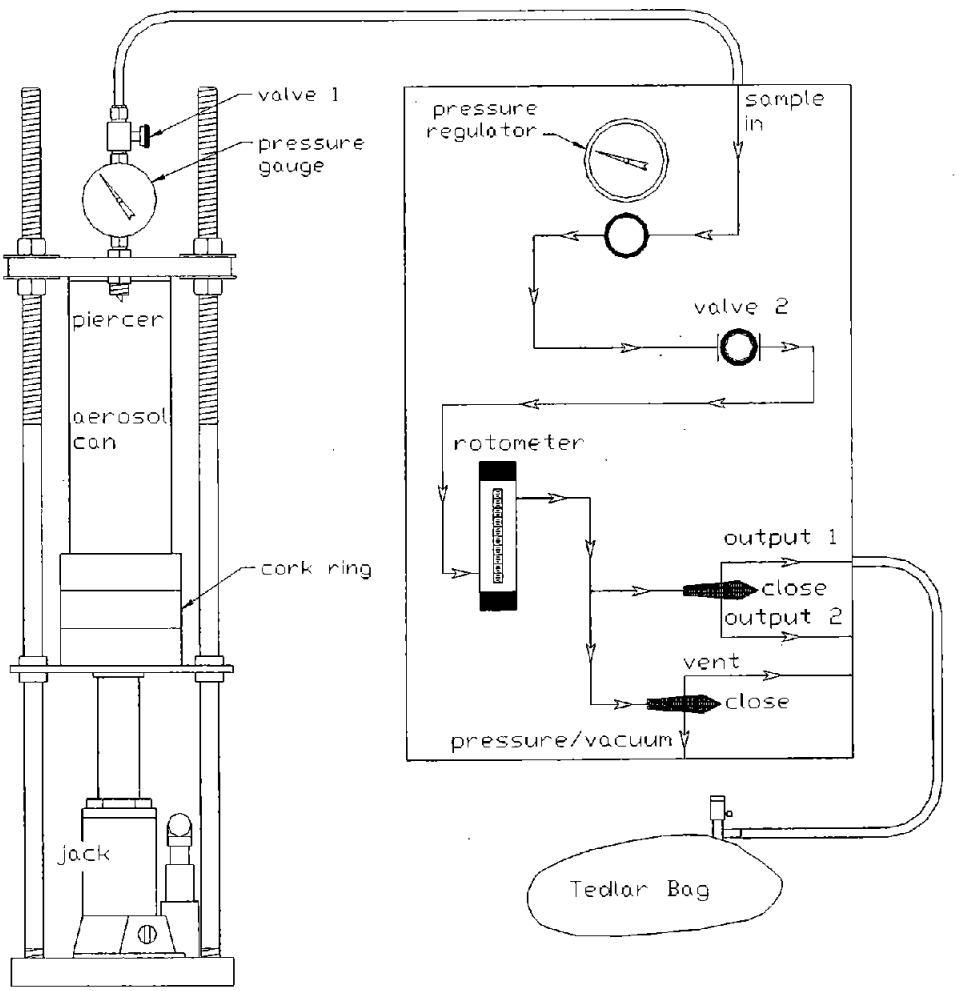


FIGURE 2

SAMPLE VENTING PLATFORM

METAL AEROSOL CONTAINER

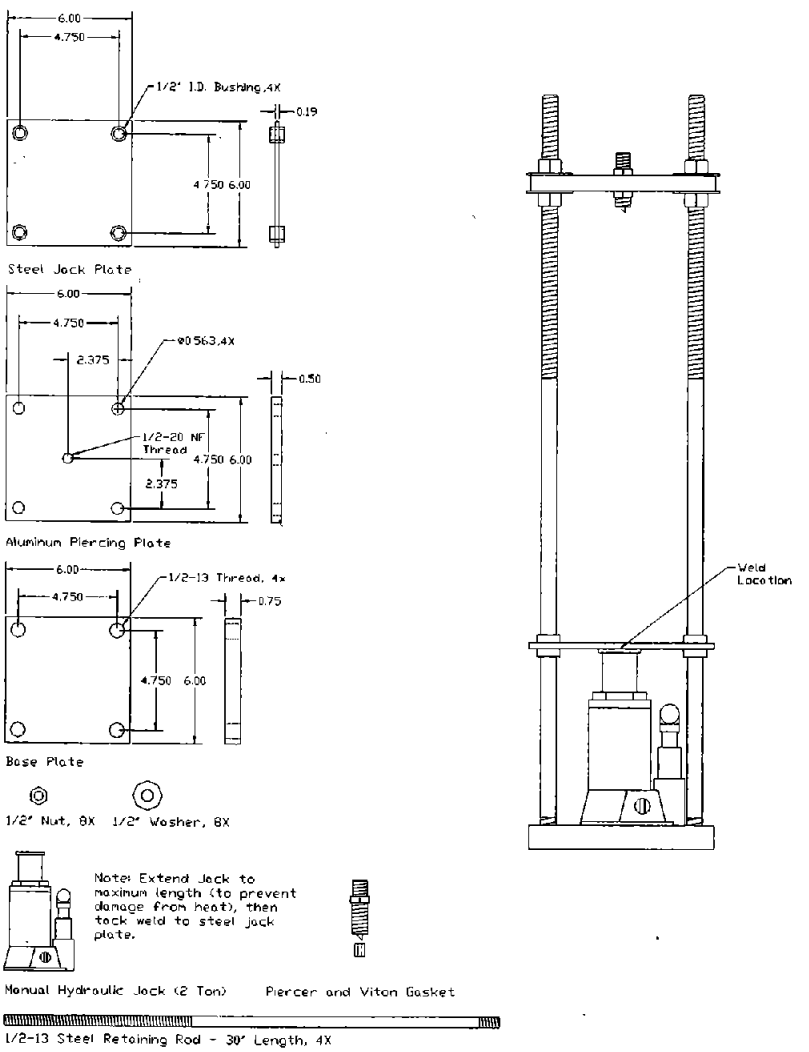


FIGURE 3

PROPELLANT COLLECTION SYSTEM

GLASS AEROSOL CONTAINER

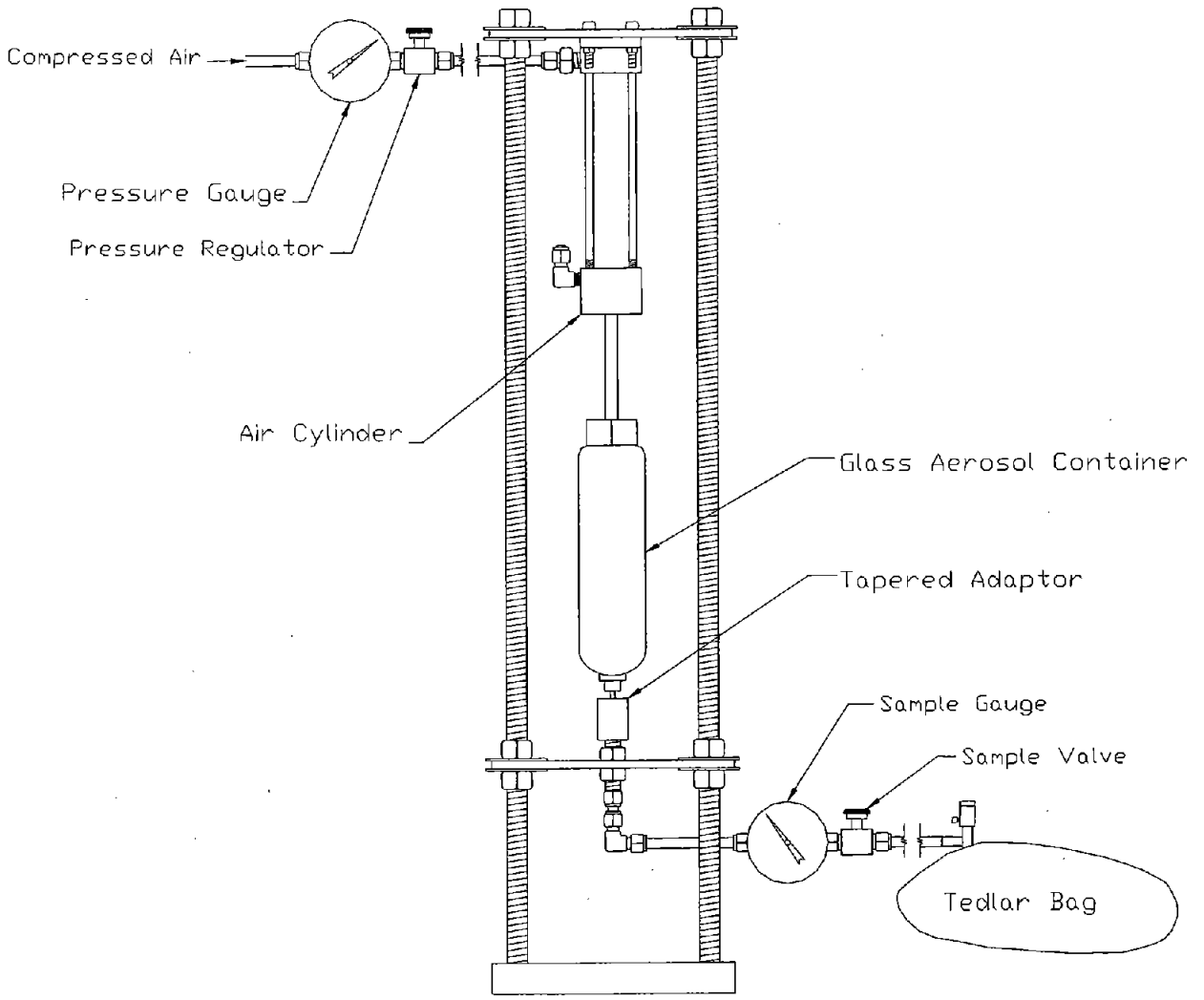
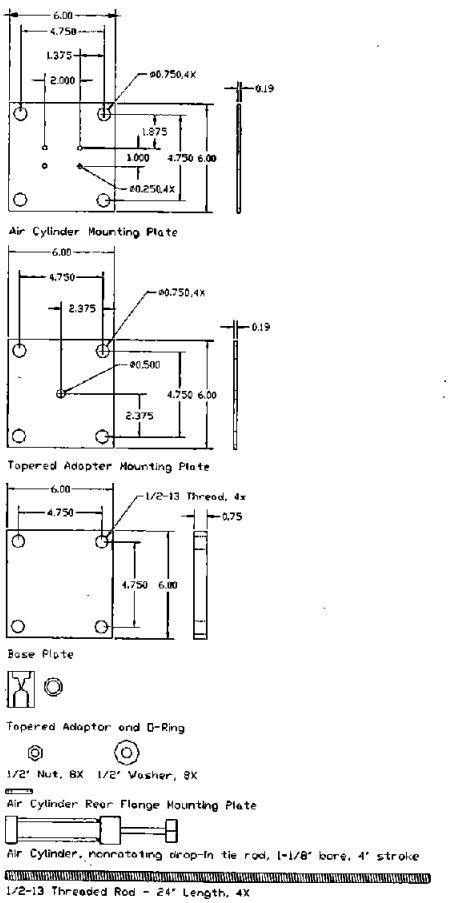
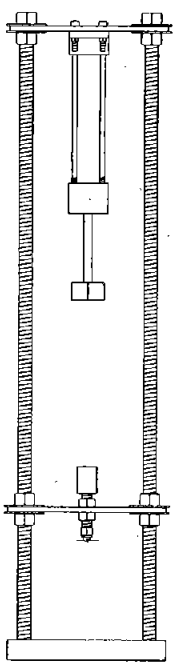


FIGURE 4

SAMPLE VENTING PLATFORM

GLASS AEROSOL CONTAINER





~~*Method 310 - Appendix B*~~

~~MODIFICATIONS to ASTM D-2879-97~~

~~This procedure modifies ASTM D-2879-97 as follows:~~

~~1. Modifications to the isoteniscope apparatus include:~~

~~a. capacitance manometers and digital readout~~
~~b. manifold system made of stainless steel and modified in design~~
~~c. Ultra-torr fittings and Ultra-torr flex-lines~~
~~d. ballast on the vacuum side of the isoteniscope manifold as depicted in ASTM D-2879-97 schematics, has been removed.~~
~~e. stainless steel liquid nitrogen trap (Cold Trap)~~
~~f. stainless steel high vacuum valves~~
~~g. recirculating cooling system (required for extremely low pressure work only)~~
~~h. diffusion pump (required for extremely low pressure work only)~~
~~i. hot ion cathode vacuum gauges (required for extremely low pressure work only)~~

~~2. A purge and degassing procedure consisting of lower pressures and a liquid nitrogen bath replaces the step of lightly boiling the sample as outlined in ASTM D-2879-97.~~

~~3. Purge and Degassing Cycle~~

~~a. With the U-tube connected, the system is evacuated to approximately 1.0 mm Hg. This readily removes most of the higher volatility gases from the sample.~~

~~b. The stainless steel, liquid nitrogen cold trap is filled. The manifold is now brought to approximately 300 mm Hg with the purified nitrogen, regulated through the needle valve.~~

~~c. The isoteniscope tube is carefully placed into a Dewar of liquid nitrogen. The ½ atmosphere pressure of nitrogen prevents the sample from splashing while being frozen. After the sample freezes, the system is evacuated to 0.05 mm Hg.~~

~~d. The U-tube is removed from the Dewar, secured and allowed to warm to room temperature. The U-tube bulb-head should be angled so the~~

dissolved gases will be readily evacuated as the frozen sample starts to melt. When gases build up, it may be necessary to tilt the U-tube to release the gases.

e. Repeat the freeze and degas process once, reducing pressure each time to less than 0.05 mm Hg. After the sample has returned to room temperature, close valve #3. There should be minimal dissolved gases left once the frozen sample starts to melt. Tilt the tube to release any gas pockets (if necessary). Do not push nitrogen into the evacuated space between the sample in the arm and the sample in the reservoir. At this point, if the sample is properly degassed, a "natural break" should form in the sample. This creates a vapor space as the liquid level in the bulb leg of the manometer falls to a quasi-equilibrium position, usually with the fluid level higher in the long manometer leg. If there is no pendulum effect, and the liquid level in the long leg of the manometer is significantly higher than the level in the short leg (> 2 mm), degassing is probably incomplete, and the degassing procedure should be repeated.

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4. Data Evaluation

The regression based on the plot of Log P vs. 1/T as outlined in ASTM D 2879-97 has been removed and replaced with a nonlinear regression to generate the coefficients for an Antoine equation. The data analysis procedure assumes that the measured pressure is the sum of the compound's vapor pressure and a residual fixed gas pressure. The vapor pressure's dependence on absolute temperature is represented by an Antoine expression, and the fixed gas as pressure is directly proportional to absolute temperature as outlined in ASTM 2879. This leads to the model equations:

$$P_{model} \equiv P_{vapor} + P_{fixed\ gas}$$

$$P_{model} = B0 * 10^{(B1/(T+B2))} + B3 * T$$

where T is the absolute temperature (K) and B0, B1, B2 and B3 are coefficients to be determined via a nonlinear regression which minimizes the sum of squares

$\sum (P_{meas} - P_{model})^2$ for all experimental data points. The vapor pressure at 20° C is then calculated as:

$$P_{vapor}(293.15\ K) = B0 * 10^{(B1/(293.15 + B2))}$$

With a set of pressure vs. temperature measurements, the nonlinear regression can be performed using a statistical software packages. The following constraints are imposed to obtain meaningful Antoine equation coefficients for low vapor pressure samples:

a. Pressures shall be measured at temperatures ranging from room temperature to about 180° C. Narrower ranges will not provide sufficient information to determine the Antoine curvature, i.e., B2 coefficient. Wider ranges can lead to experimental difficulties maintaining the vapor space in the isoteniscope. A minimum of 12 points is necessary to provide ample degrees of freedom for the calculations.

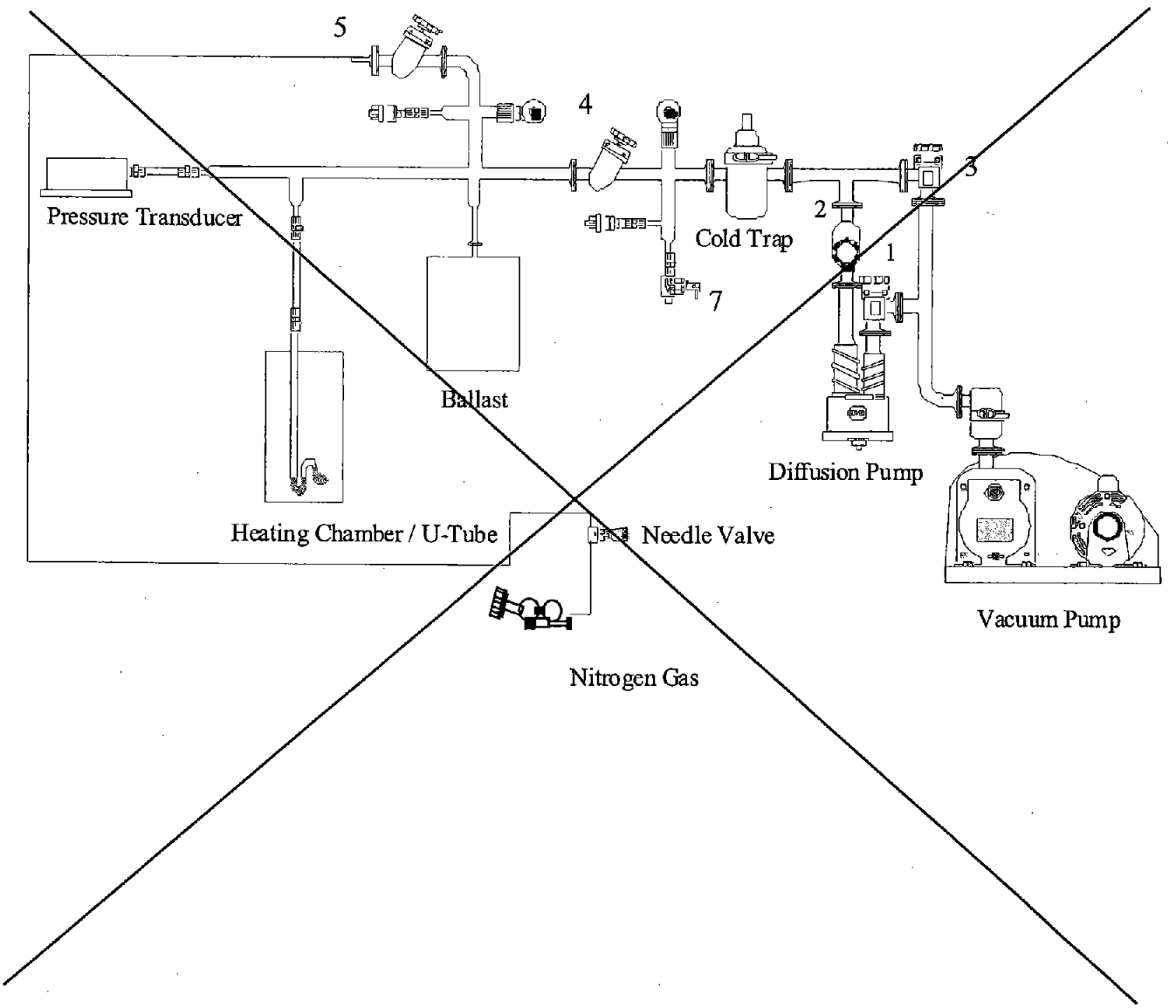
b. Initial pressures at room temperature shall be less than 1 mm Hg. Higher values are indicative of significant levels of dissolved fixed gases. These will vaporize during the course of the experiment as temperature is increased and invalidate the model's assumption for the fixed gas contribution.

c. $-235 \leq B\ 2 \leq 0$. Positive values of B2 imply that the heat of vaporization of the substance increases with increasing temperature. Thermodynamic data for many compounds suggests this is unrealistic. Large negative values can lead to unrealistically low vapor pressure values coupled with excessive fixed gas contributions. The -235(K) bound is chosen to be consistent with literature values of B2 for many pure compounds. For hydrocarbons in the LVP-VOC range, $B2 \geq -100$ provides reasonable agreement between measured and literature vapor pressures.

d. The fixed gas coefficient, B3, should normally be ≥ 0.

