State of California
AIR RESOURCES BOARD

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

THE ADOPTION OF PROPOSED AMENDMENTS TO THE CALIFORNIA CONSUMER PRODUCTS REGULATIONS

Hearing Date: November 18, 2010
Agenda Item: 10-10-7

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PUBLIC HEARING TO CONSIDER ADOPTION OF PROPOSED AMENDMENTS TO THE CALIFORNIA CONSUMER PRODUCTS REGULATIONS

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I. INTRODUCTION

In this rulemaking, the Air Resources Board (ARB or the Board) adopted amendments to the California Consumer Products Regulation that are primarily designed to reduce volatile organic compound (VOC) emissions. The regulation is codified in sections 94507-94517, title 17, California Code of Regulations (CCR). The Board also adopted amendments to Method 310, "Determination of Volatile Organic Compounds (VOC) in Consumer Products and Reactive Organic Compounds in Aerosol Coating Products."

On September 29, 2010, ARB staff issued a notice of public hearing stating that proposed amendments would be considered at the Board's November 18, 2010, hearing. An "Initial Statement of Reasons" (Staff Report or ISOR) was also made available for public review and comment beginning September 29, 2010. The Staff Report, which is incorporated by reference herein, described the rationale for the proposal. The originally proposed texts of the amended regulation and Method 310 were included as Appendices A and B, respectively, to the Staff Report. These documents were also posted on ARB's internet site for this rulemaking at http://www.arb.ca.gov/regact/2010/cp2010/cp2010.htm.

On November 18, 2010, the Board conducted a public hearing to consider staff's proposal for adoption. Written and oral comments were received at the hearing. At the conclusion of the hearing, the Board adopted Resolution 10-40, which initiated steps toward final adoption of the proposed amendments. The approved amendments included modifications to the originally proposed language. These modifications had been suggested by staff in response to public comments made after issuance of the original proposal. The text or narrative description of each modification was contained in a four page document entitled, "Public Hearing to Consider Adoption of Proposed

Amendments to the California Consumer Products Regulations – Staff's Suggested Modifications to the Original Proposal," which was distributed at the beginning of the hearing and included as Attachment B to the Resolution.

Resolution 10-40 directed the Executive Officer to adopt the modified regulations set forth in Attachment A, with the modifications set forth in Attachment B and such other conforming modifications as may be appropriate, after making the modified regulatory language and any additional supporting documents and information available for public comment for a period of 15 days, in accordance with Government Code section 11346.8(c), and to make such additional modifications as may be appropriate in light of the comments received.

A "Notice of Public Availability of Modified Text and Availability of an Additional Document for Public Comment" to the regulation together with a copy of the full text of the modifications to the regulation, with the modifications clearly indicated, were distributed on July 20, 2011, to each of the individuals described in subsections (a)(1) through (a)(4) of section 44, title 1, CCR. By this action, the modified Consumer Products Regulation was made available to the public for a 15-day comment period from July 20, 2011, to August 4, 2011, pursuant to Government Code section 11346.8.

This Final Statement of Reasons (FSOR) updates the Staff Report by identifying and providing the rationale for the modifications made to the originally proposed amendments. The FSOR also contains a summary of the comments received on the proposed amendments during the formal regulatory process and ARB's responses to those comments. Modifications to the original proposal are described in Section II of this FSOR entitled "Modifications Made to the Original Proposal."

As defined in Government Code section 11345.5(a)(6), the Board has determined that this regulatory action will not create costs or savings to any State agency, nor affect federal funding to the State. The Board has also determined that this regulatory action will not create costs or impose a mandate upon any local agency or school district, whether or not it is reimbursable by the State pursuant to part 7 (commencing with section 17500), division 4, title 2 of the Government Code; or affect other nondiscretionary savings to state or local agencies. In preparing the regulatory proposal, the ARB staff considered the potential economic impacts on California business enterprises and individuals. A detailed discussion of these impacts is included in the ISOR.

No reasonable alternative considered, or that has otherwise been identified and brought to the attention of ARB, would be more effective in carrying out the purpose for which the amendments are proposed, or be as effective and less burdensome to affected private persons and businesses than the amendments.

II. MODIFICATIONS MADE TO THE ORIGINAL PROPOSAL

Various modifications to the original proposal were made in order to address comments received during the 45-day public comment period, to clarify the regulatory language, and to correct typographical errors. These modifications are described below.

1. Modifications to section 94508(a): The definition for "Special-purpose Lubricant" was deleted and definitions were added for "Anti-Seize Lubricant," "Cutting or Tapping Oil," "Gear, Chain, or Wire Lubricant," and "Rust Preventative or Rust Control Lubricant." These changes were necessary to better describe the types of "Special-purpose Lubricant" products being regulated. A definition for "Firearm Lubricant" was added to clarify a type of product that is not currently regulated as a "Lubricant." The definition of "Lubricant" was also reorganized to add the definitions for lubricants that had been defined elsewhere in section 94508(a). To accommodate this reorganization the existing definitions for "Multi-purpose Dry Lubricant," "Multi-purpose Lubricant," "Penetrant," and "Silicone-based Multi-purpose Lubricant" were deleted. The "Lubricant" definition was further modified to clarify that products designed or labeled exclusively to release manufactured products from molds are not "Lubricant" products. An additional modification to the "Lubricant" definition clarifies that after December 31, 2012, lubricant products that claim they are suitable for use in food service environments, such as food stores or restaurants are "Lubricant" products.

2. Modifications to section 94509(a): The "Lubricant" categories and VOC limits were reorganized into a single listing under "Lubricant." The effective dates and VOC limits for "Special-purpose Lubricant" were deleted. VOC limits with effective dates of December 31, 2013, were added for "Anti-Seize Lubricant," "Cutting or Tapping Oil," "Gear, Chain, or Wire Lubricant," and "Rust Preventative or Rust Control Lubricant." To address technological feasibility, an additional modification increased the VOC limit for aerosol "Anti-Seize Lubricant" to 40 percent by weight. The changes to effective dates were necessary to ensure adequate time to reformulate numerous products.

3. Modifications to section 94509(m): An exclusion for Penetrant products used on energized equipment was restored by adding subsection 94509(m)(7). Table 94509(m)(1) was modified to delete the "Special-purpose Lubricant" category and reorganize the regulated "Lubricant" subcategories including "Anti-Seize Lubricant," "Cutting or Tapping Oil," "Gear, Chain, or Wire Lubricant," "Rust Preventative or Rust Control Lubricant," "Multi-purpose Lubricant," "Silicone-based Multi-purpose Lubricant," and "Penetrant."

4. Modifications to section 94509(n): Table (n)(1) was modified to replace the "Special-purpose Lubricant" category with "Anti-Seize Lubricant," "Cutting or

Tapping Oil," "Gear, Chain, or Wire Lubricant," and "Rust Preventative or Rust Control Lubricant."

5. Modifications to section 94512(a): A modification was made to clarify section 94512(a)(3) related to situations where Product Category definitions exclude each other. Section 94512(a)(4) was also added to restore a provision for certain products that make ancillary disinfectant or sanitizer claims. This provision clarifies that 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."

6. Modifications to sections 94508, 94509, 94512, and 94515: Nonsubstantive style and grammatical changes were made to sections 94508, 94509, 94512, and 94515. These changes involved the correction of errors where text was inadvertently omitted, or words were incorrectly spelled. Unnecessary, missing, or inconsistently applied punctuation marks, hyphens, missing periods, and misplaced quotation marks were also corrected.