~~*Figure 1*~~

~~ISOTENISCOPE VAPOR PRESSURE MEASUREMENT APPARATUS~~



Appendix G

Summary of Consumer Products Regulatory Actions

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Summary of Consumer Products Regulatory Actions

Action Date/ (Effective Date)	Regulatory Action	Site	Comments
6/16/89	Consumer Products Control Plan.	N/A	First Board action on consumer products. Board approved overall plan to fulfill H&SC Section 41712 mandate and a goal of achieving a 50 percent reduction in VOC emissions from consumer products.
11/8/89/ (2/27/91)	Regulation to Reduce VOC Emissions from Antiperspirants and Deodorants.	Article 2, Sections 94500-94506, Title 17, CCR.	First consumer product regulation adopted pursuant to the CCAA. Established VOC content limits for aerosol and non-aerosol antiperspirants and deodorants.
6/15/90	Regulation for Reducing VOC Emissions from Consumer Products in the Bay Area AQMD.	Article 2, Consumer Products, Sections 94520-94527, Title 17, CCR.	This regulation was adopted to reduce VOC emissions from consumer products in the Bay Area AQMD and establishes VOC limits for 6 consumer products.
10/11/90/ (10/21/91)	Regulation for Reducing VOC Emissions from Consumer Products - Phase I.	Article 2, Consumer Products, Sections 94507-94516 and 94503.5, Title 17, CCR Amendments to Article 2, Section 94505, Title 17, CCR	Establishes VOC limits for 16 consumer products, repeals the Bay Area consumer product regulation, and amends the AP/DO regulation to include an innovative product provision and a revised variance procedure.
1/9/92/ (1/6/93)	Adoption of Amendments to the Regulation for Reducing VOC Emissions from Consumer Products - Phase II.	Article 2, Consumer Products, Sections 94507-94517, Title 17, CCR.	Establishes standards for 10 additional categories of consumer products and several amendments to the existing regulation for clarification and improvement.
9/22/94/ (9/9/95)	Adoption of the Alternative Control Plan Regulation for Consumer Products.	Article 4, Sections 94540-94555, Title 17, CCR.	A voluntary market-based regulation which supplements the existing consumer products regulation by providing manufacturers with additional flexibility for formulating products.
11/15/94/ (2/14/95)	Approval of the California State Implementation Plan for Ozone.	N/A	Board approval of Ozone SIP which includes consumer products element comprised of near, midterm, and long term measures.
3/23/95/ (1/8/96)	Regulation for Reducing VOC Emissions from Aerosol Coating Products and Amendments to the Alternative Control (ACP) Plan.	Article 3, Sections 94520-94528, Title 17, CCR Amendments to Article 4, Sections 94540 to 94543, 94547, 94550, 94551, and 94553, Title 17, CCR.	Establishes VOC content limits for 35 categories of aerosol paints. Amendments to ACP to incorporate aerosol coating products.

Summary of Consumer Products Regulatory Actions

Action Date/ (Effective Date)	Regulatory Action	Site	Comments
9/28/95/ (2/29/96)	Amendments to the California Regulations for Reducing VOC Emissions from Antiperspirants and Deodorants, Consumer Products, and Aerosol Coating Products.	Amendments to Article 1, Sections 94500-94504, Title 17, CCR, Article 2, Section 94508(a)(90), Title17, CCR, and Article 3, Section 94521(a)(62), Title 17, CCR.	The amendments to the AP/DO regulation address fairness concerns, preserves projected emission reductions required by the SIP, ensures that manufacturers will continue their efforts to develop zero percent products and provides a vehicle to monitor progress and to make the VOC definition more consistent with EPA's VOC definition. The consumer products regulation and the aerosol coatings regulation is modified to revise the VOC definition consistent with EPA's.
11/21/96/ (11/18/97)	Amendments to the California Regulations for Reducing VOC Emissions from Consumer Products and Aerosol Coating Products.	Amendments to Article 2; Sections 94508, 94515 94517 and Article 3; Section 94521, Title 17, CCR.	The amendments to the consumer products regulation address postponement of the 25 percent standard for aerosol adhesives, modification to the VOC definition, amendment of various regulatory provisions to enhance clarity and compliance, and amendment to the test methods sections. The proposed amendments also modify the VOC definition in the aerosol coatings regulation.
3/27/97/ (8/24/98)	Amendments Pertaining to Hairspray in the California Consumer Products Regulation.	Amendments to Article 2, Sections 94509, 94513, and 94514, Title 17, CCR.	Postpones the hairspray 55 percent VOC standard from 1/1/98 to 6/1/99, require plans demonstrating progress toward compliance from manufacturers selling hairspray not meeting the 55 percent VOC standard from 1/1/98 to 6/1/99, and modifies the variance provision to include a requirement for VOC emissions mitigation when granting a variance request for hairsprays from the 6/1/99 standard.
7/24/97/ (7/1/98)	Amendments to the Consumer Products Regulation, Mid-term Measures I.	Amendments to Article 2, Sections 94508, 94509, 94510, 94512, 94513, and 94514, Title 17, CCR.	All VOC standards with 1/1/2000, effective dates were extended to 1/1/2001; First tiers of the two-tiered VOC standards and additional reporting requirements for four product categories were eliminated; Effective dates of the VOC standard were changed for five product categories.
11/19/98/ (6/24/99)	Amendments to the Aerosol Coating Products, the Antiperspirants and Deodorants Regulation, and the Consumer Products Regulation.	Amendments to Article 3, Section 94521, 94522, and 94524, Title 17, CCR; Article 1, Section 94501, Title 17, CCR; and to Article 2, Section 94508(a)(124), Title 17, CCR.	Relaxation of the second-tier VOC limits of the Aerosol Coating Products Regulation. Exemption of methyl acetate from the VOC definition in the Antiperspirants and Deodorants Regulation, the Consumer Products Regulation, and the Aerosol Coating Products Regulation.

Summary of Consumer Products Regulatory Actions

Action Date/ (Effective Date)	Regulatory Action	Site	Comments
10/28/99/ 11/19/2000	Amendments to the Consumer Products Regulation, Mid-term Measures II.	Amendments to Article 2, Section 94508, 94509, and 94513, Title 17, CCR.	Amends the Consumer Products Regulation by adding product category definitions, VOC limits for two new categories, more stringent VOC limits for fifteen existing categories, and adding subcategories for some of the existing product categories with separate VOC limits for each subcategory. New or modified VOC limits become effective from 12/31/2000, to 12/31/2004. Amendments consolidate and expand the existing reporting requirements for products containing methylene chloride or perchloroethylene.
5/25/2000/ (5/18/2001)	Amendments to the Consumer Products Regulation relating to Aerosol Adhesives.	Amendments to Article 1, Sections 94508, 94509, 94512, and 94513, Title 17, CCR.	Amendments eliminate the 25 percent VOC limit and establish new VOC limits for three new categories of aerosol adhesives, effective January 1, 2002. Amendments also include labeling and other requirements to facilitate compliance and enforcement of the new standards. Effective 1/1/2002, amendments also prohibit the use of methylene chloride, perchloroethylene, and trichloroethylene, which are toxic air contaminants, in aerosol adhesives manufactured for use in California.
6/22/2000/ (7/18/2001)	Consumer Products Relating to Aerosol Coating Products, Proposed Tables of Maximum Incremental Reactivity (MIR) Values, and Amendments to Method 310.	Amendments to Article 3, Sections 94521, 94522, 94523, 94524, and 94526. Added new sections 94700 and 94701, Title 17, CCR.	Amendments replace the second tier mass-based VOC limits for 35 product categories with equivalent reactivity-based limits. In addition, a new subchapter, Subchapter 8.6, in title 17, CCR was adopted. New Subchapter 8.6, in sections 94700 and 94701, contains Tables of MIR Values that are used to set reactivity-based limits and determine compliance.
10/26/2000/ (4/24/2001)	Amendments to the Regulation to Reduce VOC Emissions from Antiperspirants and Deodorants.	Amendments to Article 2, Sections 94502 and 94504, Title 17, CCR.	Amendments increased the HVOC limit for aerosol antiperspirants to 40 percent from the current zero percent limit, beginning 1/1/2001. The MVOC limit of 10 percent remains unchanged.
6/24/2004/ (7/20/2005) Continues to next page	Amendments to the Consumer Products, Test Method 310, Antiperspirants and Deodorants, Aerosol Coating Products, and an	Amendments to sections 94501, 94506, 94507, 94508, 94509, 94510, 94512, 94513, 94515, and 94526, title 17, California Code of	Amendments established new VOC limits for 15 product categories. Regulatory action also prohibited the use of three toxic air contaminants--methylene chloride, perchloroethylene, and trichloroethylene--in seven product categories. The ATCM prohibits the use of para-dicholorobenzene in toilet/urinal care products and solid air

Summary of Consumer Products Regulatory Actions

Action Date/ (Effective Date)	Regulatory Action	Site	Comments
Continued	Airborne Toxic Control Measure (ATCM) for Para-Dichlorobenzene	Regulations (CCR) and adoption of Amendments to ARB Method 310, which is incorporated by reference in sections 94506, 94515, and 94526, title 17, CCR.	fresheners. Amendments also modified and updated Method 310 used to determine the percent by weight of reactive organic compounds in aerosol coating products and VOCs in consumer products and AP/DO products.
11/16/2006/ (12/08/2007)	Amendments to the Aerosol Coating Products Regulation and the Consumer Products Regulation	Amendments to sections 94508, 94509, 94510, 94513, and 94523, title 17, California Code of Regulations (CCR). Non-substantial or solely grammatical changes are also proposed to sections 94507, 94511, 94512, 94514, 94515, 94516, and 94517.	Consumer Products Regulation amended by adding and modifying product category definitions and by establishing new VOC limits for 16 product categories. For some of the categories, separate VOC limits are specified for different product forms. New or modified VOC limits become effective on December 31, 2008, remainder become effective on December 31, 2010. Regulatory action also prohibits use of three toxic air contaminants--methylene chloride, perchloroethylene, and trichloroethylene--in the following products categories: "Bathroom and Tile Cleaner," "Construction, Panel, and Floor Covering Adhesive," "General Purpose Cleaner," and "Oven Cleaner." Amendment was also adopted to section 94523 (Exemptions) of the Aerosol Coatings Regulation. Amendment clarifies several product categories are exempt from regulation under the Aerosol Coatings Regulation.
11/16/2006/ (12/08/2007)	Amendments to the Aerosol Coating Products Regulation and the Consumer Products Regulation	Amendments to sections 94508, 94509, 94510, 94513, and 94523, title 17, California Code of Regulations (CCR). Non-substantial or solely grammatical changes are also proposed to sections 94507, 94511, 94512, 94514, 94515, 94516, and 94517.	Consumer Products Regulation amended by adding and modifying product category definitions and by establishing new VOC limits for 16 product categories. For some of the categories, separate VOC limits are specified for different product forms. New or modified VOC limits become effective on December 31, 2008, remainder become effective on December 31, 2010. Regulatory action also prohibits use of three toxic air contaminants--methylene chloride, perchloroethylene, and trichloroethylene--in the following products categories: "Bathroom and Tile Cleaner," "Construction, Panel, and Floor Covering Adhesive," "General Purpose Cleaner," and "Oven Cleaner." Amendment was also adopted to section 94523 (Exemptions) of the Aerosol Coatings Regulation. Amendment clarifies several product categories are exempt from regulation under the Aerosol Coatings Regulation.

Summary of Consumer Products Regulatory Actions

Action Date/ (Effective Date)	Regulatory Action	Site	Comments
6/26/2008/ (7/18/2009)	Amendments to the Consumer Products Regulation	Amendments to sections 94508, 94509, 94510, 94512, 94513, and 94515, title 17, California Code of Regulations.	Regulation was amended by adding and modifying product category definitions and by establishing new or lower VOC limits for 19 product categories. A mass limit was adopted for fabric softener products used in clothes dryers. An additional amendment removed the "grandfather" clause that pertains to Personal Fragrance Products with 20 percent or less fragrance. Removal of this clause requires all Personal Fragrance Products with 20 percent or less fragrance to meet a single VOC limit. The new or modified VOC limits become effective between December 31, 2010 and December 31, 2015. This action also prohibits the use of three toxic air contaminants--methylene chloride, perchloroethylene, and trichloroethylene--in the following product categories: "Carpet/Upholstery Cleaner," "Fabric Protectant," "Multi-Purpose Lubricant," "Penetrant," "Sealant or Caulking Compound," and "Spot Remover." Use of methylene chloride and perchloroethylene are also prohibited in "Pressurized Gas Duster" products. To partially fulfill the Discrete Early Action Measure for consumer products, the amendments will reduce the use of compounds with high GWP in Pressurized Gas Duster products. These products can only use compounds with GWP factors below 150. The GWP values used to determine compliance are those set forth in the Intergovernmental Panel on Climate Change, Second Assessment Report. The Board also adopted a modification to the definition of VOC. This modification excludes hydrofluoroether 7200 from the definition based on its negligible impacts on ground-level ozone formation.
9/24/2009/ (10/20/2010)	Amendments to the Consumer Products Regulation	Amendments to sections 94508, 94509, 94510, 94512, 94513, and 94515, title 17, California Code of Regulations.	Amendments set new or lower VOC limits for three product categories: Double Phase Aerosol Air Freshener, Multi-purpose Solvent, and Paint Thinner. Amendments also set global warming potential (GWP) limits for the three subject categories. In addition, use of the toxic air contaminants (TAC) perchloroethylene, methylene chloride, and trichloroethylene was prohibited in Multi-purpose Solvent and Paint Thinner products. Other provisions included limiting the aromatic compound content of Paint Thinner and Multi-purpose Solvent products to 1 percent by weight; providing an exemption for 8 fluid

Continues to next page

Summary of Consumer Products Regulatory Actions

Action Date/ (Effective Date)	Regulatory Action	Site	Comments
Continued			ounce containers of Paint Thinner from compliance with the VOC limits until 12/31/13; requiring labeling to address public safety for flammable and extremely flammable Paint Thinner and Multi-purpose Solvent products until 12/31/15; and requiring reporting of data for calendar year 2011 sales of Paint Thinner and Multi-purpose Solvent products. Other amendments are: minor labeling changes for dilutable Windshield Washer Fluid products; other language modifications to clarify and improve existing regulatory provisions; and various amendments to test Method 310, to clarify procedures.
11/18/2010/ (12/10/2011)	Amendments to the Consumer Products Regulation and Test Method 310	Amendments to sections 94508, 94509, 94510, 94512, and 94515, title 17, California Code of Regulations and amendments to Method 310, which is incorporated by reference in section 94515, title 17, CCR, to amend section 2.0 and add new subsections 3.3.8 and 4.2.3.	Amendments set new or lower VOC limits for 11 categories of consumer products, becoming effective between December 31, 2012, and December 31, 2014. When fully implemented, about 6.9 tons per day of VOC emission reductions would be achieved. The amendments also prohibit the use of several chlorinated Toxic Air Contaminants in seven categories, the use of compounds with higher global warming potentials in nine categories, and the use of alkylphenol ethoxylate surfactants in five categories. Amendments to Test Method 310 set forth analytical methods and procedures to be followed to determine the VOC content of "Fabric Softener-Single Use Dryer Product" and the aromatic compound content of "Paint Thinner" and "Multi-purpose Solvent" products.
10/18/2012/ (7/1/2013)	Amendments to the Consumer Products Regulation	Amendments to sections 94508, 94509, title 17, California Code of Regulations.	The amendments to the Consumer Products Regulation pertaining to Automotive Windshield Washer Fluid (AWWF) products revise the current definition of Type "A" areas by including additional mountainous areas that routinely experience freezing temperatures in the winter. The amendments allow the sale of ready-to-use AWWF products with a VOC content of up to 25 percent by weight in these new areas. The new Type "A" areas are identified by ZIP code. The amendments also clarify existing Type "A" areas by listing these areas by county name rather than air basin. The amendments also allow concentrated products to include language advising the consumer to dilute to Type A areas if traveling during times when freezing temperatures are expected.