7. Modifications to section 94509(n): A modification was made to correct a typographical error in section 94509(n) subpart (4). Section 94509(n) contains the provisions of the existing regulation that have been consolidated into one section specifying the requirements limiting the use of any chemical compound that has a Global Warming Potential (GWP) Value of 150 or greater. During the consolidation of these provisions, the combined amount of impurities was erroneously specified as "equal to or less than 0.01% by weight." The correct combined amount of impurities is "equal to or less than 0.1% by weight."

III. CORRECTIONS TO REFERENCES

(A) Staff identified several typographical errors and other minor problems in some of the references that were listed in the ISOR. For clarity, following is an identification of these errors and the necessary corrections.

1. In the reference list on page 16 (Executive Summary), the reference for (ARB, 2009e) erroneously cites January 14, 2009, as the date of the 2008 Survey Update for Dry Clean Only Spot Remover Products. This is a typographical error. The correct date is January 12, 2009. The correct reference should be as follows:

   Air Resources Board. 2008 Consumer & Commercial Products Survey Update for Dry Clean Only Spot Removers. January 12, 2009. (ARB, 2009e)

2. The references contained in the reference list on page 6 in Chapter I were corrected as follows:

   The reference for (U.S. EPA, 2008) erroneously cites Parts 51 and 59 as being relied upon for supporting documentation for this rulemaking. The correct citation is to Part 59. This is a typographical error. This reference also did not contain numbers of cited pages as being relied upon for supporting documentation for this rulemaking. Page numbers were added. The correct reference should be as follows:

   United States Environmental Protection Agency. National Volatile Organic Compound Emission Standards for Aerosol Coatings; Direct Final Rule (40 CFR Part 59). Federal Register: March 24, 2008. Volume 73, Number 57: 15421-15425. (U.S. EPA, 2008)

   The reference for (U.S. EPA, 1998a) erroneously cites only Part 59 as being relied upon for supporting documentation for this rulemaking. The correct citation is to Parts 9 and 59. This is a typographical error. The correct reference should be as follows:

   United States Environmental Protection Agency. National Volatile Organic Compound Emission Standards for Consumer Products. (40 CFR Parts 9 and 59). Federal Register: September 11, 1998. Volume 63, Number 176: 48819-48847. (U.S. EPA, 1998a)

3. The reference (ARB, 2009e) cited in the reference list on page 9 in Chapter II was corrected for a typographical error, (see correction 1).

4. The references contained in Chapter IV were corrected as follows:

   The reference cited for (Krewski *et al.*, 2000) cited in the reference list on page 29 was corrected for typographical errors in spelling and punctuation. The correct reference should be as follows:

   Krewski, D., Burnett, R.T., Goldberg, M.S., Hoover, K., Siemiatycki, J., Jerrett, M., Abrahamowicz, M., White, W.H. Reanalysis of the Harvard Six Cities Study and the American Cancer Society Study of Particulate Air Pollution and Mortality. 2000. Special Report. Health Effects Institute. (Krewski *et al.*, 2000)

   The reference for (Seinfeld and Pandis, 1998) on page 30 did not contain numbers of cited pages as being relied upon for supporting documentation for this rulemaking. Page numbers were added. The correct reference should be as follows:

   Seinfeld, J.H., and Pandis, S.N. Atmospheric Chemistry and Physics-From Air Pollution to Climate Change. John Wiley & Sons. New York. 1998, pp. 299, 300, 724-726, 738-741. (Seinfeld and Pandis, 1998)

   The reference for (Sheppard, 2003) on page 30 erroneously cites pages 227-240 as being relied upon for supporting documentation for this rulemaking. The correct citation is pages 227-230. This is a typographical error. The correct reference should be as follows:

   Sheppard, L. Ambient Air Pollution and Nonelderly Asthma Hospital Admissions in Seattle, Washington, 1987-1994. Revised Analyses of Time-Series Studies of Air Pollution and Health. Special Report. 2003. Health Effects Institute: 227-230. (Sheppard, 2003)

5. The reference (ARB, 2009e) cited in the reference list on page 41 in Chapter V was corrected for a typographical error, (see correction 1).

6. The reference (ARB, 2009e) cited in the reference list on page 105 in Chapter VII was corrected for a typographical error, (see correction 1).

7. The references contained in Chapter VIII were corrected as follows:

   The reference (ARB, 2009e) cited in the reference list on page 130 was corrected for a typographical error, (see correction 1).

   The reference for (D&B, 2009) on page 131 did not contain numbers of cited pages as being relied upon for supporting documentation for this rulemaking. Page numbers were added. The correct reference should be as follows:

D&B Industry and Financial Consulting Services. Industry Norms & Key Business Ratios, Manufacturing – Volume 1. SIC #2000-2999. Three Year Edition 2008-2009. January, 2009, pp. 167, 175, 184. (D&B, 2009)

The reference for (D&B, 2008) on page 131 did not contain numbers of cited pages as being relied upon for supporting documentation for this rulemaking. Page numbers were added. The correct reference should be as follows:

D&B Industry and Financial Consulting Services. Industry Norms & Key Business Ratios, Manufacturing – Volume 1. SIC #2000-2999. Three Year Edition 2007-2008. January, 2008, pp. 192, 194. (D&B, 2008)

8. The reference for (Seinfeld and Pandis, 1998) cited in the reference list on page 155 in Chapter IX did not contain numbers of cited pages as being relied upon for supporting documentation for this rulemaking. Page numbers were added. The correct reference should be as follows:

   Seinfeld, J.H., and Pandis, S.N. Atmospheric Chemistry and Physics-From Air Pollution to Climate Change. John Wiley & Sons. New York. 1998, pp. 299; 300; 724; 738-740. (Seinfeld and Pandis, 1998)

9. The citation (Chemical Engineering, 1991) on page E-3 (Appendix E) was erroneously cited. This is a typographical error. The correct citation is (Chemical Engineering, 1997).

10. In the reference list on page E-7 (Appendix E), the reference for (Chemical Engineering, 2010) erroneously cites February, 2010 issue of Chemical Engineering. This is a typographical error. The correct issue is June, 2010. The correct reference should be as follows:

    Chemical Engineering magazine. Chemical Engineering Plant Cost Index. June, 2010. (Chemical Engineering, 2010)

(B) Staff identified several typographical errors and other minor problems in some of the references that were listed in Attachment B of the "Notice of Public Availability of Modified Text and Availability of an Additional Document for Public Comment" dated July 20, 2011. Attachment B to this notice is the memorandum submitted by the State Water Resources Control Board Division of Water Quality entitled "Response to Comments Submitted by the Alkylphenols and Ethoxylates Research Council on Air Resources Board's Proposals to Prohibit Use of Alkylphenol Ethoxylate Surfactants in Certain Consumer Products." For clarity, following is an identification of these errors and the necessary corrections.