Appendix H

Examples of
Multi-purpose Solvent and Paint Thinner Labels

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...ISIÓN AUXILIOS – SI SE SALPICA, lave inmediatamente con abundante agua durante 15 minutos y consulte a un médico. SI SE INHALA, retírese al aire libre y consulte a un médico. EN CASO DE CONTACTO CON LA PIEL, lave con abundante agua durante 15 minutos y quítese la ropa contaminada. EN CASO DE INGESTIÓN ACCIDENTAL, no provoque el vómito. Llame a un médico inmediatamente. Lleve consigo este envase o la etiqueta.

...MABLE. MANTENGA ALEJADO DE LUCES DE LLAMA ABIERTA Y NO FUME MIENTRAS USE ESTE PRODUCTO.

...ra mezclar condiciones: brochas duras: lleve sus manos y sus ojos usando ...ntes, lentes y gafas protectoras, a el recipiente con cuidado para aliviar ...presión. Coloque la brocha en un ...ipiente, tal como un bote de café, y ...ta el limpiador de manera que cubra las ...das hasta la virola metálica. Deje ...eposar por varias horas o durante la ...che, hasta ablandar la pintura. Agite la ...cha de vez en cuando, para acelerar el ...eso de ablandamiento y mantenga el ...ipiente cubierto con papel de aluminio ...o rellenado la evaporación. Luego que la ...ha haya ablandado, limpie todo residuo ...ión de la brocha utilizando un cepillo, ...a o tenedor de metal. Por último agite ...brocha en líquido Limpiador Brush ...ner fresco, y colóquela sobre papel ...ódico. Raspando desde la virola, ...ina el exceso de líquido limpiador con ...yuda de una espátula. Para guardar la ...cha, envuélvala en papel grueso, para ...ntenerla en su forma original, y ...iquete para, para guardarla.

...a limpiar brochas y rodillos ...entemente utilizados: Agítelos ...ediatamente después de usar, en ...ido limpiador Brush Cleaner y luego ...a los procedimientos de limpieza y ...ado según las instrucciones descritas ...ba.

1400878

ACE

PROMISE

Cleaner
Brush & Roller

Restores hardened brushes even after long disuse

Water soluble

For latex and oil based paints

Limpiador de Brochas Soluble al Agua

DANGER! EXTREMELY FLAMMABLE. HARMFUL IF SWALLOWED. VAPOR HARMFUL. EYE IRRITANT. Read other cautions on back panel.

¡PELIGRO! EXTREMADAMENTE INFLAMABLE. NOCIVO SI SE INGIERE. VAPOR NOCIVO. IRRITANTE DE LOS OJOS. Lea las demás precauciones al dorso.

32 FL. OZ. (ONE QUART), 0.95 LITER/LITRO

EL USO RESPONSABLE Y EL MANEJO DE TODOS LOS QUÍMICOS PUEDEN PREVENIR LESIONES PARA USTED Y EL MEDIO AMBIENTE

ALMACENAMIENTO: No use ni almacene este producto cerca a fuentes de calor o llamas abiertas – Áreas de calefacción, hornillos piloto, estufas, etc. Almacene en un lugar fresco y seco. Mantenga el envase cerrado cuando no lo use. No reutilice este recipiente.

IMPORTANTE: Lea cuidadosamente todas las precauciones e instrucciones antes de usar el producto. Solo use este producto como lo indica la etiqueta. No use como un diluyente para pintura. Mezcle con agua, cepa de tinta, base o pintura.

PELIGRO! EXTREMADAMENTE INFLAMABLE. LOS VAPORES PUEDEN PROVOCAR UN INCENDIO SE INFLAMARSE O ENCENDERSE DE MANERA EXPLOSIVA. LOS VAPORES PUEDEN VIAJAR LARGAS DISTANCIAS A UNA FUENTE REMOTA DONDE PUEDE PRENDERSE EL FUEGO. MANTÉNGASE ALEJADO DE CALOR, CHISPAS, LLAMAS Y TODAS LAS DEMÁS FUENTES DE IGNICIÓN. No fume. Apague todas las llamas y llamas piloto y apague las estufas, calentadores, motores eléctricos y todas las demás fuentes de ignición que estén cerca de cualquier parte de la obra de pintura, mientras dure el tiempo durante su uso y hasta que los vapores hayan sido disipados totalmente. Mantenga alejado de la obra de pintura todas las fuentes de ignición, incluyendo luces, cables eléctricos, interruptores eléctricos, fósforos y cigarrillos encendidos. Use únicamente equipo eléctrico a prueba de explosión. Cierre el envase cuando no esté en uso. Use solamente en áreas bien ventiladas. Abra puertas y ventanas para ventilación cruzada. Evite el contacto con la piel y la ropa. No respire los vapores. Si siente mareos, dolor de cabeza, náuseas o ojos llorosos – DETÉNGASE – la ventilación no es adecuada. Abandone el área de trabajo. SI EL ÁREA DE TRABAJO NO ESTÁ BIEN VENTILADA, NO USE ESTE PRODUCTO. Use mascarilla para polvo si ofrece protección contra los vapores.

¡PELIGRO! NOCIVO SI SE INGIERE. VAPOR NOCIVO. IRRITANTE DE LOS OJOS. Contiene Acetona. Hay información disponible que indica que la exposición repetida y prolongada a solventes puede causar daño cerebral y otros daños físicos. La mala utilización intencional de este producto concentrando e inhalando los vapores puede ser dañino o mortal. No la use intencionalmente.

Evite respirar los vapores o aerosoles. Evite el contacto con la piel, los ojos y la ropa.

PRIMEROS AUXILIOS – SI SE SALPICA, lave inmediatamente con abundante agua durante 15 minutos y consulte a un médico. SI SE INHALA, retírese al aire libre y consulte a un médico. EN CASO DE CONTACTO CON LA PIEL, lave con abundante agua durante 15 minutos y quítese la ropa contaminada. EN CASO DE INGESTIÓN ACCIDENTAL, no provoque el vómito. Llame a un médico inmediatamente. Lleve consigo este envase o la etiqueta.

PRECAUCIÓN: Proteja las manos con guantes resistentes a solventes y los ojos con gafas protectoras. Abra la tapa de la lata con cuidado para aliviar la presión. Coloque la brocha en un recipiente, tal como un bote de café, y cubra las cerdas hasta la virola metálica. Deje reposar por varias horas o durante la noche, hasta ablandar la pintura. Agite la brocha de vez en cuando, para acelerar el proceso de ablandamiento y mantenga el recipiente cubierto con papel de aluminio o rellenado la evaporación. Luego que la brocha haya ablandado, limpie todo residuo de pintura de la brocha utilizando un cepillo, espátula o tenedor de metal. Por último agite la brocha en líquido Limpiador Brush Cleaner fresco, y colóquela sobre papel periódico. Raspando desde la virola, elimine el exceso de líquido limpiador con la ayuda de una espátula. Para guardar la brocha, envuélvala en papel grueso, para mantenerla en su forma original, y etiquete para, para guardarla.

Para limpiar brochas y rodillos frecuentemente utilizados: Agítelos inmediatamente después de usar, en líquido limpiador Brush Cleaner y luego siga los procedimientos de limpieza y almacenado según las instrucciones descritas arriba.

1400878

ACE

Brush & Roller Cleaner

RESPONSIBLE USE AND HANDLING OF ALL CHEMICALS CAN PREVENT HARM TO YOU AND THE ENVIRONMENT

STORAGE: Do not use or store this product near any source of heat or open flames, furnaces, areas, pilot lights, stoves, etc. Keep it in a cool, dry spot. Keep container closed when not in use. Do not reuse this container.

IMPORTANT: Carefully read all directions, notes and cautions prior to use. Only use this product as indicated on the label. Do not use as a general purpose cleaner. Do not spread this product over large surfaces or inside cabinets. Fire and health safety rules will increase chances locally.

DANGER! EXTREMELY FLAMMABLE. VAPORS MAY CAUSE FLASH FIRE OR IGNITE EXPLOSIVELY. VAPORS MAY TRAVEL LONG DISTANCES TO OTHER AREAS AND ROOMS AWAY FROM WORK SITE. KEEP AWAY FROM HEAT, SPARKS, FLAME AND ALL OTHER SOURCES OF IGNITION. Do not smoke. Extinguish all flames and pilot lights, and turn off stoves, heaters, electric motors and all other sources of ignition anywhere in the structure, dwelling or building during use and until vapors are gone from the work site and all areas away from work site. Keep away from electrical outlets and switches. Be aware of static electricity that may be generated by synthetic clothing and other sources. USE ONLY WITH ADEQUATE VENTILATION TO PREVENT BUILDUP OF VAPORS. Do not use in areas where vapors can accumulate and concentrate such as basements, bathrooms or small enclosed areas. Whenever possible, use outdoors in an open air area. If using indoors open all windows and doors and maintain a cross ventilation of moving fresh air across the work area. If strong odor is noticed or you experience slight dizziness, headache, nausea or eye-watering - STOP - ventilation is inadequate. Leave area immediately. IF THE WORK AREA IS NOT WELL VENTILATED, DO NOT USE THIS PRODUCT. A dust mask does not provide protection against vapors.

DANGER! HARMFUL IF SWALLOWED. VAPOR HARMFUL. EYE IRRITANT. Contains Acetone. Reports have associated repeated and prolonged exposure to solvents with reversible cerebral and other physiological damage. Intentional misuse of this product by deliberately concentrating and inhaling vapors can be harmful or fatal. Do not take intentionally.

Avoid breathing of vapors or aerosol and contact with skin, eyes or clothing.

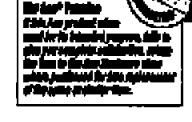
FIRST AID - IF SWALLOWED, call your poison control center, hospital emergency room or physician immediately for instructions. IN CASE OF EYE CONTACT, immediately flush with water, remove any contact lens, continue diluting with water for at least 15 minutes, then get medical attention. IN CASE OF SKIN CONTACT, friction may result. Immediately wash with soap and water.

KEEP OUT OF REACH OF CHILDREN. MAX V.O.C. 3%

PRECAUTION: Hard bristles: Protect hands with solvent-resistant gloves, and eyes with safety glasses. Open can slowly to relieve pressure. Place brush in can such as a coffee can and cover bristles with Brush Cleaner up to the metal ferrule. Soak several hours or overnight, until paint is softened. Occasionally agitate brush in cleaner to speed the softening process, and keep container covered with aluminum foil to slow evaporation. After paint has softened, remove residual paint from heel of brush, using a brush, comb or metal fork. As a final cleaning step, agitate the brush in a small amount of fresh Brush Cleaner, then remove brush and lay it on newspapers. Scraping away from the ferrule, press out excess cleaner using a flat scraper. To store the brush, wrap it in heavy paper to preserve its original shape, and lay flat to dry. To clean brushes and rollers with soft paint: Agitate them in Brush Cleaner immediately after use, then follow the cleaning and storage procedures described above.

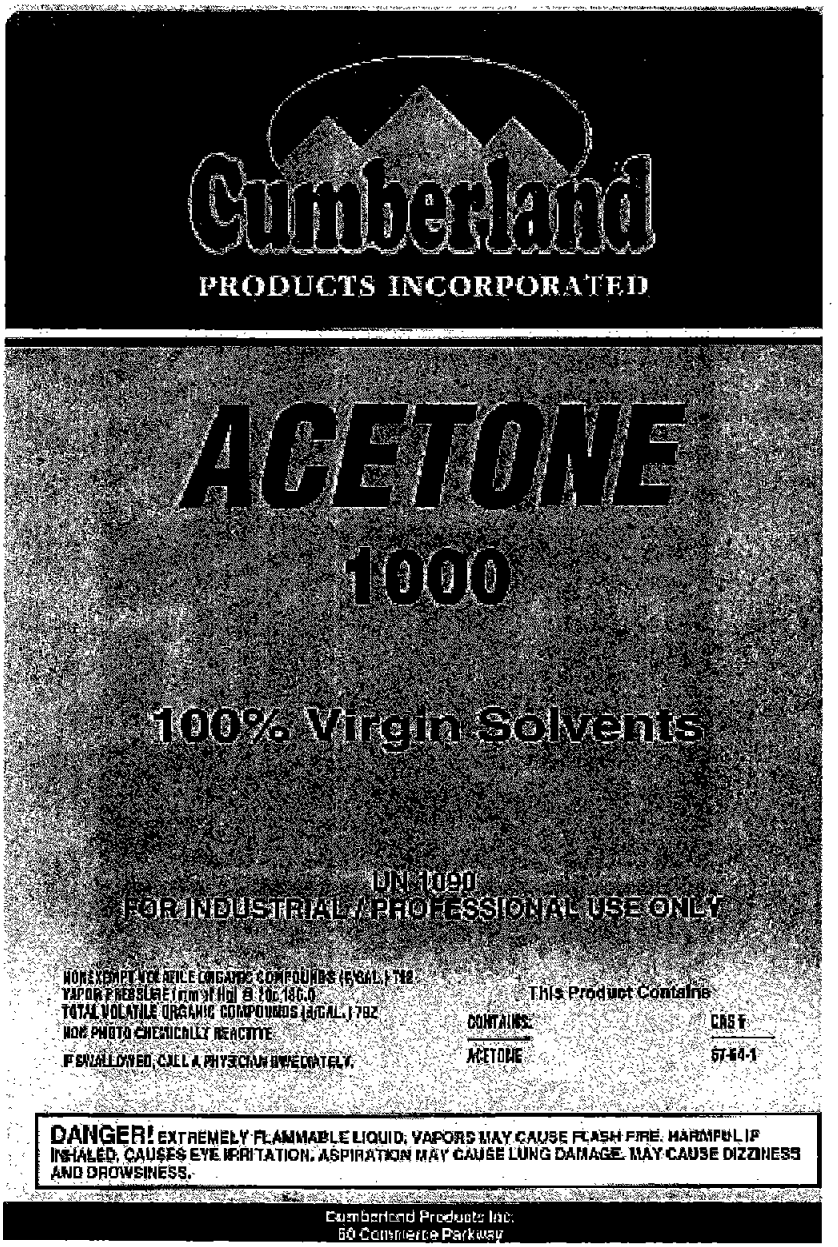
MAX V.O.C. 3%

Manufactured in the U.S.A. for Ace Hardware Corp. Oak Brook, Illinois 60523, USA 60000 www.acehardware.com



J5513

SHAKE WELL
Agítese Bien
Paint Thinner
NEXT®
Diluyente de Pintura
CROWN
Non-Flammable • Low Odor • Low VOC
No Inflamable • Bajo olor • Bajo VOC
• Preps Surfaces, Thins Paint, Cleans Tools & Spills
Prepara superficies, diluye pinturas, limpia herramientas y derrames
• Safer-to-Use than Traditional Paint Thinner
Más seguro al uso que el diluyente de pintura tradicional
• Thins & Cleans Clear, Pours White
Diluye y limpia incoloro, vierte blanco
The NEXT Generation is Green!
DANGER! HARMFUL OR FATAL IF SWALLOWED. Read additional warnings on other panels.
¡PELIGRO! DAÑINO O FATAL SI SE INGIERE. Lea las demás precauciones en los otros paneles del envase.


Cumberland
PRODUCTS INCORPORATED
ACETONE
1000
100% Virgin Solvents
UN 1090
FOR INDUSTRIAL / PROFESSIONAL USE ONLY
This Product Contains
CONTAINS:
CAS #
ACETONE
67-64-1
DANGER! EXTREMELY FLAMMABLE LIQUID. VAPORS MAY CAUSE FLASH FIRE. HARMFUL IF INHALED. CAUSES EYE IRRITATION. ASPIRATION MAY CAUSE LUNG DAMAGE. MAY CAUSE DIZZINESS AND DROWSINESS.
Cumberland Products Inc.
60 Commerce Parkway

Dupli-Color
DUPLI-COLOR
ACETONE
Directions:
Dupli-Color
ACETONE
Premium Cleaner
For Most Any Surface
• Cleans unpainted fiberglass surfaces
• Removes grease and wax from glass, metal and wood
• Evaporates quickly, leaving no residue
CM-522
1 U.S. Gal 3.78 L
Dupli-Color
ACETONE
Premium Cleaner
For Most Any Surface
• Cleans unpainted fiberglass surfaces
• Removes grease and wax from glass, metal and wood
• Evaporates quickly, leaving no residue
CM-522
DUPLI-COLOR ACETONE
CAUTION
PRECAUTIONS

Dupli-Color
PAINT THINNER
CM-532
Dupli-Color
PAINT THINNER
CM-532

Green Envy
Environmentally Friendly
Paint Thinner
Diluyente de Pinturas
Ideal for thinning oil and latex paints,
cleaning brushes & surfaces, and degreasing

¡PELIGRO! NOCIVO O FATAL SI SE INGIERE. IRRITANTE DE LOS OJOS. PUEDE PRODUCIR REACCIONES ALÉRGICAS POR EL CONTACTO CON LA PIEL POR INHALACIÓN. COMBUSTIBLE. Contiene destilados de petróleo. Manténgalo alejado del calor, chispas, llamas abiertas y otras fuentes de ignición. **USE SÓLO CON VENTILACIÓN ADECUADA PARA EVITAR LA CONCENTRACIÓN DE VAPORES.** No use en áreas donde se puedan acumular y concentrar los vapores tales como sótanos, baños o áreas pequeñas encerradas. Siempre que sea posible, use al aire libre en un área bien ventilada. Si va a usar el producto adentro, abra todas las ventanas y puertas y mantenga una ventilación cruzada que mueva el aire fresco a través del área de trabajo. Si nota un olor fuerte o va siendo un poco mareado, con dolor de cabeza, náusea o lagrimación - PARE - la ventilación es inadecuada. Salga del área inmediatamente. **SI EL ÁREA DE TRABAJO NO ESTÁ BIEN VENTILADO, NO USE ESTE PRODUCTO.** Una máscara contra el polvo no proporciona protección contra vapores. No para ser ingerido. Evite el contacto con los ojos o el contacto prolongado con la piel.

PRIMEROS AUXILIOS - EN CASO DE INGESTIÓN. No induzca el vómito. Llame inmediatamente al Centro local de control de venenos, a la sala de emergencia de su hospital o a su médico. **EN CASO DE CONTACTO CON LOS OJOS,** lávelos inmediatamente con agua y retire cualquier lente de contacto; continúe enjuagando durante por lo menos 15 minutos y luego obtenga atención médica. **EN CASO DE CONTACTO PROLONGADO CON LA PIEL,** lave cuidadosamente con agua y jabón. Obtenga asistencia médica si persiste la irritación.

MANTÉNGASE FUERA DEL ALCANCE DE LOS NIÑOS

Klean-Strip

Gum Spirits Turpentine Substitute

Substituto de trementina

El Substituto de trementina Klean-Strip® remueve adhesivos fresco de uso general. Remueve el olor los adhesivos secos.

INSTRUCCIONES PARA EL USO: Siga las instrucciones de manufactura de la pintura, para la cantidad necesaria.

IMPORTANTE: Lea todas las precauciones e instrucciones antes del uso. Sólo use este producto como lo indica la etiqueta. No utilice este en combustible. No lo use para ningún otro propósito. No utilice de este producto en forma grande porque los peligros de incendio y riesgos para la salud aumentan dramáticamente. Use gafas protectoras para sus ojos y evite el contacto prolongado con la piel. Nunca se ha tropezado con ningún otro. No use como ninguna de las fuentes de agua, no disminuirán de latex, lace, pero lace o resinas epóxicas.

EL USO Y LA MANIPULACIÓN RESPONSABLES DE LOS PRODUCTOS QUÍMICOS PUEDEN EVITAR DAÑOS A USTED Y AL MEDIO AMBIENTE.

ALMACENAMIENTO: Manténgalo en un lugar fresco y seco. Cierre el recipiente después de cada uso. No vuelva a usar el recipiente. **DESECHO:** Cuando lo acuerdo con todas las regulaciones federales, estatales y locales.

Klean-Strip® Gum Spirits Turpentine Substitute removes fresh general purpose adhesives. Will remove some dried adhesives.

DIRECTIONS FOR USE: Follow the coating manufacturers instructions for the required amount.

IMPORTANT: Carefully read all directions, notes and cautions prior to use. Only use this product as directed on the label. Do not use as a fuel. Do not use for any other purpose. Do not spread this product over large surface areas because the and health safety risks will increase dramatically. Protect eyes with chemical splash goggles and avoid prolonged skin contact. Do not use as a general purpose cleaner. Do not use as a thinner for water-based paint, latex coatings, lacquer, shellac or epoxy.

RESPONSIBLE USE AND HANDLING OF ALL CHEMICALS CAN PREVENT HARM TO YOU AND THE ENVIRONMENT.

STORAGE: Keep it in a cool, dry spot. Keep container closed when not in use. Do not reuse this container. **DISPOSAL:** Dispose of in accordance with federal, state and local regulations.

DANGER! HARMFUL OR FATAL IF SWALLOWED. EYE IRRITANT, MAY CAUSE ALLERGIC REACTION BY SKIN CONTACT OR INHALATION. COMBUSTIBLE. Contains Petroleum Distillates. Keep away from heat, sparks, open flames, and other ignition sources. **USE ONLY WITH ADEQUATE VENTILATION TO PREVENT BUILDUP OF VAPORS.** Do not use in areas where vapors can accumulate and concentrate such as basements, bathrooms or small enclosed areas. Whenever possible, use outdoors in an open air area. If using indoors open all windows and doors and maintain a cross ventilation of moving fresh air across the work area. If strong odor is noticed or you experience slight dizziness, headache, nausea or eye-watering - STOP - ventilation is inadequate. Leave area immediately. **IF THE WORK AREA IS NOT WELL VENTILATED, DO NOT USE THIS PRODUCT.** A dust mask does not provide protection against vapors. Do not take internally. Avoid contact with eyes and prolonged contact with skin.

FIRST AID - IF SWALLOWED, do not induce vomiting. Immediately call poison control center, hospital emergency room or physician. **IN CASE OF EYE CONTACT,** immediately flush with water, remove any contact lens, continue flushing with water for at least 15 minutes, then get medical attention. **IN CASE OF PROLONGED SKIN CONTACT,** wash thoroughly with soap and water. If irritation persists, get medical attention.

KEEP OUT OF REACH OF CHILDREN

Product Category - General Purpose Adhesive Remover
MAX VOC: 20%

Product # [illegible]
©2010 W.M. Barr & Co., Inc.
Memphis, TN 38113
www.kleanstrip.com
All rights reserved.
Label designed a trademark of W.M. Barr & Co., Inc.
15668

Destilados de petróleo de Klean-Strip® es un solvente concentrado que limpia y desengrasa de manera efectiva pinceles, cepillos, herramientas y equipos inmediatamente después de su usados.

INSTRUCCIONES PARA EL USO:
Para recubrimientos nuevos con base de aceite, sople la brocha el medio en Destilados de petróleo hasta que se disuelva. Escurra el exceso. Después siguiente limpie Destilados de petróleo fresco. Elimine el exceso de solvente y vuelva a secar.
Para desengrasar, aplique a un paño limpio y pase exhaustivamente. No está previsto para ser usado diluyente en California.
Para limpiar y desengrasando superficies grandes antes de pintar: 1. Vierta una pequeña cantidad de producto en una pintura vacía puede u otro contenedor compatible. 2. Moje limpio con el contenedor para que haya a ser saturado. Escurra el exceso en el contenedor para quitar exceso de producto. 3. El uso trapo para limpiar superficie. 4. Repita pasos 2 y 3 hasta que superficie sea limpia. 5. La superficie de la trabaja seca y prepara para pintar. 6. Coloque los trapos sucios y el solvente en un recipiente hermético y deséchelo adecuadamente.

Klean-Strip®

Mineral Spirits

Use in place of Paint Thinner for cleaning and degreasing
Cleans up after an oil-based paint project

Destilados de Petróleo

Se usa en lugar de diluyente para pintar para limpieza y desengrase
Limpia después de trabajos de pintura a base de aceite

DANGER! HARMFUL OR FATAL IF SWALLOWED. EYE IRRITANT.
Read other cautions on back panel.

¡PELIGRO! NOCIVO O LETAL SI SE INGIERE. IRRITANTE DE LOS OJOS.
Lea las demás precauciones al dorso.

ONE GALLON (3.785 L)

EL USO Y LA MANIPULACIÓN RESPONSABLES DE LOS PRODUCTOS QUÍMICOS PUEDEN EVITAR DAÑOS A USTED Y AL MEDIO AMBIENTE.
ALMACENAMIENTO: No use ni almacene este producto cerca de fuentes de calor, llamas abiertas, aparatos de llamas, llamas piloto, estufas, etc. Manténgalo en un lugar fresco y seco. Cierre y almacene el recipiente en posición vertical después de cada uso. No vuelva a usar el recipiente.
DESECHO APROPIADO: Deseche de acuerdo con todos los reglamentos federales estatales y locales.
IMPORTANTE: Lea todas las precauciones e instrucciones antes del uso. Sólo use este producto como lo indica la etiqueta. Use gafas protectoras para sus ojos y evite el contacto prolongado con la piel.
¡PELIGRO! NOCIVO O FATAL SI SE INGIERE. IRRITANTE DE LOS OJOS. Contiene destilados de petróleo e hidrocarburos aromáticos. Manténgalo alejado del calor, chispas, llamas abiertas y otras fuentes de ignición. **USE SÓLO CON VENTILACIÓN ADECUADA PARA EVITAR LA CONCENTRACIÓN DE VAPORES.** Una máscara contra el polvo no proporciona protección contra vapores. No para ser ingerido. Evite el contacto con los ojos o el contacto prolongado con la piel. **PRIMEROS AUXILIOS - EN CASO DE INGESTIÓN,** no induzca el vómito. Llame inmediatamente al Centro local de control de venenos, a la sala de emergencia de su hospital o su médico. **EN CASO DE CONTACTO CON LOS OJOS,** lávelos (irrigue) inmediatamente con agua y retire cualquier lente de contacto; continúe enjuagando durante por lo menos 15 minutos, después obtenga atención médica de inmediato. **EN CASO DE CONTACTO PROLONGADO CON LA PIEL,** lave cuidadosamente con agua y jabón. Obtenga asistencia médica si persiste la irritación.
MANTÉNGASE FUERA DEL ALCANCE DE LOS NIÑOS

Categoría de producto: desengrasante de uso general
Contenido máx. en COV: 4%

Klean-Strip® Mineral Spirits is a strong solvent that is effectively cleans and degreases paint brushes, tools and equipment immediately after use.

DIRECTIONS FOR USE:
For fresh oil-based coatings, agitate brush or roller in Mineral Spirits until all visible resin is dissolved. Then rinse using fresh Mineral Spirits. Knock out excess solvent and hang to dry.
For degreasing, apply to a clean cloth and wipe thoroughly. Not intended for use as a thinner in California.
For cleaning and degreasing large surfaces before painting: 1. Pour in appropriate amount of product into an empty paint can or other compatible container. 2. Dip rag into solvent and as it becomes saturated, squeeze rag into container to remove excess product. 3. Use wetted rag to wipe down surface. 4. Repeat steps 2 and 3 until surface is clean. 5. Wipe surface dry and prepare to paint. 6. Place dirty rags and solvent in an airtight container and dispose of properly.

RESPONSIBLE USE AND HANDLING OF ALL CHEMICALS CAN PREVENT HARM TO YOU AND THE ENVIRONMENT.
STORAGE: Do not use or store this product near any source of heat or open flame, furnace areas, pilot lights, stoves, etc. Keep it in a cool, dry spot. Keep container closed when not in use. Do not reuse this container.
PROPER DISPOSAL: Dispose of in accordance with federal, state and local regulations.
IMPORTANT: Carefully read all directions, notes and cautions prior to use. Only use this product as directed on the label. Protect eyes with chemical splash goggles and avoid prolonged skin contact.
DANGER! HARMFUL OR FATAL IF SWALLOWED. EYE IRRITANT. Contains Petroleum Distillates and Aromatic Hydrocarbon. Keep away from heat, sparks, open flames and other ignition sources. **USE ONLY WITH ADEQUATE VENTILATION TO PREVENT BUILDUP OF VAPORS.** A dust mask does not provide protection against vapors. Do not take internally. Avoid contact with eyes and prolonged contact with skin.
FIRST AID – IF SWALLOWED, do not induce vomiting, immediately call poison control center, hospital emergency room or physician. **IN CASE OF EYE CONTACT,** immediately flush with water, remove any contact lens, continue flushing with water for at least 15 minutes, then get immediate medical attention. **IN CASE OF PROLONGED SKIN CONTACT,** wash thoroughly with soap and water. If irritation persists, get medical attention.
KEEP OUT OF REACH OF CHILDREN

Product Category – General Purpose Degreaser
Max VOC Content- 4%

Product of CLEVELAND
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El Diluyente de Pintura Klean-Strip® diluye efectivamente pinturas a base de aceite y barniz. El diluyente de pintura es un limpiador para brochas y equipos inmediatamente después de usarlos.

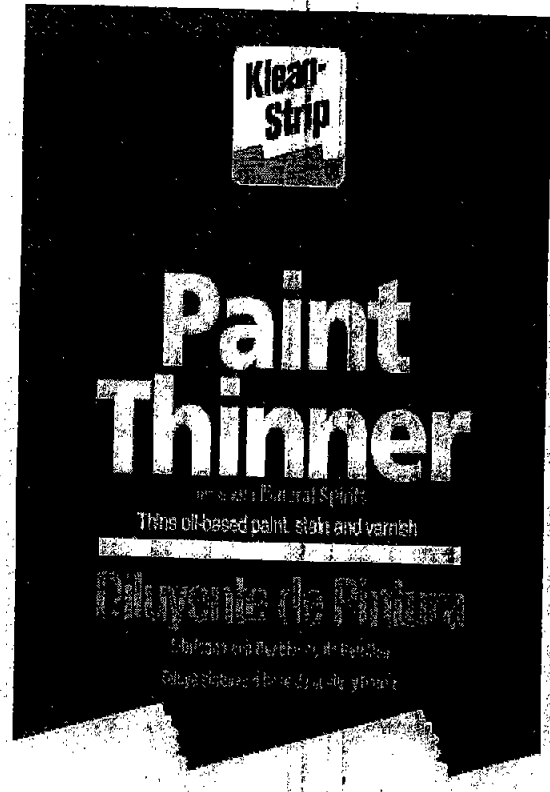
Instrucciones para el uso:
Siga las instrucciones del fabricante de la pintura para la cantidad de diluyente requerida, no use más de la cantidad recomendada. Agregue gradualmente y revuelva minuciosamente hasta obtener la consistencia deseada. No lo use como un diluyente para pinturas látex o a otros recubrimientos al agua, tales como lacas. No está diseñado para su venta o uso en SCAQMD.
Para recubrimientos reciientes a base de aceite, agite la brocha o el rodillo en Diluyente de pintura hasta el salvy todo residuo visible. Luego enjuague con diluyente de pintura fresco. Presione para eliminar el exceso y colóquelo en forma plana para secar.

EL USO Y LA MANIPULACIÓN RESPONSABLE DE LOS PRODUCTOS QUÍMICOS PUEDEN EVITAR DAÑOS A USTED Y AL MEDIO AMBIENTE.

ALMACENAMIENTO: No use ni almacene esta producto cerca de fuentes de calor, llamas abiertas, zonas de hornos, llamas piloto, estufas, etc. Manténgalo en un lugar fresco y seco. Cierre y almacene el recipiente en posición vertical después de cada uso. No vuelva a usar el recipiente.

DESECHO APROPIADO: Deséchelo de acuerdo con todos los reglamentos federales, estatales y locales.

IMPORTANTE: Lea todas las precauciones e instrucciones antes del uso. Solo use este producto como lo indica la etiqueta. No utilice cerca de combustible. No lo use para ningún otro propósito. No lo revenda ni regale este producto. No guarde este producto en áreas grandes porque los peligros de incendio y riesgos para la salud aumentarán dramáticamente. Use guantes protectores para su piel y evite el contacto prolongado con la piel.



DANGER! HARMFUL OR FATAL IF SWALLOWED. COMBUSTIBLE.
Read other cautions on back panel.

¡PELIGRO! NOCIVO O LETAL SI SE INGIERE. COMBUSTIBLE.
Lea las demás precauciones al dorso.

ONE GALLON (3.785 L)

¡PELIGRO! NOCIVO O FATAL SI SE INGIERE. COMBUSTIBLE. Contiene destilados de petróleo. Manténgalo alejado del calor, chispas, llamas abiertas y otras fuentes de ignición. **USE SÓLO CON VENTILACIÓN ADECUADA PARA EVITAR LA CONCENTRACIÓN DE VAPORES.** No use en áreas donde se puedan acumular y concentrar los vapores tales como sótanos, baños o áreas pequeñas encerradas. Siempre que sea posible, use al aire libre en un área bien ventilada. Si va a usar el producto adentro, abra todas las ventanas y puertas y mantenga una ventilación cruzada que mueva el aire fresco a través del área de trabajo. Si nota un olor fuerte o se siente un poco mareado, con dolor de cabeza, náusea o lagrimación - PARE - la ventilación es inadecuada. Salga de área inmediatamente. SI EL ÁREA DE TRABAJO NO ESTÁ BIEN VENTILADO, NO USE ESTE PRODUCTO. Una máscara contra el polvo no proporciona protección contra vapores, no para ser ingerido. Evite el contacto con los ojos o el contacto prolongado con la piel.
PRIMEROS AUXILIOS - EN CASO DE INGESTIÓN, no induzca el vómito. Llame inmediatamente al Centro local de control de venenos, a la sala de emergencia de su hospital o a su médico. **EN CASO DE CONTACTO CON LOS OJOS,** lávelos inmediatamente con agua y retire cualquier lente de contacto; continúe enjuagando durante por lo menos 15 minutos y luego obtenga atención médica. **EN CASO DE CONTACTO PROLONGADO CON LA PIEL,** lave cuidadosamente con agua y jabón. Obtenga asistencia médica si persiste la irritación.
MANTÉNGASE FUERA DEL ALCANCE DE LOS NIÑOS

Categoría de producto: diluyente de pintura
Contenido máx. en COV: 30%

Klean-Strip® Paint Thinner effectively thins oil-based paint, stain and varnish. It can also be used to clean brushes and equipment immediately after use.

Directions for Use:
Follow the paint product manufacturer's instructions for the proper amount of paint thinner required, do not use more than recommended. Add gradually and stir thoroughly until desired consistency is obtained. Do not use as a thinner for latex paint or other water based coatings. Lacquer or shellac. Not intended for sale or use in SCAQMD.
For fresh oil-based coatings, agitate brush or roller in Paint Thinner until all visible residue is dissolved. Then rinse using fresh Paint Thinner. Press out excess and lay flat to dry.

RESPONSIBLE USE AND HANDLING OF ALL CHEMICALS CAN PREVENT HARM TO YOU AND THE ENVIRONMENT.
STORAGE: Do not use or store this product near any source of heat or open flame, furnace areas, pilot lights, stoves, etc. Keep it in a cool, dry spot. Keep container closed when not in use. Do not reuse this container.
PROPER DISPOSAL: Dispose of in accordance with federal, state and local regulations.
IMPORTANT: Carefully read all directions, notes and cautions prior to use. Only use this product as directed on the label. Do not use as a fuel. Do not use for any other purpose. Do not mix with any other product. Do not spread this product over large surface areas as becoming fire and health safety risks will increase dramatically. Protect eyes with chemical splash goggles and avoid prolonged skin contact.

DANGER! HARMFUL OR FATAL IF SWALLOWED. COMBUSTIBLE. Contains Petroleum Distillates. Keep away from heat, sparks, open flames and other ignition sources. **USE ONLY WITH ADEQUATE VENTILATION TO PREVENT BUILDUP OF VAPORS.** Do not use in areas where vapors can accumulate and concentrate such as basements, bathrooms or small enclosed areas. Whenever possible, use outdoors in an open air area. If using indoors open all windows and doors and maintain a cross ventilation of moving fresh air across the work area. If strong odor is noticed or you experience slight dizziness, headache, nausea or eye-watering - STOP - ventilation is inadequate. Leave area immediately. IF THE WORK AREA IS NOT WELL VENTILATED, DO NOT USE THIS PRODUCT. A dust mask does not provide protection against vapors. Do not take internally. Avoid contact with eyes and prolonged contact with skin.
FIRST AID - IF SWALLOWED, do not induce vomiting. Call Poison Control Center, hospital emergency room or physician immediately. **IN CASE OF EYE CONTACT,** immediately flush with water, remove any contact lens, continue flushing with water for at least 15 minutes, then get medical attention. **IN CASE OF PROLONGED SKIN CONTACT,** wash thoroughly with soap and water. If irritation persists, get medical attention.
KEEP OUT OF REACH OF CHILDREN

Product Category – Paint Thinner
Max VOC Content: 30%

Product of CHEMTRONICS
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El Diluyente de Pintura Klean-Strip® diluye eficientemente pinturas a base de aceite y barniz. Diseñado para la dilución de recubrimientos utilizados para el mantenimiento industrial.