1. In the reference list on page 8, the reference for (APERC, 2010) erroneously cites November 18, 2010, as the date of the comments letter submission. This is a typographical error. The correct date is November 17, 2010. The correct reference should be as follows:

   Alkylphenols & Ethoxylates Research Council Comments to the California Air Resources Board on Proposed Restrictions on the Use of Alkylphenol Ethoxylates in Certain Consumer Cleaning Product Categories. November 17, 2010. (APERC, 2010)

2. In the reference for (Backer *et al*., 2010) cited on page 8, the year of publication was erroneously omitted. The year of publication was added. The correct reference should be as follows:

   Backer, H., Leppänen, J.-M., Brusendorff, A.C., Forsius, K., Stankiewicz, M., Mehtonen, J., Pyhälä, M., Laamanen, M., Paulomäki, H., Vlasov N., and Haaranen, T. HELCOM Baltic Sea Action Plan – A regional programme of measures for the marine environment based on the Ecosystem Approach. 2010. Marine Pollution Bulletin, Volume 60, Number 6: 642-649. (Backer *et al*., 2010)

3. The reference for (Maine, 2010) cited in the reference list on page 9 was corrected for typographical errors. The correct reference should be as follows:

   Maine Department of Environmental Protection. Bureau of Remediation and Waste Management. Basis Statement for Chapter 883, Designation of the Chemical Class Nonylphenol and Nonylphenol Ethoxylates as a Priority Chemical and Safer Chemicals Program Support Document for the Designation as a Priority Chemical of Nonylphenol and Nonylphenol Ethoxylates. September 2, 2010. (Maine, 2010)

4. The reference for (Schoenfuss *et al*., 2008) cited in the reference list on page 9 was corrected for typographical errors in spelling. The correct reference should be as follows:

   Schoenfuss H.L., Bartell, S.E., Bistodeau, T.B., Cediel, R.A., Grove, K.J., Zintek, L., Lee, K.E. and Barber, L.B. Impairment of the reproductive potential of male fathead minnows by environmentally relevant exposures to 4-nonylphenol. 2008. Aquatic Toxicology. Volume 86, Number1: 91-98. (Schoenfuss *et al*., 2008)

IV. SUMMARY OF COMMENTS MADE DURING THE 45-DAY AND 15-DAY COMMENT PERIODS AND AGENCY RESPONSES

The Board received written and oral comments during the 45-day and 15-day comment periods for this regulatory action. Lists of commenters are shown below, along with an abbreviation for each commenter. Following the lists, staff has summarized each comment provided regarding the proposal with an explanation of how the proposed action was changed to accommodate the comment, or the reasons for making no change.

A. Lists of Commenters

The tables below identify the comments received during the 45-day and 15-day comment periods that presented an objection or recommendation specifically directed towards the regulation or the procedures followed. The tables provide a correlation between (1) the abbreviation used in this Section IV to refer to a comment letter or testimony; and (2) the name of the person(s) signing the comment letter or presenting the testimony.

1. 45-Day Comments

The table below contains a list of commenters that provided comments on the proposed amendments contained in the September 29, 2010, ISOR that were received during the 45-day comment period or at the November 18, 2010, hearing. Written submittals were received between November 9, 2010, and November 18, 2010. Oral testimony was also presented at the November 18, 2010, hearing.

Commenter Abbreviation	Commenter
ADCO	Julie Hirner, Adco Cleaning Products Written testimony: November 17, 2010
APERC1	Barbara Losey, Alkylphenols & Ethoxylates Research Council Written testimony: November 17, 2010
APERC2	Barbara Losey, Alkylphenols & Ethoxylates Research Council Oral testimony: November 18, 2010

APERC3	Barbara Losey, Alkylphenols & Ethoxylates Research Council Written testimony: November 18, 2010
CA	Cassandra Adams, Architect Written testimony: November 17, 2010
CCA, *et al.*	Luis R. Cabrales, Coalition for Clean Air; Arturo Carmona, COFEM; Renee Sharp, Environmental Working Group; Marcia Dávalos, Latino Coalition for a Healthy California; Erin Switalski, Women's Voices for the Earth; Jamie Silberberger, National Healthy Nail Salon Alliance; Adriana Quintero, Voces Verdes; Angel De Fazio, BSAT, National Toxic Encephalopathy Foundation; Mario Talavera, Latinos United for Clean Air; Sarah Sharpe, Fresno Metro Ministry; Henry Huerta, CLEAN Carwash Campaign; Marlom Portillo, Instituto De Educación Popular Del Sur De California's Workers Health Project; Stephanie Taylor, Green LA Coalition; Kimberly Irish, J.D., Breast Cancer Action; Rabbi Jonathan D. Klein, Clergy and Laity United for Economic Justice (CLUE-LA); Leslie Gersicoff, Jewish Labor Committee Western Region; Rick Hind, Greenpeace USA; Janet Nudelman, Breast Cancer Fund; Joel Ervice, Regional Asthma Management &Prevention (RAMP); Neal Richman, Breathe LA; Jim Stewart, PhD, Earth Day Los Angeles; Miguel Luna, Urban Semillas; Ana Mascareñas, Physicians for Social Responsibility- Los Angeles; Julia Liou, CA Healthy Nail Salon Collaborative; Patricia Castellanos, Los Angeles Alliance for a New Economy; Bill Gallegos, Communities for a Better Environment; Morgan Wyenn, Southern California Air Quality Project, Natural Resources Defense Council; James J. Provenzano, Clean Air Now; Conner Everts, Southern California Watershed Alliance; Jocelyn Vivar, M.P.H., East Yard Communities for Environmental Justice; Deborah Moore, Green Schools Initiative; Bill Magavern, Sierra Club California Written testimony: November 18, 2010
CCA1	Luis R. Cabrales, Coalition for Clean Air Oral testimony: November 18, 2010
CCA2	Pedro Guzman, Coalition for Clean Air Oral testimony: November 18, 2010
CRC	Adam M. Selisker, CRC Industries, Inc. Written testimony: November 15, 2010

CSPA1	D. Douglas Fratz and Joseph T. Yost, Consumer Specialty Products Association Written testimony: November 16, 2010
CSPA2	D. Douglas Fratz, Consumer Specialty Products Association Oral testimony: November 18, 2010
CSPA3	Joseph T. Yost, Consumer Specialty Products Association Oral testimony: November 18, 2010
ECO	Kris K. Wick, Ecolab Written testimony: November 15, 2010
EVEREADY	Dan Harrington, Eveready Products Corporation Written testimony: November 15, 2010
FORMLETTER1	Monica Howe, (no affiliation provided) **245 additional commenters submitted similar comments** Written testimony: November 9, 2010
FORMLETTER2	Nicole Biegenzahn, (no affiliation provided) **23 additional commenters submitted similar comments** Written testimony: November 16, 2010
IRTA	Katy Wolf, Ph.D., Institute for Research and Technical Assistance Written testimony: November 17, 2010
JC	Juli Chamberlin, (no affiliation provided) Written testimony: November 17, 2010
MM	Melanie Miller, (no affiliation provided) Written testimony: November 17, 2010
NAA	Larry Midtbo, The National Aerosol Association Written testimony: November 15, 2010
NRDC	Morgan Wyenn, Natural Resources Defense Council Oral testimony: November 18, 2010
P&G	John T. Stickney, Ph. D, Procter & Gamble Company Written testimony: November 17, 2010
RRR for CRC; RRR for ECO; RRR for NAA; & RRR for RSC	Doug Raymond, Raymond Regulatory Resources Oral testimony: November 18, 2010
R.R.STREET	Written testimony: November 22, 2010. Comments received late, but are responding for completeness.
RSC	Larry G. Beaver, Ph. D, Radiator Specialty Company Written testimony: November 12, 2010
SCAQMD1	Barry Wallerstein, South Coast Air Quality Management District Written testimony: November 9, 2010

SCAQMD2	Barry Wallerstein, South Coast Air Quality Management District Oral testimony: November 18, 2010
SCJ	F. H. Brewer, S. C. Johnson & Son, Inc Written testimony: November 15, 2010
STON1	Harry Zechman, Stoner, Incorporated Written testimony: November 17, 2010
STON2	Harry Zechman, Stoner, Incorporated Oral testimony: November 18, 2010
STON3	Bob Sweger, Stoner, Incorporated Oral testimony: November 18, 2010
SWC	Greg Johnson, Sherwin-Williams Company Oral testimony: November 18, 2010
TR	Timothy Riley, (BAS Chemistry, UC Davis 1992) Written testimony: November 16, 2010

2. 15-Day Comments

The table below contains the list of commenters that provided comments on the July 20, 2011, "Notice of Public Availability of Modified Text and Availability of an Additional Document for Public Comment." Written submittals were received on August 4, 2011.

3R	Doug Raymond, Raymond Regulatory Resources (3R), LLC Written testimony: August 4, 2011
CSPA4	D. Douglas Fratz and Joseph T. Yost, Consumer Specialty Products Association Written testimony: August 4, 2011
APERC4	Barbara Losey, Alkylphenols & Ethoxylates Research Council Written testimony: August 4, 2011

B. 45-Day Comments and Agency Responses

1. Support for the Proposed Amendments

B-1. Comment: As a consumer and concerned citizen, I urge the California Air Resources Board (CARB) to strengthen and adopt the 2010 Consumer Products Regulation Amendments. This would reduce the volatile organic compounds (VOC) found in products such as multipurpose cleaning products, metal polishers, insecticides, and window cleaners. I encourage you to strongly regulate and reduce the harmful chemicals in consumer products. In doing so, we can set an important precedent in

protecting the health of families and workers – not only in our state, but nationwide as well. [FORMLETTER1; FORMLETTER2; JC]

B-2. Comment: Good air quality is important. Lessening the endocrine disruptors and other harmful chemicals in our bodies is also a good thing. It may even lessen the burden on our health care system, another good thing. Manufacturers can reformulate their products. Please protect us consumers. [CA]

B-3. Comment: I would ask for an outright ban or very strict regulation on most volatile organic solvents, because even licensed commercial users of these solvents cannot restrict the movement of air from carrying these solvents once they vaporize. Please, please, please help California lead the nation in banning this toxic class of chemicals from polluting our air, bodies, and environment. [TR]

B-4. Comment: Although the proposed regulation presents very serious and cost[ly] reformulation challenges, Consumer Specialty Products Association (CSPA) member companies support most of the proposed new VOC limits and other regulatory provisions. In addition, CSPA member companies support the changes proposed by ARB staff as part of the 15-day notice and comment period. CSPA member companies commit to initiate extensive research and development and engineering efforts that will be necessary to reformulate their products to meet these very aggressive new regulatory standards. [CSPA3]

B-5. Comment: I am here to support the proposed amendments to the 2010 consumer products regulation. We especially applaud CARB's proactive approach in prohibiting several toxic air contaminants and compounds with high global warming potential to make sure they are not used to meet the new VOC limits. We believe this proposal is a great step in the right direction to protect the health of workers and consumers to meet the 2014 standards and to make progress on an important source of pollution. [NRDC]

B-6. Comment: These regulations are very important. That is why just recently the United States Environmental Protection Agency (U.S. EPA) has notified us that they are interested in making one of your recent regulations a national regulation. So that is how important these regulations are for people across the nation. I would like to speak in support of staff's proposal and also commend their work and their efforts to involve all of the stakeholders in this process. We have the support of these groups. [CCA1]

B-7. Comment: We are in support of the staff proposal. We have taken an independent look at the analysis and concluded as your staff did that there is available feasible technology. It is cost effective. And we believe that your staff's proposal complies with all provisions of State law. We are also pleased to note that the staff is working hard on issues associated with consumer products, such as toxicity of materials, any other environmental effects, and also on the topic of volatility, because some low volatility materials are significant[ly] involved in ozone formation. And we look

forward to working with your staff on those issues. And we recommend approval of the staff proposal. [SCAQMD2]

B-8. Comment: People [that] take their vehicles to car washes to have [them] cleaned are not aware that us, workers, have to handle strong chemicals, like degreasers and cleaners to remove stains; glass cleaners, waxes, and other chemicals to polish their vehicle as well as acid to clean the rain [water spots]. All this time I worked as a car wash worker, I have hardly ever used or had access to the adequate equipment such as gloves, face masks, glasses, or even shoes to protect myself from the chemicals. We never received any training on how to use those chemicals and about the risks. After using these chemicals for six days a week, I suffered [from] skin rashes, skin irritation, red eyes, irritation of the eyes, and respiratory [irritation]. And now I suffer [from] blurry sight and respiratory problems. Recently, workers at the hand car wash won several lawsuits against the owners and manager of this company for abuses to worker safety laws. The company was also fined for environmental violations and for getting rid of polluted water without being treated previously. That is why I am asking this agency to help workers like myself and other workers, especially women that work at car washes, because it is practically impossible to protect the thousands of workers from the abuses of their employers. But by reducing the toxic chemicals, we will at least face less risk. And we will have a cleaner environment. [CCA2]

B-9. Comment: We applaud your agency's efforts to reduce emissions of volatile organic compounds (VOCs) and greenhouse gases (GHGs) from consumer products in efforts to help protect the health of California residents, consumers, and workers. We want to highlight staff's improvements on this proposal and commend them for their foresight in addressing the following issues:

We strongly support the proposed reductions to all the categories in this regulatory process. Specifically, we support the proposed VOC limits on General Purpose Cleaners and General Purpose Degreasers. As you may be aware, in developing the Clean Air Choices Certification Program, South Coast Air Quality Management District (SCAQMD) staff has conducted testing and researched a number of products that comply with this requirement. These reduced VOC products are commercially and technologically feasible and comply with this regulation. Therefore, we are very supportive of CARB's decision to also prohibit alkylphenol ethoxylate surfactants in the following products: General Purpose Cleaner (nonaerosol); General Purpose Degreaser (nonaerosol); Glass Cleaner (nonaerosol); Heavy-duty Hand Cleaner or Soap (nonaerosol); and Oven or Grill Cleaner.

We are very pleased with the prohibition of compounds with global warming potential (GWP) values above 150 to prevent the use of such compounds as products are reformulated to meet proposed VOC limits in the following categories: Flying Bug Insecticide (aerosol); Furniture Maintenance Product (aerosol); Metal Polish or Cleanser; Special-purpose Lubricant; Spot Remover; Wasp or Hornet Insecticide [aerosol].

We strongly support CARB's prohibition of methylene chloride, perchloroethylene and trichloroethylene in the following categories and look forward to seeing these prohibitions in other categories as well: Spot Remover for Dry Clean Only; Silicone-Based Lubricant; Special-Purpose Lubricant; [and] Metal Polish or Cleanser.

We support CARB's approach with respect to the potential increased use of certain toxic low vapor pressure [volatile organic compounds] (LVP-VOC) solvents. We believe that there are sufficient cost-competitive products on the market that are within the proposed VOC limits and that are not formulated with these solvents. In addition, we support CARB's approach to pursue lower VOC limits, while concurrently reviewing and tracking the use of these LVP solvents as the preferred, prudent course of action.