Instrucciones para el uso:
Siga las instrucciones del fabricante de la pintura para la cantidad de diluyente requerida; no use más de la cantidad recomendada. Agregue gradualmente y revuelva minuciosamente hasta obtener la consistencia deseada. No lo use como un diluyente para pintura látex u otros recubrimientos al agua, laca ni goma laca.

EL USO Y LA MANIPULACIÓN RESPONSABLES DE LOS PRODUCTOS QUÍMICOS PUEDEN EVITAR DAÑOS A USTED Y AL MEDIO AMBIENTE.

ALMACENAMIENTO: No use ni almacene este producto cerca de fuentes de calor, llamas abiertas, pilotos de hornos, llamas piloto, estufas, etc. Manténgalo en un lugar fresco y seco. Cierre y almacene el recipiente en posición vertical después de cada uso. No vuelva a usar el recipiente.

DESECHO APROPIADO: Deseche de acuerdo con todos los reglamentos federales estables y locales.

¡IMPORTANTE! Lea todas las precauciones e instrucciones antes del uso. Solo use este producto como lo indica la etiqueta. No utilice este en combustible. No lo use para ningún otro propósito ni lo mezcle con ningún otro producto. Nuestra ida este producto en áreas grandes porque los peligros de incendio y riesgos para la salud aumentarán dramáticamente. Use gafas protectoras para evitar los ojos y evite el contacto prolongado con la piel.

Klean-Strip

Paint Thinner

Mineral Spirits

Excellent for thinning oil-based paint, stain and varnish

Diluyente de Pintura

Para uso en pinturas de base aceite

DANGER! HARMFUL OR FATAL IF SWALLOWED. EYE IRRITANT. COMBUSTIBLE.
Read other cautions on back panel.

¡PELIGRO! NOCIVO O LETAL SI SE INGIERE. IRRITANTE DE LOS OJOS. COMBUSTIBLE.
Lea las demás precauciones al dorso.

ONE GALLON (3.785 L)

¡PELIGRO! NOCIVO O FATAL SI SE INGIERE. IRRITANTE DE LOS OJOS. **COMBUSTIBLE.** Contiene destilados de petróleo. Manténgalo alejado del calor, chispas, llamas abiertas y otras fuentes de ignición. **USE SÓLO CON VENTILACIÓN ADECUADA PARA EVITAR LA CONCENTRACIÓN DE VAPORES.** No use en áreas donde se puedan acumular y concentrar los vapores tales como sótanos, baños o áreas pequeñas encerradas. Siempre que sea posible, use al aire libre en un área bien ventilada. Si va a usar el producto adentro, abra todas las ventanas y puertas y mantenga una ventilación cruzada que mueva el aire fresco a través del área de trabajo. Si nota un olor fuerte o se siente un poco mareado, con dolor de cabeza, náusea o irritación - PARE - la ventilación es inadecuada. Salga del área inmediatamente. SI EL ÁREA DE TRABAJO NO ESTÁ BIEN VENTILADO, NO USE ESTE PRODUCTO. Una máscara contra el polvo no proporciona protección contra vapores. No para ser ingerido. Evite el contacto con los ojos o el contacto prolongado con la piel. **PRIMEROS AUXILIOS - EN CASO DE INGESTIÓN,** no induzca el vómito. Llame inmediatamente al Centro local de control de venenos, a la sala de emergencia de su hospital o a su médico. **EN CASO DE CONTACTO CON LOS OJOS,** lávelos inmediatamente con agua y retire cualquier lente de contacto; continúe enjuagando durante por lo menos 15 minutos y luego obtenga atención médica. **EN CASO DE CONTACTO PROLONGADO CON LA PIEL,** lave cuidadosamente con agua y jabón. Obtenga asistencia médica si persiste la irritación.

MANTÉNGASE FUERA DEL ALCANCE DE LOS NIÑOS

Klean-Strip® Paint Thinner effectively thins oil-based paint, stain and varnish. Designated for the thinning of Industrial Maintenance Coatings.

Directions for Use:
Follow the paint product manufacturer's instructions for the proper amount of paint thinner required; do not use more than recommended. Add gradually and stir thoroughly until desired consistency is obtained. Do not use as a thinner for latex paint or other water based coatings, lacquer or shellac.

RESPONSIBLE USE AND HANDLING OF ALL CHEMICALS CAN PREVENT HARM TO YOU AND THE ENVIRONMENT.

STORAGE: Do not use or store this product near any source of heat or open flame, furnace areas, pilot lights, stoves, etc. Keep it in a cool, dry spot. Keep container closed when not in use. Do not reuse this container.

PROPER DISPOSAL: Dispose of in accordance with federal, state and local regulations.

IMPORTANT: Carefully read all directions, notes and cautions prior to use. Only use this product as directed on the label. Do not use as a fuel. Do not use for any other purpose. Do not mix with any other product. Do not spread this product over large surface areas because fire and health safety risks will increase dramatically. Protect eyes with chemical splash goggles and avoid prolonged skin contact.

DANGER! HARMFUL OR FATAL IF SWALLOWED. EYE IRRITANT. COMBUSTIBLE. Contains Petroleum Distillates. Keep away from heat, sparks, open flames, and other ignition sources. **USE ONLY WITH ADEQUATE VENTILATION TO PREVENT BUILDUP OF VAPORS.** Do not use in areas where vapors can accumulate and concentrate such as basements, bathrooms or small enclosed areas. Whenever possible, use outdoors in an open air area. If using indoors open all windows and doors and maintain a cross ventilation of moving fresh air across the work area. If strong odor is noticed or you experience slight dizziness, headache, nausea or eye-watering - STOP - ventilation is inadequate. Leave area immediately. IF THE WORK AREA IS NOT WELL VENTILATED, DO NOT USE THIS PRODUCT. A dust mask does not provide protection against vapors. Do not take internally. Avoid contact with eyes and prolonged contact with skin.
FIRST AID – IF SWALLOWED, do not induce vomiting, immediately call poison control center, hospital emergency room or physician. **IN CASE OF EYE CONTACT,** immediately flush with water, remove any contact lens, continue flushing with water for at least 15 minutes, then get medical attention. **IN CASE OF PROLONGED SKIN CONTACT,** wash thoroughly with soap and water. If irritation persists, get medical attention.
KEEP OUT OF REACH OF CHILDREN

Product Category - Industrial Maintenance Coating Thinner

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Monday through Friday, 8 a.m. to 5:30 p.m. Central Time

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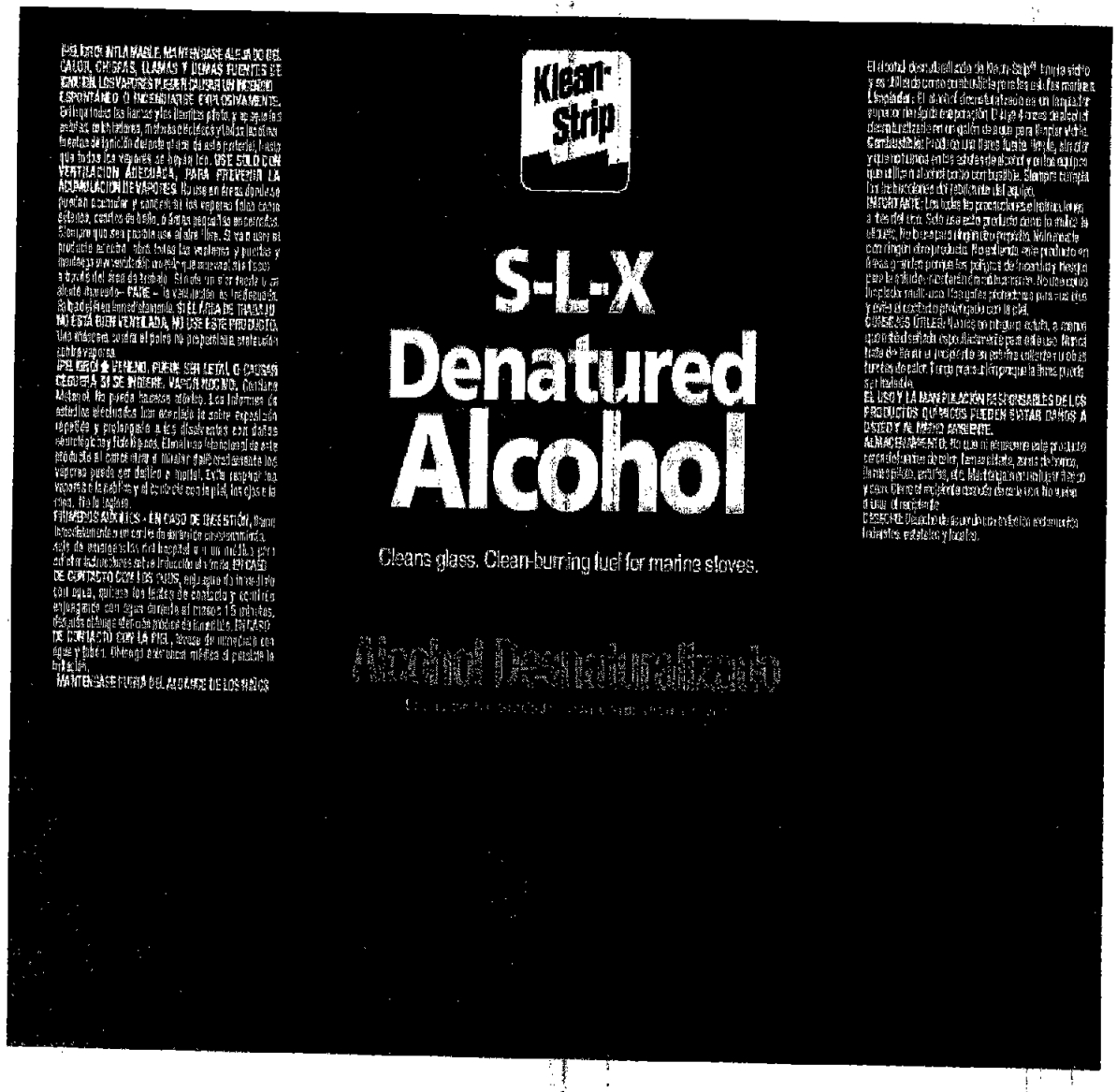

Klean-Strip® Denatured Alcohol cleans glass and is used as a fuel for marine stoves.
Cleaner: Denatured Alcohol is a superior, fast-evaporating cleaner. Dilute 4 oz. Denatured Alcohol to a gallon of water to clean glass.
Fuel: Produces a hot, clean, odorless and smokeless flame in alcohol stoves and alcohol burning appliances. Always follow appliance manufacturer's instructions.

IMPORTANT: Carefully read all directions, notes and cautions prior to use. Only use this product as directed on the label. Do not use for any other purpose. Do not spread this product over large surface areas because fire and health safety risks will increase dramatically. Do not use as a general purpose cleaner. Protect eyes with chemical splash goggles and avoid prolonged skin contact.

HELPFUL TIPS: Do not use in any stove unless specified as an alcohol fuel stove. Never attempt to fill a hot stove or heat source. Use caution as flame may be invisible.

RESPONSIBLE USE AND HANDLING OF ALL CHEMICALS CAN PREVENT HARM TO YOU AND THE ENVIRONMENT.

STORAGE: Do not use or store this product near any source of heat or open flame, furnace areas, pilot lights, stoves, etc. Keep it in a cool, dry spot. Keep container closed when not in use. Do not reuse this container. **DISPOSAL:** Dispose of in accordance with federal, state and local regulations.

DANGER! FLAMMABLE. KEEP AWAY FROM HEAT, SPARKS, FLAME AND ALL OTHER SOURCES OF IGNITION. VAPORS MAY CAUSE FLASH FIRE OR IGNITE EXPLOSIVELY. Extinguish all flames and pilot lights, and turn off all stoves, heaters, electric motors and all other sources of ignition during use and until all vapors are gone. **USE ONLY WITH ADEQUATE VENTILATION TO PREVENT BUILDUP OF VAPORS.** Do not use in areas where vapors can accumulate and concentrate such as basements, bathrooms and small, enclosed areas. Whenever possible use outdoors in an open air area. If using indoors open all windows and doors and maintain a cross ventilation of moving fresh air across the work area. If strong odor is noticed or you experience slight dizziness – **STOP** – ventilation is inadequate. Leave area immediately. **IF THE WORK AREA IS NOT WELL VENTILATED, DO NOT USE THIS PRODUCT.** A dust mask does not provide protection against vapors.
DANGER! POISON. MAY BE FATAL OR CAUSE BLINDNESS IF SWALLOWED. VAPOR HARMFUL. Contains Methanol. Contains denatured alcohol-poisonous. Reports have associated repeated and prolonged overexposure to solvents with neurological and other physiological damage. Intentional misuse of this product by deliberately concentrating and inhaling vapors can be harmful or fatal. Avoid breathing of vapors or mist and contact with skin, eyes and clothing. Do not take internally.
FIRST AID – IF SWALLOWED, immediately call your poison control center, hospital emergency room or physician for instructions on inducing vomiting. **IN CASE OF EYE CONTACT,** immediately flush with water, remove any contact lens, continue flushing with water for at least 15 minutes, then get immediate medical attention. **IN CASE OF SKIN CONTACT,** immediately wash with soap and water. If irritation persists, get medical attention.
KEEP OUT OF REACH OF CHILDREN

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The Quality Run Since 1880
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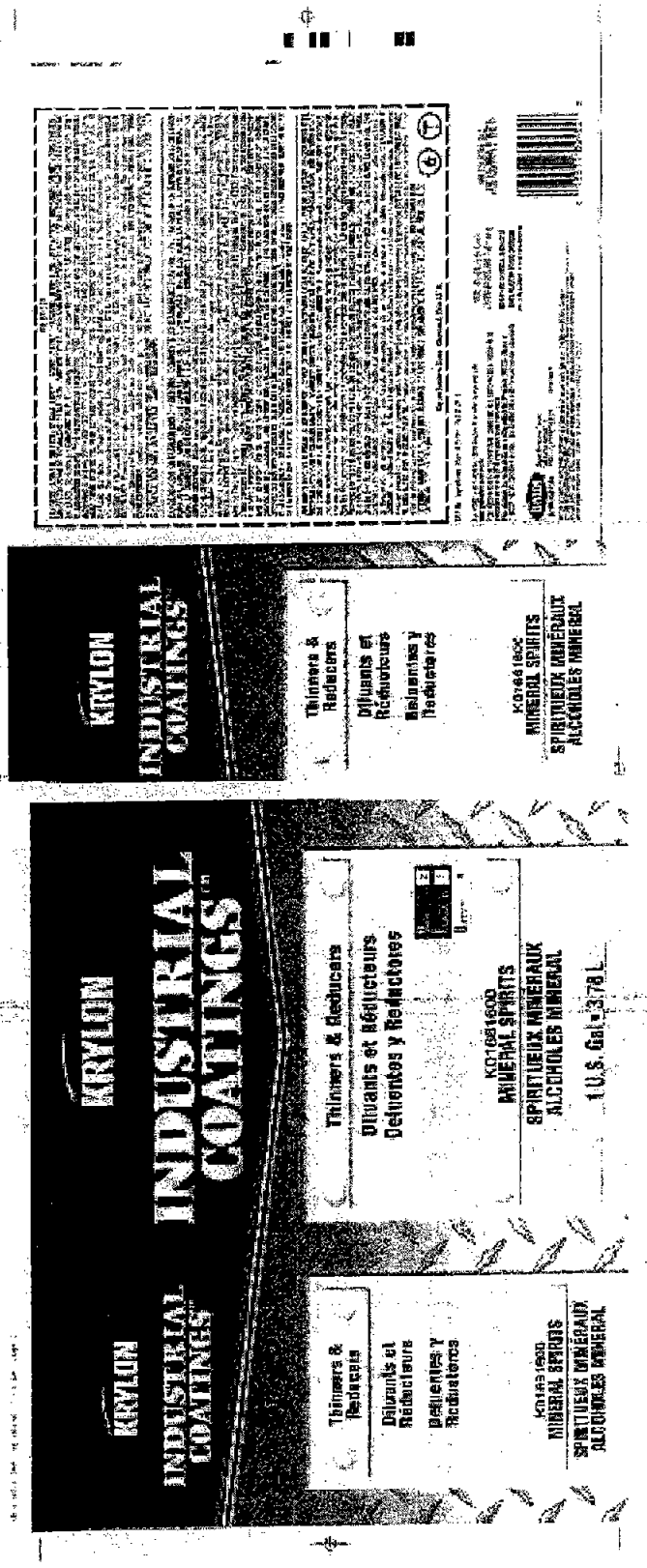
KRYLON
INDUSTRIAL COATINGS
Thinners & Reducers
Diluants et Réducteurs
Deluentes y Reductores
MINERAL SPIRITS
SPIRITUEUX MINÉRAUX
ALCOHOLES MINERAL
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ALCOHOLES MINERAL
1 U.S. Gal = 3.78 L
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INDUSTRIAL COATINGS
Thinners & Reducers
Diluants et Réducteurs
Deluentes y Reductores
MINERAL SPIRITS
SPIRITUEUX MINÉRAUX
ALCOHOLES MINERAL

sunnyside

acetone

Acetona

Powerful, fast drying thinner for boat, auto body and epoxy resins.