Again, thank you for your commitment to regulate VOCs in consumer products. We are very hopeful about this regulation's potential to help protect the health of California residents, consumers, and workers who deal with these products on a daily basis. We look forward to continuing our work with you on this issue. [CCA, *et al.*]

B-10. Comment: Please maintain California's leadership in environmental matters by limiting VOCs, as we are all vulnerable to their effects. By doing so, you can help maintain the health of all Americans. [MM]

B-11. Comment: We are here to support the regulation as is, and we actually look forward to working with staff on the specialty lubricants issue. That is something of very much importance to us. [RRR representing NAA]

B-12. Comment: We support the changes that are being made today for some of the oversights and some of the provisions. [RRR representing RSC]

B-13. Comment: While the new VOC limits in S. C. Johnson (SCJ) categories will require reformulation of some existing products, SCJ does not oppose the new consumer product VOC limits being considered for adoption in these cases. [SCJ]

B-14. Comment: The South Coast Air Quality Management District (AQMD) staff supports the recent California Air Resources Board (CARB) proposal to amend the California Consumer Product Regulation. AQMD strongly supports any and all appropriate actions that will allow the State Implementation Plan (SIP) commitments to be met and will assist in efforts to achieve clean air for the residents of California.

Specifically, AQMD strongly supports the proposed lower VOC limits for General Purpose Cleaners and General Purpose Degreasers. AQMD believes that these products are technically feasible based on testing conducted to establish the AQMD Clean Air Choices Cleaner Certification Program. In addition, further research indicates that a variety of compliant products are both readily available and represent a large portion of the market. Clearly, these low-VOC products are "commercially and technologically feasible" and meet the necessary finding of Health and Safety Code

41712, which also calls for these regulations to achieve the maximum feasible VOC reductions.

Furthermore, AQMD would also like to express support for CARB's approach with respect to the potential increased use of certain toxic low vapor pressure (LVP) solvents. AQMD similarly believes that there are a sufficient number of cost-competitive products on the market that are within the proposed VOC limits and that are not formulated with these solvents. Additionally, the toxic, low vapor pressure solvents in question are more likely to be found in the high-VOC content consumer product formulations than in the low-VOC alternatives, which are overall being formulated to be environmentally preferable. AQMD staff supports CARB's approach to pursue lower VOC limits, while concurrently reviewing and tracking the use of these LVP solvents as the preferred, prudent course of action.

AQMD encourages CARB to continue to examine limiting the LVP solvent exemptions as a way to further reduce VOC emissions from consumer products. Studies and testing suggest that LVP solvents contribute to ozone formation, as reflected by their Maximum Incremental Reactivity (MIR) values. AQMD believes that substantial additional emission reductions could be realized by limiting the LVP exemption to only solvents that have very low MIRs. Moreover, during the research conducted to establish the AQMD Clean Air Choices Cleaner program, it was determined that most environmentally- preferable cleaning products would meet the proposed standards without relying on LVP solvent exemptions.

AQMD looks forward to working closely with CARB towards attaining our mutual goals of reaching attainment of State and Federal air quality standards and further protecting the health of all Californians. [SCAQMD1]

Agency Response to Comments B-1 through B-14: Support noted. At the November 18, 2010, hearing the Board approved staff's proposal with staff's suggested modifications. When fully effective, these amendments would reduce VOC emissions by 6.9 tons per day. In addition, co-benefits of this proposal would prevent potential exposure to carcinogens, minimize potential climate change impacts, and provide protection to aquatic organisms.

2. Comments on Specific Categories

Flying Bug Insecticide (Aerosol)

B-15. Comment: Based upon the technical data submitted to ARB by CSPA members, there is ample evidence to support the need to maintain an adequate amount of VOC ingredients for ensuring the efficacy of this important public health product. The proposed 20 percent VOC limit constitutes a significant reduction from the current regulatory limit. Adequate levels of propellants are needed in these products to allow the uniformly small particle size necessary for efficacy while minimizing active ingredient levels. Notwithstanding this significant reduction in the VOC content for this product

category, CSPA member companies commit to expend the considerable amount of money to conduct the extensive research, development and engineering efforts necessary to ensure that the reformulated products are effective while maintaining the low active ingredient levels in current products.

This product category is subject to regulation under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and the California Food and Agricultural Code. Under both federal and state law, any new formulation of FIFRA-regulated products must be reviewed and approved by both the U.S. Environmental Protection Agency and the California Department of Pesticide Regulation (CDPR) before the product may be offered for sale. In addition to reformulation, this need for data generation, review and registration by both the federal and state agencies imposes a significant additional – and time-consuming – requirement on product manufacturers. Therefore, the December 31, 2013, effective date for this product category is both reasonable and necessary. [CSPA1]

> **Agency Response:** The Board approved staff's proposal for a 20 percent VOC limit, effective December 31, 2013, for aerosol Flying Bug Insecticide. As specified in section 94509(d), of the Consumer Products Regulation an additional year for compliance with the VOC limit is allowed for products to comply with FIFRA and CDPR requirements. In proposing the effective date staff considered the time necessary to reformulate, conduct efficacy testing, and meet the requirements of FIFRA and CDPR.

Furniture Maintenance Product (Aerosol)

B-16. Comment: ARB's proposal to set a 12 percent VOC limit for aerosol [Furniture Maintenance Product] category constitutes a significant reduction of the currently applicable regulatory standard. CPSA member companies commit to work diligently to meet this ambitious challenge of reformulating this product category to meet ARB's stringent new VOC limit while ensuring that products will meet the needs of consumers who rely upon these products to maintain their expensive furniture.

Based upon the technical data presented to ARB, it is abundantly clear that extra time is needed to accomplish reformulations and packaging/spray technology changes, and product testing, including the consumer testing and storage and stability testing required for these types of aerosol products. Thus, the proposed 2013 effective date for the revised VOC limit is both reasonable and necessary. [CSPA1]

> **Agency Response:** The Board approved staff's proposal of a 12 percent by weight VOC limit for aerosol Furniture Maintenance Product effective December 31, 2013.

General Purpose Cleaner (Nonaerosol)

B-17. Comment: CSPA urges ARB to consider adopting a 2 percent VOC limit for General Purpose Cleaners that are sold in wipe form. A consumer use study conducted

by one of CSPA's member companies found that twice as much liquid is used when consumers use a trigger form of product to clean a given surface area than is used when cleaning the same surface area with a wipe product. Taking into account the market share of trigger and wipe cleaning products, the resulting consumer's use is approximately four times as many products in trigger form than wipe forms to clean a given surface area. Assuming a 0.5 percent VOC limit for triggers and a 2 percent VOC limit for wipes, both trigger and wipe cleaning products yield an equivalent contribution to VOC emissions. Therefore, providing a higher (yet reduced limit from 4 percent) VOC limit for General Purpose Cleaners in wipe form would not result in lower net VOC reduction in this category. CSPA requests that ARB consider this issue as part of a 15-day notice subsequent to adoption of the regulation. [CSPA1]

Agency Response: Staff disagrees that General Purpose Cleaner 'wipe' products should have a higher VOC limit than other nonaerosol products, such as trigger sprays. It is important to note that a 'wipe' product is considered a delivery mechanism for a nonaerosol product. Thus, both are regulated in the same manner. As noted in the Staff Report, products already complying with the 0.5 percent by weight VOC limit represent 69 percent of the overall market (complying marketshare). This includes 'wipe' products. We believe the high complying market share demonstrates that the VOC limit is feasible for all types of nonaerosol products, including 'wipes.'

At the hearing, the Board agreed and approved staff's proposal of 0.5 percent by weight VOC limit for all nonaerosol General Purpose Cleaner products effective, December 31, 2012.

However, in the Commenter's example, the manufacturer may evaluate whether complying through use of the Innovative Product Exemption (IPE) contained in section 94511 is an option. This provision allows products that have VOC emissions above the limit to be sold as long as there is a clear demonstration that, on a per use basis, the emissions are lower than a representative complying product.

B-18. Comment: CSPA urges ARB to create a narrowly-defined product subcategory for Special-Purpose Floor Cleaners. CSPA urges that a new VOC limit for nonaerosol Special Purpose Floor Cleaners be established that is separate from the category of General Purpose Cleaners. We are willing to accept the 0.5 percent VOC limit for the vast majority of the products currently defined as General Purpose Cleaners if a new specialty cleaner category is created for Special-Purpose Floor Cleaner with a 3 percent VOC limit. CSPA's proposal is aimed at achieving maximum reductions while maintaining the safety and efficacy of these cleaning products, many of which are antimicrobial products. This change is needed to assure that these types of spray-and-wipe products can be formulated without compromising walkway safety. This is especially important due to the fact that older consumers are finding that this type of cleaning system is far easier to accomplish for consumers without the physical abilities necessary for standard mop-and-bucket floor cleaners. [CSPA1]

B-19. Comment: We request that ARB strongly consider our proposal to create a new category of products termed “Special Purpose Floor Cleaners.” Procter and Gamble (P&G) provided two technical presentations to ARB staff regarding a unique niche of floor cleaning products termed “Special Purpose Floor Cleaners.” These products are often part of an integrated cleaning system consisting of a bottle of cleaning solution, delivery implement, and pad. Once these products are applied to floors, they are removed by the pad without the aid of additional water. Data provided to CARB staff demonstrated the unique ergonomic and hygienic benefits of these products. Further, we showed how Special Purpose Floor Cleaners are valued by the elderly and those with physical limitations as lightweight, effective alternatives to traditional floor cleaning methods (such as the mop and bucket). We also provided data showing how reducing the current solvent system and replacing with other non-VOC alternatives leads to products with slower drying times and a greater slipperiness once floors are rewetted. Thus, we have proposed that a new category carrying a VOC limit of 3 percent be created to define these products:

“Special-Purpose Floor Cleaner” means a cleaning product labeled exclusively for use in being applied to hard-surface flooring and wiped off without transfer of soil to a liquid reservoir. “Special-Purpose Floor Cleaner” does not include "Floor Maintenance Product," "Floor Polish or Wax," "Floor Wax Stripper," "Spray Buff Product," or “Wood Cleaner.”

We strongly encourage the Board to consider our proposal to ensure these products continue to be available and effective for those who desire efficient and lightweight floor cleaning options in their home. [P&G]

B-20. Comment: While we have serious concerns about a 0.5 percent limit for spray and wipe products used in general cleaning tasks (such as countertops and appliances), we would not oppose implementation of a lower limit if provisions were made to create a new, niche category of specialty cleaners termed “Special-Purpose Floor Cleaners.” The proposed [General Purpose Cleaner] limit of 0.5 percent is a dramatic reduction from the current limit of 4 percent and presents severe technological challenges for some types of General Purpose Cleaners.

P&G, with CSPA member stakeholder input, led the development and delivery of two separate technical presentations to ARB staff detailing the technological role that solvents (which happen to be classified as VOCs) play in [General Purpose Cleaner] function. Specifically, [General Purpose Cleaner] products that are not used in conjunction with copious amounts of water require additional solvents to deliver a number of benefits that consumers expect, such as haze and streak-free cleaning. These products include product types such as spray and wipe [General Purpose Cleaners] for countertops and appliances as well as specialty cleaners designed for floors (see proposed category of Special Purpose Floor Cleaners). We recognize that [General Purpose Cleaners] designed to be used with large amounts of water (such as those used for mop and bucket floor cleaning) do not generally require solvents for efficacy. As such, we do not object to a 0.5 percent limit for these types of [General Purpose Cleaners]. While we have serious concerns about a 0.5 percent limit for spray and wipe products used in general cleaning tasks (such as countertops and

appliances), we would not oppose implementation of a lower limit if provisions were made to create a new, niche category of specialty cleaners termed “Special Purpose Floor Cleaners.” [P&G]

B-21. Comment: The proposed implementation date of December 31, 2012, presents a significant burden to manufacturers of “General Purpose Cleaners,” especially those companies that market cleaners that are also antimicrobial products. Due to the additional regulatory burden antimicrobial products face, the Consumer Products Regulation already provides another year for the implementation of new VOC limits for antimicrobial products. However, even with this additional year, it will be very challenging to successfully reformulate and register antimicrobial products by the end of 2013. In spite of these challenges, we do not oppose a December 31, 2012, implementation date if a category to describe certain specialty floor cleaners is created. [CSPA1; P&G]

B-22. Comment: [We have an issue with] spray floor cleaners that are used exclusively with specialty designed light-weight mops. These products that were developed over the last decade have proven to be of great benefit to older household consumers and others that have limited physical abilities to handle the traditional mop and bucket techniques. More than a year of research has yet to find a technology that will allow these products to maintain their effective and efficient cleaning systems and not create slipperiness on the floor surfaces. We continue to believe the special purpose floor cleaners should not be treated as General Purpose Cleaners. [CSPA2]

Agency Response to Comments B-18 through B-22: These Commenters cite reasons such as antimicrobial testing and the extra time needed to comply with FIFRA and CDPR requirements as to why the 0.5 percent VOC limit will be challenging to comply with by the December 31, 2012, effective date. However, they all concur that the VOC limit is feasible except for certain floor cleaners. They contend certain specialty floor cleaning products require a higher VOC limit. Staff believes that the VOC limit is feasible by the effective date for all types of nonaerosol General Purpose Cleaner products and that there is no need to create a category of ‘Special Purpose Floor Cleaner’ with a higher VOC limit. Staff’s proposal is supported by the 2006 Consumer and Commercial Products Survey (2006 Survey or Survey) data that indicate the limit is feasible for all product types and delivery mechanisms, including products designed specifically for use on floors, and those antimicrobial products that must also comply with FIFRA and CDPR requirements.

In fact, a review of general purpose cleaning products specially designed for cleaning floors that were reported in the 2006 Survey shows that 54 percent of the market already complies with the 0.5 percent by weight VOC limit. Staff also notes that the claim ‘that complying products will leave the floor slippery’ is not supported by the data. It is unlikely that currently complying products, representing a large share of the market, would continue to be sold if they left floors slippery and hazardous after use. The Commenters also did not provide any data that would indicate reformulated products would not work adequately in integrated floor cleaning systems.

Related to the comments about the challenge to reformulate and register antimicrobial products, the 2006 Survey data show that 73 percent of the market of antimicrobial General Purpose Cleaner Products complies with the 0.5 percent by weight VOC limit. This indicates that technology is readily available such that products can be reformulated within the timeframe provided. As noted by the Commenters, manufacturers of antimicrobial products, in accordance with section 94509(d), are granted an extra year to comply with FIFRA and CDPR requirements.

The Board rejected the Commenter's claim that there is a need for a separate special purpose floor cleaner category and approved staff's proposal of 0.5 percent by weight VOC for nonaerosol General Purpose Cleaner products, effective December 31, 2012.

B-23. Comment: I would like to express our disapproval or our opposition to any attempt to change this regulation as drafted. Especially, I want to mention CSPA's request to create any Special Purpose Floor Cleaner category. Further, I believe that their comments and concerns that reducing the VOCs from their products all the way down to 0.5 percent will make them I quote, 'compromise walkway safety' and without providing any valid information to back their arguments. [CCA1]

Agency Response: As explained in the response to the previous comment, ARB agrees with the commenter that it is not necessary to modify the proposed regulation to create a new category for Special Purpose Floor Cleaner. The Board approved staff's proposal of a 0.5 percent by weight VOC limit for nonaerosol General Purpose Cleaner products, effective December 31, 2012.