100% water miscible

84032

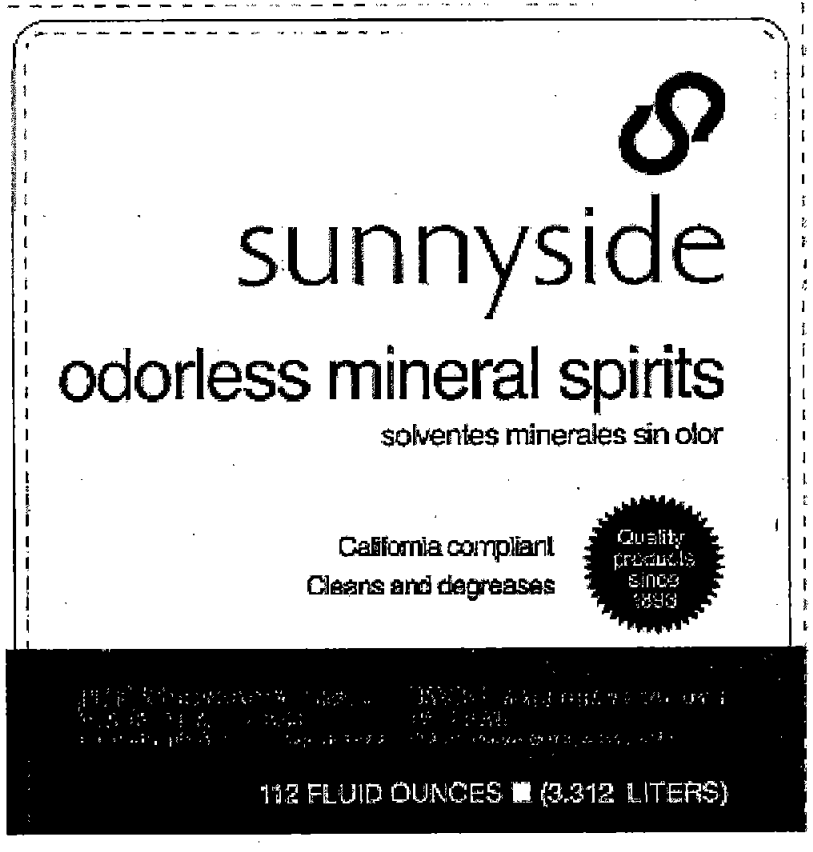
DANGER! EXTREMELY FLAMMABLE LIQUID & VAPOR. VAPORS MAY CAUSE FLASH FIRE.

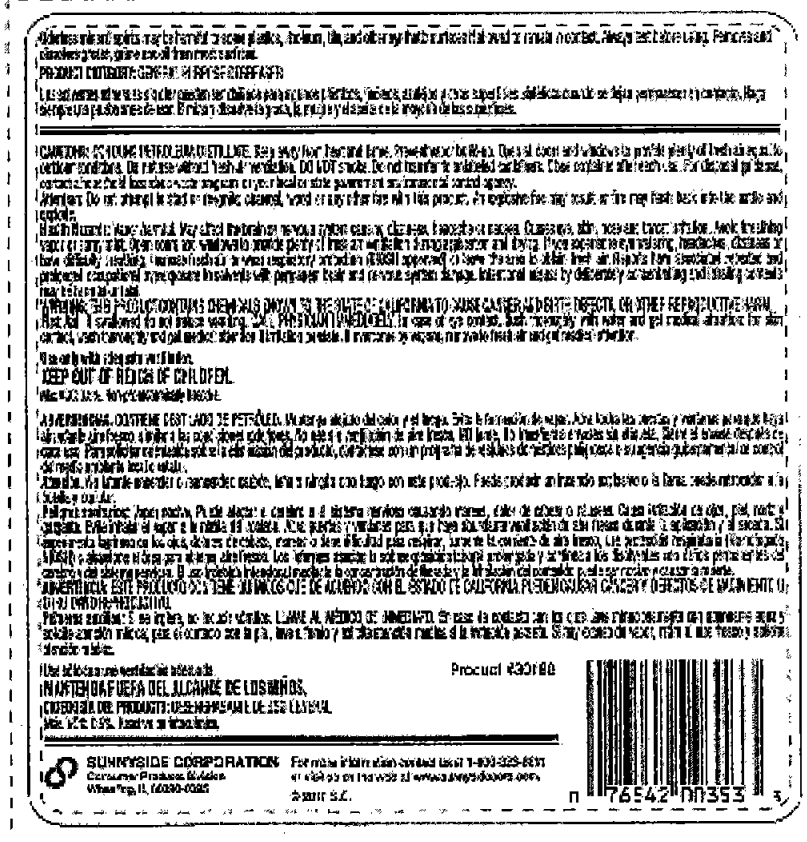
¡PELIGRO! LÍQUIDO Y VAPOR EXTREMADAMENTE INFLAMABLE. LOS VAPORES PUEDEN CAUSAR INCENDIO REPENTINO.

32 FL.OZ.(1QT) ■ .9463 LITER

KEEP OUT OF REACH OF CHILDREN.

MANTENGA FUERA DEL ALCANCE DE LOS NIÑOS.


sunnyside
odorless mineral spirits
solventes minerales sin olor
California compliant
Cleans and degreases
Quality products since 1888
112 FLUID OUNCES ■ (3.312 LITERS)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Product #30188
SUNNYSIDE CORPORATION

Appendix I

Methodology to Determine Recurring Costs

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Methodology to Determine Recurring Costs

Staff evaluated formulations of complying and noncomplying products for each category for which a lower or new reactivity limit or VOC standard is proposed. These formulations are then used to develop example, nonconfidential formulas that are representative of the category. These representative complying and noncomplying formulas are used to estimate the cost of raw materials to produce each formulation. The difference in cost between a pound of complying and noncomplying formula is then calculated. Next, the typical unit size is used to calculate the cost to comply per unit. The typical unit size is the predominant unit size in a category as reported in the 2010 Survey and the 2012 Technical Assessment for "Multi-purpose Solvent" and "Paint Thinner" products (ARB, 2012).

To assign costs, distributor-level ingredient prices from *ICIS Chemical Business* website (ICIS, 2012), and chemical materials distributors were used to calculate the baseline and compliant material costs for these formulations. Low and high cost scenarios are calculated for each category. In the low cost scenario, the cost per pound of product is calculated using the low end estimate of the cost of each raw material. In the high cost scenario, the high end of the raw material price range is used. Ingredients for which prices were unknown were grouped into an "all others" classification and assigned a default cost of $1.50 per pound (ARB, 2007).

In some cases, the compliant formula is less expensive than the typical noncompliant formula. This is true, for example, when some amount of VOC solvent is replaced with a lower cost VOC solvent. Also, if the high cost estimate of the solvent is significantly higher than the low cost estimate, the net savings to reformulate will *increase* in the high cost scenario.

The costs calculated here are then copied into Tables VII-1a and VII-1b in Chapter VII, Economic Impacts and used to determine total costs of the proposed amendments.

A. Consumer Products

Category: Consumer Product
Subcategory: Mist Spray Adhesive
Typical VOC (%): 53
Proposed Limit (%): 30
Typical Unit Size (oz.): 11

LOW COST

Component	Unit Cost $/lb	Typical Non-Complying		Typical Complying	
		WT%	Cost	WT%	Cost
Hydrocarbon Propellant	0.50	23	$ 0.12	20	$ 0.10
Aliphatic Hydrocarbon Solvent	0.53	30	$ 0.16	10	$ 0.05
Acetone	0.46	27	$ 0.12	50	$ 0.23
Solids	1.50	20	$ 0.30	20	$ 0.30
Total		100		100	
Total Cost, $/lb			$ 0.70		$ 0.68
% Cost Diff. Relative to Current Product					-0.02
Total Cost, $/Unit			$ 0.48		$ 0.47

HIGH COST

Component	Unit Cost $/lb	Typical Non-Complying		Typical Complying	
		WT%	Cost	WT%	Cost
Hydrocarbon Propellant	0.85	23	$ 0.20	20	$ 0.17
Aliphatic Hydrocarbon Solvent	0.65	30	$ 0.20	10	$ 0.07
Acetone	0.62	27	$ 0.17	50	$ 0.31
Solids	1.50	20	$ 0.30	20	$ 0.30
Total		100		100	
Total Cost, $/lb			$ 0.86		$ 0.85
% Cost Diff. Relative to Current Product					-0.015
Total Cost, $/Unit			$ 0.59		$ 0.58

Category: Consumer Product
Subcategory: Screen Print Adhesive
Typical VOC (%): 60
Proposed Limit (%): 55
Typical Unit Size (oz.): 14

LOW COST

Component	Unit Cost $/lb	Typical Non-Complying		Typical Complying	
		WT%	Cost	WT%	Cost
Hydrocarbon Propellant	0.50	23	$ 0.12	20	$ 0.10
Aliphatic Hydrocarbon Solvent	0.53	37	$ 0.20	35	$ 0.19
Acetone	0.46	20	$ 0.09	25	$ 0.12
Solids	1.50	20	$ 0.30	20	$ 0.30
Total		100		100	
Total Cost, $/lb			$ 0.70		$ 0.70
% Cost Diff. Relative to Current Product					-0.004
Total Cost, $/Unit			$ 0.62		$ 0.61

HIGH COST

Component	Unit Cost $/lb	Typical Non-Complying		Typical Complying	
		WT%	Cost	WT%	Cost
Hydrocarbon Propellant	0.85	23	$ 0.20	20	$ 0.17
Aliphatic Hydrocarbon Solvent	0.65	37	$ 0.24	35	$ 0.23
Acetone	0.62	20	$ 0.12	25	$ 0.16
Solids	1.50	20	$ 0.30	20	$ 0.30
Total		100		100	
Total Cost, $/lb			$ 0.86		$ 0.85
% Cost Diff. Relative to Current Product					-0.009
Total Cost, $/Unit			$ 0.75		$ 0.75

Category:	Consumer Product
Subcategory:	Web Spray Adhesive
Typical VOC (%):	55
Proposed Limit (%):	40
Typical Unit Size (oz.):	12

LOW COST

Component	Unit Cost $/lb	Typical Non-Complying		Typical Complying	
		WT%	Cost	WT%	Cost
Hydrocarbon Propellant	0.50	25	$ 0.13	20	$ 0.10
Aliphatic Hydrocarbon Solvent	0.53	30	$ 0.16	20	$ 0.11
Acetone	0.46	25	$ 0.12	40	$ 0.18
Solids	1.50	20	$ 0.30	20	$ 0.30
Total		100		100	
Total Cost, $/lb			$ 0.70		$ 0.69
% Cost Diff. Relative to Current Product					-0.013
Total Cost, $/Unit			$ 0.52		$ 0.52

HIGH COST

Component	Unit Cost $/lb	Typical Non-Complying		Typical Complying	
		WT%	Cost	WT%	Cost
Hydrocarbon Propellant	0.85	25	$ 0.21	20	$ 0.17
Aliphatic Hydrocarbon Solvent	0.65	30	$ 0.20	20	$ 0.13
Acetone	0.62	25	$ 0.16	40	$ 0.25
Solids	1.50	20	$ 0.30	20	$ 0.30
Total		100		100	
Total Cost, $/lb			$ 0.86		$ 0.85
% Cost Diff. Relative to Current Product					-0.017
Total Cost, $/Unit			$ 0.65		$ 0.64

Category: Consumer Product
Subcategory: Aerosol Multi-Purpose Solvent & Paint Thinner
Typical VOC (%): 57
Proposed Limit (%): 10
Typical Unit Size (oz.): 14

LOW COST

Component	Unit Cost $/lb	Typical Non-Complying		Typical Complying	
		WT%	Cost	WT%	Cost
Acetone	0.46	43	$ 0.20		$ -
Hydrocarbon Propellant	0.50	15	$ 0.08	10	$ 0.05
Aromatic Hydrocarbon Solvent	0.62	21	$ 0.13		$ -
Aliphatic Hydrocarbon Solvent	0.53	21	$ 0.11		$ -
Water	0.00		$ -	70	$ 0.00
Exempt VOC	2.00		$ -	15	$ 0.30
Nonsolvent LVP	3.50		$ -	5	$ 0.18
Total		100		100	
Total Cost, $/lb			$ 0.51		$ 0.53
% Cost Diff. Relative to Current Product					-0.02
Total Cost, $/Unit			$ 0.45		$ 0.46

HIGH COST

Component	Unit Cost $/lb	Typical Non-Complying		Typical Complying	
		WT%	Cost	WT%	Cost
Acetone	0.62	43	$ 0.27		$ -
Hydrocarbon Propellant	0.85	15	$ 0.13	10	$ 0.09
Aromatic Hydrocarbon Solvent	0.64	21	$ 0.13		$ -
Aliphatic Hydrocarbon Solvent	0.65	21	$ 0.14		$ -
Water	0.00		$ -	70	$ 0.00
Exempt VOC	3.00		$ -	15	$ 0.45
Nonsolvent LVP	7.00		$ -	5	$ 0.35
Total		100		100	
Total Cost, $/lb			$ 0.67		$ 0.89
% Cost Diff. Relative to Current Product					0.331
Total Cost, $/Unit			$ 0.58		$ 0.77

B. Aerosol Coatings

Category:	Aerosol Coating
Subcategory:	Clear Coating
Typical Noncompliant MIR:	1.26
Proposed Limit:	0.85
Typical Unit Size (WO):	12

LOW COST

Component	Unit Cost $/lb	Typical Non-Complying		Typical Complying	
		WT%	Cost	WT%	Cost
Acetone	0.46	25	$ 0.12	25	$ 0.12
Hydrocarbon Propellant	0.50	24	$ 0.12	24	$ 0.12
Coating Solids	1.50	16	$ 0.24	16	$ 0.24
Acetates	0.77	13	$ 0.10	17	$ 0.13
Aromatic Hydrocarbon Solvent	0.62	7	$ 0.04	2	$ 0.01
Aliphatic Hydrocarbon Solvent	0.53	5	$ 0.03	5	$ 0.03
Alcohols	0.90	5	$ 0.05	5	$ 0.05
Toluene	0.56	4	$ 0.02	0	$ -
Ketones	0.71	1	$ 0.01	1	$ 0.01
Propionates	1.50	0	$ -	5	$ 0.08
Total		100		100	
	Total Cost, $/lb		$ 0.72		$ 0.77
	% Cost Diff. Relative to Current Product				0.07254814
	Total Cost, $/Unit		$ 0.54		$ 0.58

HIGH COST

Component	Unit Cost $/lb	Typical Non-Complying		Typical Complying	
		WT%	Cost	WT%	Cost
Acetone	0.62	25	$ 0.16	25	$ 0.16
Hydrocarbon Propellant	0.85	24	$ 0.20	24	$ 0.20
Coating Solids	1.50	16	$ 0.24	16	$ 0.24
Acetates	0.86	13	$ 0.11	17	$ 0.15
Aromatic Hydrocarbon Solvent	0.64	7	$ 0.04	2	$ 0.01
Aliphatic Hydrocarbon Solvent	0.65	5	$ 0.03	5	$ 0.03
Alcohols	1.22	5	$ 0.06	5	$ 0.06
Toluene	0.62	4	$ 0.02	0	$ -
Ketones	1.20	1	$ 0.01	1	$ 0.01
Propionates	1.50	0	$ -	5	$ 0.08
Total		100		100	
	Total Cost, $/lb		$ 0.89		$ 0.94
	% Cost Diff. Relative to Current Product				0.059384595
	Total Cost, $/Unit		$ 0.66		$ 0.70

Category: Aerosol Coating
Subcategory: Flat Coating
Typical Noncompliant MIR: 1.08
Proposed Limit: 0.8
Typical Unit Size (WO): 12

LOW COST

Component	Unit Cost $/lb	Typical Non-Complying		Complying	
		WT%	Cost	WT%	Cost
Hydrocarbon Propellant	0.50	30	$ 0.15	30	$ 0.15
Acetone	0.46	30	$ 0.14	30	$ 0.14
Coating Solids	1.50	18	$ 0.27	18	$ 0.27
Toluene	0.56	11	$ 0.06	4	$ 0.02
Aliphatic Hydrocarbon Solvent	0.53	7	$ 0.04	7	$ 0.04
Aromatic Hydrocarbon Solvent	0.62	3	$ 0.02	1	$ 0.01
Ketones	0.71		$ -	4	$ 0.03
Acetates	0.77	1	$ 0.01	4	$ 0.03
Propionates	1.50		$ -	1	$ 0.02
Alcohols	0.90		$ -	1	$ 0.01
Total		100		100	
Total Cost, $/lb			$ 0.68		$ 0.71
% Cost Diff. Relative to Current Product					0.034484942
Total Cost, $/Unit			$ 0.51		$ 0.53

HIGH COST

Component	Unit Cost $/lb	Typical Non-Complying		Complying	
		WT%	Cost	WT%	Cost
Hydrocarbon Propellant	0.85	30	$ 0.26	30	$ 0.26
Acetone	0.62	30	$ 0.19	30	$ 0.19
Coating Solids	1.50	18	$ 0.27	18	$ 0.27
Toluene	0.62	11	$ 0.07	4	$ 0.02
Aliphatic Hydrocarbon Solvent	0.65	7	$ 0.05	7	$ 0.05
Aromatic Hydrocarbon Solvent	0.64	3	$ 0.02	1	$ 0.01
Ketones	1.20	0	$ -	4	$ 0.05
Acetates	0.86	1	$ 0.01	4	$ 0.03
Propionates	1.50	0	$ -	1	$ 0.02
Alcohols	1.22	0	$ -	1	$ 0.01
Total		100		100	
Total Cost, $/lb			$ 0.85		$ 0.90
% Cost Diff. Relative to Current Product					0.052569807
Total Cost, $/Unit			$ 0.64		$ 0.67

Category:	Aerosol Coating
Subcategory:	Fluorescent Coating
Typical Noncompliant MIR:	1.48
Proposed Limit:	1.3
Typical Unit Size (WO):	12

LOW COST

Component	Unit Cost $/lb	Typical Non-Complying		Complying	
		WT%	Cost	WT%	Cost
Coating Solids	1.50	34.0	$ 0.51	34.0	$ 0.51
Hydrocarbon Propellant	0.50	25	$ 0.13	25	$ 0.13
Acetone	0.46	15	$ 0.07	15	$ 0.07
Aromatic Hydrocarbon Solvent	0.62	14	$ 0.09	11	$ 0.07
Aliphatic Hydrocarbon Solvent	0.53	10	$ 0.05	13	$ 0.07
Toluene	0.56	2	$ 0.01	2	$ 0.01
None	0.00		$ -		$ -
None	0.00		$ -		$ -
None	0.00		$ -		$ -
None	0.00		$ -		$ -
Total		100		100	
	Total Cost, $/lb		$ 0.86		$ 0.85
	% Cost Diff. Relative to Current Product				0.003157548
	Total Cost, $/Unit		$ 0.64		$ 0.64