General Purpose Degreaser (Nonaerosol)

B-24. Comment: [General Purpose Degreaser] products must be formulated to remove a broad spectrum of soils and substrates. Consequently, it will be very difficult for manufacturers to develop new product formulations that will comply with ARB's proposal to establish a 0.5 percent VOC limit. The difficult research and development task is further compounded by the great number and diversity of products included in this category (*e.g.*, ready-to-use pump sprays, wipes, liquids with dilutions, liquids without dilutions).

Although the 0.5 percent VOC limit poses significant challenges, CSPA member companies are not opposing the new VOC limit and commit to conduct active research and development efforts necessary to comply with this very aggressive VOC content of the products while maintaining the requisite level of product efficacy. [CSPA1]

Agency Response: The Board approved staff's proposal of a 0.5 percent VOC limit for nonaerosol General Purpose Degreaser products, effective December 31, 2012.

Glass Cleaner (Nonaerosol)

B-25. Comment: This broad category of [Glass Cleaner] products serves many distinct and separate functions for a wide variety of household, institutional, commercial and industrial users. The ARB's proposed 3 percent VOC limit poses a substantial challenge for product manufacturers. This revised proposed limit constitutes a 25 percent reduction in the currently applicable regulatory limit of 4 percent, which had already proven difficult to reach for products aimed at removing difficult soils and heavy soil buildup without streaking or haze. Product manufacturers will face a particularly difficult challenge to reformulate glass cleaners used in automobiles since these products must remove: (1) grime caused by the off-gassing from the interior of motor vehicles, and (2) insect residue and other grime that may be difficult to remove from the exterior windshield. Impaired visibility poses a substantial safety risk to drivers; this problem is exacerbated by the glare of morning and evening sunlight.

Notwithstanding this significant additional reduction in the VOC content for this product category, CSPA member companies commit to expend the amount of money to conduct the extensive research, development and engineering efforts necessary to ensure that the reformulated products: (1) achieve efficient cleaning, (2) minimize streaking, and (3) minimize residual compounds that remain on the glass that attract grime that causes increased hazing and more frequent need for cleaning. [CSPA1]

B-26. Comment: We support the staff recommendations on the proposed VOC limit for nonaerosol Glass Cleaner. The proposed VOC limit will be challenging to obtain. However, we believe that we can obtain this goal. This limit will force technology. In the last two years we have worked closely with staff to develop a VOC limit that provides VOC emission reductions and provides a VOC limit that is technically possible to produce products that provide the customer with an effective product that will ensure their safety. [STON1]

B-27. Comment: I am here to support the Glass Cleaner category as proposed. This change will be challenging. [STON2]

B-28. Comment: The staff proposal will reduce the VOC in our [Glass Cleaner] product by 25 percent. This is a significant reduction for a product that has been regulated and reduced three times before. Currently, technology of certain compounds, such as surfactants, does not lend itself readily to the extensive use in glass cleaners because a film is left behind that can cause streaks or hazing. The proposal by staff today reflects the state of technology for years to come. We support the proposed VOC limit for Glass Cleaner and we appreciate the opportunity to comment on this proposal. [STON3]

Agency Response to comments B-25 through B-28: The Board approved staff's proposal of a 3 percent by weight VOC limit for nonaerosol Glass Cleaner, effective December 31, 2012.

Heavy-duty Hand Cleaner or Soap (Nonaerosol)

B-29. Comment: CSPA believes that an approach is needed that will allow for effective Heavy-duty Hand Cleaners while reducing VOCs in a manner that does not inhibit the use of renewable and sustainable bio-based VOC materials or increase the use of materials that increase net carbon emissions. CSPA therefore is willing to accept the 1 percent limit proposed for Heavy-duty Hand Cleaner or Soap [products] if a 5 percent VOC limit is allowed for Special-Purpose Heavy-duty Hand Cleaner defined as those labeled exclusively for removal of a few specific hard-to-remove soils where water is not available for rinsing. [CSPA went on to provide draft definitions, standards and effective dates for their proposal.] The soils included in the "Special-Purpose Heavy-Duty Hand Cleaner" definition are the primary soils encountered by safety, military and repair personnel working out of mobile units in the field without access to running water. [Our] approach is also similar to the approach used by Green Seal, where they are divided as follows:

GS 41 A (Institutional Hand Cleaners): 1 percent VOC maximum
GS 41 B (Industrial Heavy Duty Hand Cleaners): 8 percent VOC maximum

CSPA believes that the approach proposed by CSPA will allow for effective Heavy-Duty Hand Cleaners while also reducing VOCs. It would also do so in a manner that does not unduly inhibit the use of renewable and sustainable, bio-based materials, or increase the use of nonrenewable materials that increase net carbon emissions, which we believe are important goals for ARB as well as our industry.

CSPA has surveyed major marketers of these products to determine which would be subject to the 1 percent limit and which to the 5 percent limit per this proposal. The survey covered 126 products, of which 15 would be classified as "Special-Purpose Heavy-Duty Hand Cleaners" as defined. We therefore urge ARB to seek to have this issue addressed further in a 15-day notice subsequent to adoption of this regulation. [CSPA1]

Agency Response: Staff agrees in part with the Commenter and proposed a VOC limit that allows for effective Heavy-duty Hand Cleaner or Soap products. We also note that the proposal allows for use of bio-based materials such as LVP-VOC methyl esters and certain types of abrasives. However, staff disagrees that a Special-Purpose Heavy-duty Hand Cleaner category with a 5 percent by weight VOC limit is warranted. As reported in the 2006 Survey data, 113 products, representing 30 percent of the market, comply with the proposed 1 percent by weight VOC limit. The data also show that some of the complying products state that they are effective for hard-to-remove soils with or without the use of water.

The Board rejected the Commenter proposal and approved staff's proposal of 1 percent by weight VOC for nonaerosol Heavy-duty Hand Cleaner or Soap products, effective December 31, 2013.

B-30. Comment: We have an issue related to Heavy-duty Hand Cleaners that are used to remove tough soils such as adhesives, asphalt, pre-soak polychlorinated biphenols (PCBs), tar, tree sap, and soot, [sometimes when] no water is available. [Such soils] can cause dermatological problems if they are not removed quickly when water is unavailable in the field. Most effective current products use bio-based citrus extracts [d-limonene], which is a sustainable solvent but which is a VOC. Moving to sustainable bio-based solvents is one of our goals. [CSPA2]

Agency Response: We agree that Heavy-duty Hand Cleaner or Soap products need to remove soils such as adhesives, asphalt, pre-soak polychlorinated biphenols (PCBs), tar, tree sap, and soot, sometimes when no water is available. Of the 113 complying products, some are labeled to remove one or more of these difficult soils described by the Commenter with or without the use of water. At the hearing, the Board approved the staff's proposal of a 1 percent by weight VOC limit, for nonaerosol Heavy-duty Hand Cleaner or Soap products, effective December 31, 2013.

Metal Polish or Cleanser (Aerosol and Nonaerosol)

B-31. Comment: This broadly defined category of Metal Polish or Cleanser performs many separate and distinct functions on different metal substrates for a variety of household, institutional, and commercial users. ARB's proposal to establish a 15 percent VOC limit for the aerosol form and a 3 percent VOC limit for the nonaerosol form of this product category poses significant technological challenges for manufacturers. Despite these challenges, CSPA member companies commit to expend the time and monetary resources to conduct research, development, and engineering efforts needed to reformulate our products to meet ARB's very stringent VOC limits for both forms of this product category.