HIGH COST

Component	Unit Cost $/lb	Typical Non-Complying		Complying	
		WT%	Cost	WT%	Cost
Coating Solids	1.50	34	$ 0.51	34	$ 0.51
Hydrocarbon Propellant	0.85	25	$ 0.21	25	$ 0.21
Acetone	0.62	15	$ 0.09	15	$ 0.09
Aromatic Hydrocarbon Solvent	0.64	14	$ 0.09	11	$ 0.07
Aliphatic Hydrocarbon Solvent	0.65	10	$ 0.07	13	$ 0.08
Toluene	0.62	2	$ 0.01	2	$ 0.01
None	0.00	0	$ -	0	$ -
None	0.00	0	$ -	0	$ -
None	0.00	0	$ -	0	$ -
None	0.00	0	$ -	0	$ -
Total		100		100	
	Total Cost, $/lb		$ 0.98		$ 0.98
	% Cost Diff. Relative to Current Product				0.000305345
	Total Cost, $/Unit		$ 0.74		$ 0.74

Category: Aerosol Coating
Subcategory: Metallic Coating
Typical Noncompliant MIR: 1.66
Proposed Limit: 1.25
Typical Unit Size (WO): 12

LOW COST

Component	Unit Cost $/lb	Typical Non-Complying		Complying	
		WT%	Cost	WT%	Cost
Hydrocarbon Propellant	0.50	26	$ 0.13	26	$ 0.13
Toluene	0.56	27	$ 0.15	13	$ 0.07
Acetone	0.46	17	$ 0.08	27	$ 0.12
Coating Solids	1.50	15	$ 0.23	15	$ 0.23
Aliphatic Hydrocarbon Solvent	0.53	11	$ 0.06	11	$ 0.06
Aromatic Hydrocarbon Solvent	0.62	4	$ 0.02	3	$ 0.02
Acetates	0.77		$ -	4	$ 0.03
Ketones	0.71		$ -	1	$ 0.01
None	0.00		$ -		$ -
None	0.00		$ -		$ -
Total		100		100	
	Total Cost, $/lb		$ 0.67		$ 0.67
	% Cost Diff. Relative to Current Product				0.002030472
	Total Cost, $/Unit		$ 0.50		$ 0.50

HIGH COST

Component	Unit Cost $/lb	Typical Non-Complying		Complying	
		WT%	Cost	WT%	Cost
Hydrocarbon Propellant	0.85	26	$ 0.22	26	$ 0.22
Toluene	0.62	27	$ 0.17	13	$ 0.08
Acetone	0.62	17	$ 0.11	27	$ 0.17
Coating Solids	1.50	15	$ 0.23	15	$ 0.23
Aliphatic Hydrocarbon Solvent	0.65	11	$ 0.07	11	$ 0.07
Aromatic Hydrocarbon Solvent	0.64	4	$ 0.03	3	$ 0.02
Acetates	0.86	0	$ -	4	$ 0.03
Ketones	1.20	0	$ -	1	$ 0.01
None	0.00	0	$ -	0	$ -
None	0.00	0	$ -	0	$ -
Total		100		100	
	Total Cost, $/lb		$ 0.82		$ 0.83
	% Cost Diff. Relative to Current Product				0.018666705
	Total Cost, $/Unit		$ 0.61		$ 0.62

Category:	Aerosol Coating
Subcategory:	Nonflat Coating
Typical Noncompliant MIR:	1.26
Proposed Limit:	0.95
Typical Unit Size (WO):	12

LOW COST

Component	Unit Cost $/lb	Typical Non-Complying		Complying	
		WT%	Cost	WT%	Cost
Hydrocarbon Propellant	0.50	29	$ 0.15	29	$ 0.15
Acetone	0.46	30	$ 0.14	30	$ 0.14
Coating Solids	1.50	20	$ 0.30	20	$ 0.30
Toluene	0.56	10	$ 0.06	3	$ 0.02
Aromatic Hydrocarbon Solvent	0.62	7	$ 0.04	2	$ 0.01
Aliphatic Hydrocarbon Solvent	0.53	4	$ 0.02	4	$ 0.02
Acetates	0.77	0	$ -	7	$ 0.05
Ketones	0.71	0	$ -	3	$ 0.02
Propionates	1.50	0	$ -	2	$ 0.03
None	0.00		$ -		$ -
Total		100		100	
Total Cost, $/lb			$ 0.70		$ 0.74
% Cost Diff. Relative to Current Product					0.049243747
Total Cost, $/Unit			$ 0.53		$ 0.55

HIGH COST

Component	Unit Cost $/lb	Typical Non-Complying		Complying	
		WT%	Cost	WT%	Cost
Hydrocarbon Propellant	0.85	29.0	$ 0.25	29.0	$ 0.25
Acetone	0.62	30.0	$ 0.19	30.0	$ 0.19
Coating Solids	1.50	20.0	$ 0.30	20.0	$ 0.30
Toluene	0.62	10.0	$ 0.06	3.0	$ 0.02
Aromatic Hydrocarbon Solvent	0.64	7.0	$ 0.04	2.0	$ 0.01
Aliphatic Hydrocarbon Solvent	0.65	4.0	$ 0.03	4.0	$ 0.03
Acetates	0.86	0.0	$ -	7.0	$ 0.06
Ketones	1.20	0.0	$ -	3.0	$ 0.04
Propionates	1.50	0.0	$ -	2.0	$ 0.03
None	0.00	0.0	$ -	0.0	$ -
Total		100		100	
Total Cost, $/lb			$ 0.87		$ 0.92
% Cost Diff. Relative to Current Product					0.058726199
Total Cost, $/Unit			$ 0.65		$ 0.69

Category: Aerosol Coating
Subcategory: Primer
Typical Noncompliant MIR: 1.00
Proposed Limit: 0.7
Typical Unit Size (WO): 16

LOW COST

Component	Unit Cost $/lb	Typical Non-Complying		Complying	
		WT%	Cost	WT%	Cost
Acetone	0.46	30	$ 0.14	35	$ 0.16
Coating Solids	1.50	30	$ 0.45	30	$ 0.45
Hydrocarbon Propellant	0.50	20	$ 0.10	21	$ 0.11
Aliphatic Hydrocarbon Solvent	0.53	7	$ 0.04	5	$ 0.03
Aromatic Hydrocarbon Solvent	0.62	7	$ 0.04	3	$ 0.02
Acetates	0.77	6	$ 0.05	6	$ 0.05
None	0.00		$ -		$ -
None	0.00		$ -		$ -
None	0.00		$ -		$ -
None	0.00		$ -		$ -
Total		100		100	
	Total Cost, $/lb		$ 0.81		$ 0.81
	% Cost Diff. Relative to Current Product				0.009083098
	Total Cost, $/Unit		$ 0.81		$ 0.81

HIGH COST

Component	Unit Cost $/lb	Typical Non-Complying		Complying	
		WT%	Cost	WT%	Cost
Acetone	0.62	30	$ 0.19	35	$ 0.22
Coating Solids	1.50	30	$ 0.45	30	$ 0.45
Hydrocarbon Propellant	0.85	20	$ 0.17	21	$ 0.18
Aliphatic Hydrocarbon Solvent	0.65	7	$ 0.05	5	$ 0.03
Aromatic Hydrocarbon Solvent	0.64	7	$ 0.04	3	$ 0.02
Acetates	0.86	6	$ 0.05	6	$ 0.05
None	0.00	0	$ -	0	$ -
None	0.00	0	$ -	0	$ -
None	0.00	0	$ -	0	$ -
None	0.00	0	$ -	0	$ -
Total		100		100	
	Total Cost, $/lb		$ 0.95		$ 0.95
	% Cost Diff. Relative to Current Product				0.000949467
	Total Cost, $/Unit		$ 0.95		$ 0.95

Category:	Aerosol Coating
Subcategory:	Flexible Coating
Typical Noncompliant MIR:	2.70
Proposed Limit:	1.6
Typical Unit Size (WO):	12

LOW COST

Component	Unit Cost $/lb	Typical Non-Complying		Complying	
		WT%	Cost	WT%	Cost
Hydrocarbon Propellant	0.50	26	$ 0.13	26	$ 0.13
Coating Solids	1.50	25	$ 0.38	25	$ 0.38
Aromatic Hydrocarbon Solvent	0.62	17	$ 0.11	10	$ 0.06
Acetone	0.46	15	$ 0.07	15	$ 0.07
Aliphatic Hydrocarbon Solvent	0.53	13	$ 0.07	13	$ 0.07
Toluene	0.56	3	$ 0.02	3	$ 0.02
Acetates	0.77	0	$ -	7	$ 0.05
Alcohols	0.90	1	$ 0.01	1	$ 0.01
None	0.00		$ -		$ -
None	0.00		$ -		$ -
Total		100		100	
	Total Cost, $/lb		$ 0.77		$ 0.78
	% Cost Diff. Relative to Current Product				0.013561669
	Total Cost, $/Unit		$ 0.58		$ 0.59

HIGH COST

Component	Unit Cost $/lb	Typical Non-Complying		Complying	
		WT%	Cost	WT%	Cost
Hydrocarbon Propellant	0.85	26.0	$ 0.22	26.0	$ 0.22
Coating Solids	1.50	25.0	$ 0.38	25.0	$ 0.38
Aromatic Hydrocarbon Solvent	0.64	17.0	$ 0.11	10.0	$ 0.06
Acetone	0.62	15.0	$ 0.09	15.0	$ 0.09
Aliphatic Hydrocarbon Solvent	0.65	13.0	$ 0.08	13.0	$ 0.08
Toluene	0.62	3.0	$ 0.02	3.0	$ 0.02
Acetates	0.86	0.0	$ -	7.0	$ 0.06
Alcohols	1.22	1.0	$ 0.01	1.0	$ 0.01
None	0.00	0.0	$ -	0.0	$ -
None	0.00	0.0	$ -	0.0	$ -
Total		100		100	
	Total Cost, $/lb		$ 0.91		$ 0.93
	% Cost Diff. Relative to Current Product				0.016865738
	Total Cost, $/Unit		$ 0.68		$ 0.70

Category: Aerosol Coating

Subcategory: Electrical/Electronic/Conformal Coating

Typical Noncompliant MIR: 3.07

Proposed Limit: 2.00

Typical Unit Size (WO): 12

LOW COST

Component	Unit Cost $/lb	Typical Non-Complying		Complying	
		WT%	Cost	WT%	Cost
Hydrocarbon Propellant	0.50	27	$ 0.14	27	$ 0.14
Coating Solids	1.50	20	$ 0.30	22	$ 0.33
Aromatic Hydrocarbon Solvent	0.62	18	$ 0.11	0	$ -
Acetone	0.46	18	$ 0.08	0	$ -
Toluene	0.56	17	$ 0.10	0	$ -
Ketones	0.71		$ -	25	$ 0.18
Methyl Acetate	0.77		$ -	22	$ 0.17
Acetates (other)	0.77		$ -	4	$ 0.03
None	0.00		$ -		$ -
None	0.00		$ -		$ -
Total		100		100	
Total Cost, $/lb			$ 0.73		$ 0.84
% Cost Diff. Relative to Current Product					0.161705652
Total Cost, $/Unit			$ 0.54		$ 0.63

HIGH COST

Component	Unit Cost $/lb	Typical Non-Complying		Complying	
		WT%	Cost	WT%	Cost
Hydrocarbon Propellant	0.85	27	$ 0.23	27	$ 0.23
Coating Solids	1.50	20	$ 0.30	22	$ 0.33
Aromatic Hydrocarbon Solvent	0.64	18	$ 0.12	0	$ -
Acetone	0.62	18	$ 0.11	0	$ -
Toluene	0.62	17	$ 0.11	0	$ -
Ketones	1.20	0	$ -	25	$ 0.30
Methyl Acetate	0.86	0	$ -	22	$ 0.19
Acetates (other)	0.86	0	$ -	4	$ 0.03
None	0.00	0	$ -	0	$ -
None	0.00	0	$ -	0	$ -
Total		100		100	
Total Cost, $/lb			$ 0.86		$ 1.08
% Cost Diff. Relative to Current Product					0.256985542
Total Cost, $/Unit			$ 0.65		$ 0.81

Category:	Aerosol Coating
Subcategory:	Auto Body Primer
Typical Noncompliant MIR:	1.06
Proposed Limit:	0.95
Typical Unit Size (WO):	16

LOW COST

Component	Unit Cost $/lb	Typical Non-Complying		Complying	
		WT%	Cost	WT%	Cost
Acetone	0.46	30	$ 0.14	31	$ 0.14
Coating Solids	1.50	24	$ 0.36	24	$ 0.36
Hydrocarbon Propellant	0.50	20	$ 0.10	20	$ 0.10
Toluene	0.56	10	$ 0.06	7	$ 0.04
Acetates	0.77	8	$ 0.06	8	$ 0.06
Aromatic Hydrocarbon Solvent	0.62	5	$ 0.03	3	$ 0.02
Aliphatic Hydrocarbon Solvent	0.53	3	$ 0.02	7	$ 0.04
None	0.00		$ -		$ -
None	0.00		$ -		$ -
None	0.00		$ -		$ -
Total		100		100	
	Total Cost, $/lb		$ 0.76		$ 0.76
	% Cost Diff. Relative to Current Product				0.004641051
	Total Cost, $/Unit		$ 0.76		$ 0.76

HIGH COST

Component	Unit Cost $/lb	Typical Non-Complying		Complying	
		WT%	Cost	WT%	Cost
Acetone	0.62	30	$ 0.19	31	$ 0.19
Coating Solids	1.50	24	$ 0.36	24	$ 0.36
Hydrocarbon Propellant	0.85	20	$ 0.17	20	$ 0.17
Toluene	0.62	10	$ 0.06	7	$ 0.04
Acetates	0.86	8	$ 0.07	8	$ 0.07
Aromatic Hydrocarbon Solvent	0.64	5	$ 0.03	3	$ 0.02
Aliphatic Hydrocarbon Solvent	0.65	3	$ 0.02	7	$ 0.05
None	0.00	0	$ -	0	$ -
None	0.00	0	$ -	0	$ -
None	0.00	0	$ -	0	$ -
Total		100		100	
	Total Cost, $/lb		$ 0.90		$ 0.90
	% Cost Diff. Relative to Current Product				0.000897537
	Total Cost, $/Unit		$ 0.90		$ 0.90

Category:	Aerosol Coating
Subcategory:	Exact Match Finish: Engine
Typical Noncompliant MIR:	1.27
Proposed Limit:	0.95
Typical Unit Size (WO):	12

LOW COST

Component	Unit Cost $/lb	Typical Non-Complying		Complying	
		WT%	Cost	WT%	Cost
Acetone	0.46	37	$ 0.17	36	$ 0.17
Hydrocarbon Propellant	0.50	30	$ 0.15	29	$ 0.15
Toluene	0.56	17	$ 0.10	7	$ 0.04
Aliphatic Hydrocarbon Solvent	0.53	5	$ 0.03	9	$ 0.05
Coating Solids	1.50	11	$ 0.17	11	$ 0.17
Acetates	0.77	0	$ -	8	$ 0.06
None	0.00		$ -		$ -
None	0.00		$ -		$ -
None	0.00		$ -		$ -
None	0.00		$ -		$ -
Total		100		100	
Total Cost, $/lb			$ 0.61		$ 0.62
% Cost Diff. Relative to Current Product					0.02753018
Total Cost, $/Unit			$ 0.46		$ 0.47

HIGH COST

Component	Unit Cost $/lb	Typical Non-Complying		Complying	
		WT%	Cost	WT%	Cost
Acetone	0.62	37	$ 0.23	36	$ 0.22
Hydrocarbon Propellant	0.85	30	$ 0.26	29	$ 0.25
Toluene	0.62	17	$ 0.11	7	$ 0.04
Aliphatic Hydrocarbon Solvent	0.65	5	$ 0.03	9	$ 0.06
Coating Solids	1.50	11	$ 0.17	11	$ 0.17
Acetates	0.86	0	$ -	8	$ 0.07
None	0.00	0	$ -	0	$ -
None	0.00	0	$ -	0	$ -
None	0.00	0	$ -	0	$ -
None	0.00	0	$ -	0	$ -
Total		100		100	
Total Cost, $/lb			$ 0.79		$ 0.81
% Cost Diff. Relative to Current Product					0.023017416
Total Cost, $/Unit			$ 0.59		$ 0.60

Category:	Aerosol Coating
Subcategory:	Exact Match Finish: Automotive
Typical Noncompliant MIR:	1.12
Proposed Limit:	0.95
Typical Unit Size (WO):	8.25

LOW COST

Component	Unit Cost $/lb	Typical Non-Complying		Complying	
		WT%	Cost	WT%	Cost
Acetone	0.46	41	$ 0.19	42	$ 0.19
Hydrocarbon Propellant	0.50	20	$ 0.10	21	$ 0.11
Coating Solids	1.50	10	$ 0.15	11	$ 0.17
Toluene	0.56	9	$ 0.05	4	$ 0.02
Ketones	0.71	8	$ 0.06	10	$ 0.07
Propionates	1.50	8	$ 0.12	8	$ 0.12
Alcohols	0.90	3	$ 0.03	2	$ 0.02
Acetates	0.77	1	$ 0.01	2	$ 0.02
None	0.00		$ -		$ -
None	0.00		$ -		$ -
Total		100		100	
Total Cost, $/lb			$ 0.70		$ 0.71
% Cost Diff. Relative to Current Product					0.013218329
Total Cost, $/Unit			$ 0.36		$ 0.37

HIGH COST

Component	Unit Cost $/lb	Typical Non-Complying		Complying	
		WT%	Cost	WT%	Cost
Acetone	0.62	41	$ 0.25	42	$ 0.26
Hydrocarbon Propellant	0.85	20	$ 0.17	21	$ 0.18
Coating Solids	1.50	10	$ 0.15	11	$ 0.17
Toluene	0.62	9	$ 0.06	4	$ 0.02
Ketones	1.20	8	$ 0.10	10	$ 0.12
Propionates	1.50	8	$ 0.12	8	$ 0.12
Alcohols	1.22	3	$ 0.04	2	$ 0.02
Acetates	0.86	1	$ 0.01	2	$ 0.02
None	0.00	0	$ -	0	$ -
None	0.00	0	$ -	0	$ -
Total		100		100	
Total Cost, $/lb			$ 0.89		$ 0.91
% Cost Diff. Relative to Current Product					0.021443896
Total Cost, $/Unit			$ 0.46		$ 0.47

Category: Aerosol Coating
Subcategory: Exact Match Finish: Industrial
Typical Noncompliant MIR: 1.42
Proposed Limit: 0.95
Typical Unit Size (WO): 12

LOW COST

Component	Unit Cost $/lb	Typical Non-Complying		Complying	
		WT%	Cost	WT%	Cost
Acetone	0.46	33	$ 0.15	33	$ 0.15
Hydrocarbon Propellant	0.50	25	$ 0.13	25	$ 0.13
Coating Solids	1.50	20	$ 0.30	20	$ 0.30
Aromatic Hydrocarbon Solvent	0.62	18	$ 0.11	8	$ 0.05
Aliphatic Hydrocarbon Solvent	0.53	3	$ 0.02	5	$ 0.03
Toluene	0.56	1	$ 0.01	0	$ -
Ketones	0.71		$ -	5	$ 0.04
Acetates	0.77		$ -	4	$ 0.03
None	0.00		$ -		$ -
None	0.00		$ -		$ -
Total		100		100	
	Total Cost, $/lb		$ 0.71		$ 0.72
	% Cost Diff. Relative to Current Product				0.013033376
	Total Cost, $/Unit		$ 0.53		$ 0.54

HIGH COST

Component	Unit Cost $/lb	Typical Non-Complying		Complying	
		WT%	Cost	WT%	Cost
Acetone	0.62	33	$ 0.20	33	$ 0.20
Hydrocarbon Propellant	0.85	25	$ 0.21	25	$ 0.21
Coating Solids	1.50	20	$ 0.30	20	$ 0.30
Aromatic Hydrocarbon Solvent	0.64	18	$ 0.12	8	$ 0.05
Aliphatic Hydrocarbon Solvent	0.65	3	$ 0.02	5	$ 0.03
Toluene	0.62	1	$ 0.01	0	$ -
Ketones	1.20	0	$ -	5	$ 0.06
Acetates	0.86	0	$ -	4	$ 0.03
None	0.00	0	$ -	0	$ -
None	0.00	0	$ -	0	$ -
Total		100		100	
	Total Cost, $/lb		$ 0.86		$ 0.90
	% Cost Diff. Relative to Current Product				0.043359172
	Total Cost, $/Unit		$ 0.64		$ 0.67

Category: Aerosol Coating
Subcategory: Ground Traffic/Marking Coating
Typical Noncompliant MIR: 1.06
Proposed Limit: 0.85
Typical Unit Size (WO): 17

LOW COST

Component	Unit Cost $/lb	Typical Non-Complying		Complying	
		WT%	Cost	WT%	Cost
Water	0.00	34	$ -	32	$ -
Hydrocarbon Propellant	0.50	20	$ 0.10	20	$ 0.10
Toluene	0.56	17	$ 0.10	9	$ 0.05
Aliphatic Hydrocarbon Solvent	0.53	17	$ 0.09	24	$ 0.13
Coating Solids	1.50	11	$ 0.17	14	$ 0.21
Glycols	0.83	1	$ 0.01	1	$ 0.01
None	0.00		$ -		$ -
None	0.00		$ -		$ -
None	0.00		$ -		$ -
None	0.00		$ -		$ -
Total		100		100	
		Total Cost, $/lb	$ 0.46		$ 0.50
		% Cost Diff. Relative to Current Product			0.080374699
		Total Cost, $/Unit	$ 0.49		$ 0.53

HIGH COST

Component	Unit Cost $/lb	Typical Non-Complying		Complying	
		WT%	Cost	WT%	Cost
Water	0.00	34	$ -	32	$ -
Hydrocarbon Propellant	0.85	20	$ 0.17	20	$ 0.17
Toluene	0.62	17	$ 0.11	9	$ 0.06
Aliphatic Hydrocarbon Solvent	0.65	17	$ 0.11	24	$ 0.16
Coating Solids	1.50	11	$ 0.17	14	$ 0.21
Glycols	1.08	1	$ 0.01	1	$ 0.01
None	0.00	0	$ -	0	$ -
None	0.00	0	$ -	0	$ -
None	0.00	0	$ -	0	$ -
None	0.00	0	$ -	0	$ -
Total		100		100	
		Total Cost, $/lb	$ 0.56		$ 0.60
		% Cost Diff. Relative to Current Product			0.072848876
		Total Cost, $/Unit	$ 0.60		$ 0.64

References

1. Air Resources Board. 2012 Consumer and Commercial Products Technical Assessment Survey for Multi-purpose Solvent and Paint Thinner Products. July 10, 2012. (ARB, 2012)

2. Air Resources Board. 2010 Consumer and Commercial Products Survey Update for Aerosol Coating and Aerosol Adhesive Products. December 3, 2010. http://www.arb.ca.gov/consprod/regact/2010surv/2010surv.htm (ARB, 2010)

3. Air Resources Board. Technical Support Document for Proposed Amendments to the Suggested Control Measure for Architectural Coatings. September, 2007. (ARB, 2007)

4. ICIS. ICIS Chemical Business. http://icispricing.com. (ICIS, 2012)

Appendix J

Nonrecurring Costs Calculations

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Nonrecurring Costs Calculations

Appendix J contains the methodology and costs staff used to assign nonrecurring costs for each category. Nonrecurring costs are those associated with research and development to reformulate complying products and are independent of, and in addition to, the costs of ingredients to produce a product.

For the cost scenarios, the initial statement of development goals to final delivery of the new product/product line to the marketplace shelves was divided into eight phases. The phases are: product development, including reformulation and development of a new delivery system if necessary; stability testing; efficacy testing; safety testing; labeling modification; registration with regulatory agencies, if necessary; manufacturing changes; and marketing.

For the consumer product categories, we estimated a low and a high cost scenario. The consumer products costs are shown in Tables J-1 and J-2

For the aerosol coatings, staff determined a single cost scenario for the reformulation changes due to the proposed amendments. This is appropriate given that the limits do not require major technology changes. The nonrecurring cost estimates used in this analysis are shown in Table J-3.

A description of each of the nonrecurring cost factors listed in the tables follows:

1. Nonrecurring Costs Considered

Product Development

Given a set of new product requirements, a laboratory prototype for product evaluation and testing must be developed. This includes formulating the contents and specifying the packaging and raw materials. New packaging and chemical formula components might need to be sourced.

Stability Testing

Stability testing ensures that the newly formulated chemical composition and/or package are compatible with each other and with product function for a reasonable period of time. Food and Drug Administration (FDA) and U.S. Environmental Protection Agency (U. S. EPA) regulated products require extra steps to ensure the stability of active ingredients and kill claims of products such as disinfectants.

Efficacy testing

Efficacy testing seeks to ensure that the product maintains the ability to perform label claims and to meet customer expectations. For U.S. EPA registered products (for

example, those which make bacterial kill claims) this would require extensive testing by a specialized laboratory to validate anti-microbial efficacy claims. The testing must be documented with and meet the approval of the U.S. EPA.

Safety Test

Safety testing costs include testing of the new product to ensure safety to manufacturing personnel during fabrication, logistics personnel during transit and to consumers during use and storage.

Labeling Modifications

Cost assigned for labeling modifications are those required when product qualities or use instructions change.

Registration Fees

Registration expenses are incurred for products requiring U.S. EPA registration or FDA regulation whenever changes are made to the label or formula.

Marketing

The costs for marketing consider focus group testing, conducting surveys, advertising and design and publication of print and internet materials.

Manufacturing

The costs for manufacturing consider the technology and infrastructure required to mass-produce a product. Manufacturing costs to comply with proposed standards can include 'pilot plant' testing and/or retooling of production lines or construction of completely new facilities.

A pilot plant test is a small scale version of full scale production which is large enough to approximate the physical characteristics and challenges which will be encountered in the full-scale version. A pilot test run consumes considerably less resources and raw materials than a full scale run to produce a batch of product which will not necessarily be ready or suitable for a commercial market.

Literature

Literature costs are those incurred when new sales and marketing and/or technical literature need to be developed and distributed in order to inform customers of the attributes of a new product.

2. Assigning Costs

Since 1999, a set of per product reformulation costs in 1991 dollars had been established for each phase of bringing a reformulated product into the market. The costs are adjusted to 2012 dollars using a well-established method of rationing chemical engineering plant cost indices as follows (Peters and Timmerhaus, 1980):

$$\text{Non - Recurring Costs (in 2012 dollars)} = \text{Non - Recurring Costs (in 1991 dollars)} \times \frac{\text{C.E. 2012 Index}}{\text{C.E. 1991 Index}}$$

where,

C.E. 2012 index = 2012 Chemical Engineering Plant Cost Index = 584.6 (Chemical Engineering, 2013).

C.E. 1991 index = 1991 Chemical Engineering Plant Cost Index = 361.3 (Chemical Engineering, 1997).

Table J-1 shows the cost assigned to each phase for the low and high cost scenario for an adhesive product. The aerosol Multi-purpose Solvent, aerosol Paint thinner, and aerosol coating categories in this rulemaking are considered "household products." The low and high cost scenarios for aerosol multipurpose solvent and paint thinner are shown in Table J-2 and the cost scenario for aerosol coatings is shown in Table J-3.

To develop the costs shown in the tables, personnel costs are assigned. Beyond personnel costs, additional cost elements were considered at each phase and added as appropriate. These cost elements are facility; equipment; tool; jig; fixture and miscellaneous materials handling equipment; purchased material; packaging; distribution; warehousing; technical data; research studies and tests; promotional literature; residual inventory and disposal; consumer tests; general and administrative expense; patent; registration fees; and computer support. The result of these considerations is a per-product cost for developing a reformulated product and bringing it to market.

The length of time in each phase was estimated based on an industry analysis of 80 new product innovations. Most of the phases occur in sequence; however, there is some time overlap in each phase.

Table J-1
Adhesive Consumer Product
Product Reformulation Costs (low and high cost approach)

Adhesive	Low Cost	High Cost
Product Development Material	$161.80	$970.83
Computer Support	$0.00	$0.00
Personnel/Formulation	$0.00	$17,313.09
Personnel/Delivery System	$0.00	$0.00
Prototype Equipment	$0.00	$0.00
Testing Material	$0.00	$485.41
Computer Support	$0.00	$0.00
Personnel/Stability Test	$0.00	$0.00
Personnel/Efficacy Test	$0.00	$0.00
Personnel/Safety Test	$0.00	$0.00
Labeling Modifications Material	$0.00	$323.61
Technical Data	$0.00	$970.83
Personnel	$0.00	$0.00
Registration/Fees	$0.00	$0.00
Personnel	$0.00	$0.00
Manufacturing Equipment	$0.00	$0.00
Technical Data	$0.00	$0.00
Computer Support	$0.00	$0.00
Other	$0.00	$0.00
Personnel	$0.00	$0.00
Marketing Studies	$0.00	$0.00
Literature	$0.00	$0.00
Inventory	$0.00	$0.00
Computer Support	$0.00	$0.00
Personnel	$0.00	$0.00
TOTAL	**$161.80**	**$20,063.77**

2013 C.E. Plant Cost Index =	584.6	(2012 Annual CPI)
1991 C.E. Plant Cost Index =	361.3	

Table J-2
Household Consumer Product – Aerosol Multi-Purpose Solvent & Paint Thinner
Product Reformulation Costs (low and high cost approach)

Household	Low Cost	High Cost
Product Development Material	$161.80	$809.02
Computer Support	$0.00	$0.00
Personnel/Formulation	$5,986.77	$20,549.18
Personnel/Delivery System	$0.00	$0.00
Prototype Equipment	$0.00	$0.00
Testing Material	$485.41	$485.41
Computer Support	$0.00	$0.00
Personnel/Stability Test	$1,294.44	$7,281.21
Personnel/Efficacy Test	$1,294.44	$5,986.77
Personnel/Safety Test	$3,236.09	$10,840.91
Labeling Modifications Material	$0.00	$0.00
Technical Data	$0.00	$0.00
Personnel	$0.00	$0.00
Registration/Fees	$0.00	$0.00
Personnel	$0.00	$0.00
Manufacturing Equipment	$0.00	$0.00
Technical Data	$0.00	$0.00
Computer Support	$0.00	$0.00
Other	$0.00	$0.00
Personnel	$0.00	$0.00
Marketing Studies	$323.61	$1,618.05
Literature	$0.00	$0.00
Inventory	$0.00	$0.00
Computer Support	$0.00	$0.00
Personnel	$0.00	$0.00
TOTAL	**$12,782.56**	**$47,570.55**

2013 C.E. Plant Cost Index =	584.6	(2012 Annual CPI)
1991 C.E. Plant Cost Index =	361.3	

Table J-3
Assigned Costs for Product Development
Aerosol Coating Product Reformulation Costs (low and high cost approach)

Household	Low Cost	Estimated Cost
Product Development Material	$161.80	$161.80
Computer Support	$161.80	$161.80
Personnel/Formulation	$5,986.77	$5,986.77
Personnel/Delivery System	$0.00	$0.00
Prototype Equipment	$0.00	$0.00
Testing Material	$485.41	$485.41
Computer Support	$0.00	$0.00
Personnel/Stability Test	$1,294.44	$1,294.44
Personnel/Efficacy Test	$1,294.44	$1,294.44
Personnel/Safety Test	$3,236.09	$3,236.09
Labeling Modifications Material	$161.80	$161.80
Technical Data	$323.61	$323.61
Personnel	$970.83	$970.83
Registration/Fees	$323.61	$0.00
Personnel	$647.22	$0.00
Manufacturing Equipment	$0.00	$0.00
Technical Data	$161.80	$161.80
Computer Support	$0.00	$0.00
Other	$0.00	$0.00
Personnel	$1,456.24	$1,456.24
Marketing Studies	$323.61	$323.61
Literature	$161.80	$161.80
Inventory	$0.00	$0.00
Computer Support	$0.00	$0.00
Personnel	$323.61	$323.61
TOTAL	**$17,474.90**	**$16,504.07**

2012 C.E. Plant Cost Index = 584.6
1991 C.E. Plant Cost Index = 361.3

Next, estimated personnel resources were allocated against each phase considering the most probable types of skills needed including general engineering; technician; drafting; packaging engineering; specification engineering; model making; chemical engineering; technical publication; production support; quality assurance; marketing; warehousing; word processing; and clerical. For the high cost elements for aerosol adhesives, aerosol multipurpose solvent and paint thinner, additional personnel were allocated to each phase.

As mentioned above, staff used a low cost and high cost scenario for aerosol adhesives and aerosol multi-purpose solvent and paint thinner categories. Staff used different assumptions for the low and high cost analyses, and considered the specific likelihood that each of the cost elements would occur for each product category individually.

Low Cost Scenario

In the low cost scenario it is assumed that only minor modification to the current formulation is necessary to come into compliance. Therefore, for the low cost analysis no major costs were added for changing delivery systems or other product attributes.

In addition, it is common that large companies having significant market share and broad product lines offer both low VOC complying products and higher VOC noncomplying products. In many cases, relatively low costs would be incurred where these companies could increase sales and distribution of complying products and discontinue noncomplying products.

If products do not change significantly, it is assumed that major retooling of manufacturing equipment would not be required, technical data changes would be minor, and the change in marketing costs would be small.

High Cost Scenario

Each category was analyzed individually to determine which of the elements, described earlier and shown in Tables J-1 and J-2, manufacturers would likely incur in their reformulation efforts. High costs for specific steps of the reformulation process were only included in the cost analysis where staff believed they were likely to occur. If staff believed a markedly different product would be needed to comply with the proposed limit, such as a new delivery system, then high personnel and capital resources, especially in product development and manufacturing changes, were assumed. In addition, a new delivery system would require investment for prototypes, new filling machines training, and technical data, so these high costs were also included in these scenarios. Additional costs were also added for packaging, distribution and warehousing. In areas where it was expected that little or no reformulation would occur, or that the cost of reformulation would be minimal, the value for low cost was used.

For especially challenging limits, it was assumed for the high cost approach that, because of a markedly different product, there would also be additional marketing costs,

including research studies and tests, promotional literature, and consumer tests. The cost analysis did not include the costs for an extensive advertising campaign. New products are regularly brought onto the market, and the advertising for a new product, whether reformulated or not, would replace the advertising for the existing product, and would be a normal cost. It was assumed that the new product would be marketed nationally.

The staff also recognized that development of a new product does not occur in isolation. Few companies have only one product line; for those that have more than one product line, the product lines can be very similar. Development and production tasks, from the initial concept through marketing, would be proceeding simultaneously on more than one product line, with a transfer of information and work-sharing between the products. For these companies, this "technology transfer" would substantially reduce the cost of developing and marketing a new product on a per product basis. For categories where the majority of products were held by a few companies it was assumed that this "technology transfer" would occur, and high costs adjusted accordingly.

For aerosol coatings staff used a single scenario approach based on the low cost scenario. As discussed earlier, staff believes this is appropriate because the reformulation that would be required by the proposed amendments would not involve new technologies. As shown in Table J-3, in the column "Est. Cost" all of the costs except those for registration were used. Only a handful, if any, of products would need to be registered.

Staff considered only nonrecurring costs that are likely to occur. Costs are adjusted from those determined in 1991 by using the Chemical Engineering Plant Cost Index. For aerosol coating products, only changes to the product's reformulation were necessary to comply with the new proposed limit, therefore, only the lower end of the nonrecurring cost was included. In addition, costs associated with registration were not included because, except for a few niche products, there is no requirement to register aerosol coating products. For aerosol coating products, the nonrecurring costs represent the costs associated with an entire product line. We believe that this approach gives a more realistic estimate of the costs.

References

1. Chemical Engineering. Chemical Engineering Plant Cost Index. April, 2013. (Chemical Engineering, 2013)

2. Chemical Engineering. Chemical Engineering Plant Cost Index. April, 1997. (Chemical Engineering, 1997)

3. Peters, M. S. and Timmerhaus, K. D. Plant Design and Economics for Chemical Engineers. 3rd Edition, McGraw-Hill Book Company, 1980, pp. 159-162. (Peters and Timmerhaus, 1980)