In addition, CSPA member companies do not oppose ARB's proposal to ban the use of methylene chloride, perchloroethylene, and trichloroethylene in this product category. [CSPA1]

Agency Response: The Board approved staff's proposal of a 15 percent by weight VOC limit for aerosol Metal Polish or Cleanser products and a 3 percent by weight VOC limit for nonaerosol Metal Polish or Cleanser products, effective December 31, 2012.

Oven or Grill Cleaner (Aerosol and Nonaerosol)

B-32. Comment: ARB's proposed VOC limits for the Oven or Grill Cleaner product categories are reasonable and necessary. The proposed revisions to the VOC limits, effective date, and definitions for this product category are needed to assure that products used to remove soils on high temperature surfaces are safe and effective for consumers. Thus, CSPA supports the proposed changes for this product category. [CSPA1]

B-33. Comment: We support the Oven Cleaner category changes. This will help us make some products that are more safe and effective. [ECO; RRR on behalf of Ecolab]

Agency Response to Comments B-32 through B-33: The Board approved staff's proposal for Oven or Grill Cleaner products. The proposal increases the VOC limit to 4 percent by weight from the current 1 percent by weight VOC limit for nonaerosol products to accommodate use of additional technologies. The Board also approved the staff's proposal to add the previously unregulated grill cleaning products into the category and provide an effective date of December 31, 2012, for aerosol products. Provisions to prohibit use of methylene chloride, perchloroethylene, trichloroethylene, and alkylphenol ethoxylate surfactants were also approved.

Silicone-based Multi-purpose Lubricant

B-34. Comment: CSPA member companies do not oppose ARB's proposal to ban the use of methylene chloride, perchloroethylene, and trichloroethylene in Silicone-based Multi-purpose Lubricant. [CSPA1]

Agency Response: The Board approved staff's proposal to prohibit use of methylene chloride, perchloroethylene, and trichloroethylene in Silicone-based Multi-purpose Lubricant, effective December 31, 2012.

Special-purpose Lubricant (Aerosol and Nonaerosol)

B-35. Comment: CSPA continues to strongly believe that the 277 nonaerosol products and the 201 aerosol products that would be included in the proposed Special-purpose Lubricant category constitute too broad and diverse a range of products for a single VOC limit. Specifically, ARB's proposed definition would include dozens of different types of products – including lithium greases , molybdenum greases, Teflon-based, cutting oils, anti-seize, chain and cable, gear, gun oil, etc. All of these products have different uses for different consumers and different VOC requirements; they do not fit into a single "one size fits all" category with one regulatory limit.

After reviewing ARB's data summary for this product category, CSPA members would not oppose VOC limits and effective dates for the following narrowly-defined subcategories: "Anti-Seize Lubricant;" "Cutting or Tapping Oil;" "Gear, Chain, or Wire Lubricant;" "Rust Preventive or Rust Control Lubricant." [CSPA went on to provide draft definitions for these subcategories.]

CSPA believes that this approach will result in emission reductions equal or greater than those estimates for the limits proposed by ARB, while providing clearer definitions and less uncertainty regarding what products are subject to what limits. The proposal, in conjunction with existing definitions, would clarify that the following subcategories of lubricants are not regulated: Industrial-Use Only (not Consumer Products), Special-purpose Silicone Lubricant, Gun Oil, and Special-purpose Dry Lubricants. It would also

clarify that Food Grade products from the 2006 Survey are subject to regulation in these categories.

In addition, we believe that some of the products reported as other Special-purpose Lubricants would fit the definitions above, including some that are Multi-purpose Lubricants. Many of the products classified as Special-purpose Lubricants in the 2006 Survey [data] summaries are already covered by adopted VOC limits for "Multi-purpose Lubricants," "Penetrants," and other existing regulated categories. A few of the products are for Industrial Use Only. Of the remaining products, a few fall into the four "Special-purpose Lubricants" subcategories with limits to be adopted, a few fall into "Special-purpose Lubricants" categories suggested for deferment, and a small portion fall into undefined categories.

CSPA is willing to work with ARB staff to determine the specific reductions that our proposal will obtain, but we are confident that additional reductions can be credited. We therefore urge ARB address this issue further in a 15-day notice subsequent to adoption of this regulation. [CSPA1]

Agency Response: Staff generally agrees with the Commenter and at the hearing proposed, and the Board approved, to subcategorize and define the following types of special-purpose lubricants: "Anti-Seize Lubricant," "Cutting or Tapping Oil," "Gear, Chain, or Wire Lubricant," and "Rust Preventative or Rust Control Lubricant" products. These changes clarify the types of products being regulated. A definition for "Firearm Lubricant" was added to clarify a type of product that is not currently regulated as a lubricant. However, with the exception of aerosol "Anti-seize Lubricant," staff believes the VOC limits of 3 percent by weight for nonaerosol forms and 25 percent by weight for aerosol forms are feasible and supported by the survey data. Related to aerosol "Anti-Seize Lubricant," ARB staff reviewed the data and found it appropriate to increase the VOC limit for aerosol "Anti-Seize Lubricant" to 40 percent VOC by weight. To allow adequate time to reformulate all of these lubricant products, the effective dates of the limits for "Anti-Seize Lubricant," "Cutting or Tapping Oil," "Gear, Chain, or Wire Lubricant," and "Rust Preventative or Rust Control Lubricant" products were extended to December 31, 2013. All of these changes were circulated to the public via a 15-day notice dated July 20, 2011.

B-36. Comment: The December 31, 2012, effective date proposed does not provide adequate time for reformulation of hundreds of Special-purpose Lubricant products. We, therefore, are urging that any new VOC limits in this area have effective dates of December 31, 2013, to be consistent with the previously adopted new VOC limit for Multi-purpose Lubricant [products]. [CSPA1]

Agency Response: Staff agrees that more time is necessary to reformulate the large number of lubricant products. Therefore, at the hearing staff proposed, and the Board approved, extending the effective date of the VOC limits to December 31, 2013. All of these changes were circulated to the public via a 15-day notice dated July 20, 2011.

B-37. Comment: There is legitimate technical evidence to justify a 40 percent VOC limit for the aerosol form of "Anti-Seize Lubricants." Aerosol anti-seize compounds generally consist of five major components: grease, graphite flakes, soft metal particles such as copper and aluminum, solvents, and propellant. The composition of the first three components is usually the same as for a nonaerosol version of the product. In order to produce a properly functioning aerosol version, the compound must be miscible with and thinned with an appropriate solvent that allows for proper packaging. The compound is dispensed from the aerosol by the action of an appropriate amount of propellant that provides additional viscosity reduction and proper delivery characteristics. Addition of LVP-VOC solvents is not an option in this category.

In order for the compound to function properly after delivery, the dispensed product must return to its original grease state as rapidly as possible. This requires the use of a fast evaporating thinning solvent. Although acetone is a fast evaporating VOC exempt solvent, it cannot be used in large amounts because it is not miscible with the petroleum-based greases that are used, causing them to coagulate and come out of solution. Slower evaporating solvents prevent the recovery of the grease by maintaining the diluted form. LVP-VOC solvents are not suitable for dilution for this reason.

Effective anti-seize lubricant is essential to the operation and maintenance of numerous types of equipment in commercial as well as industrial operations. Effective application of anti-seize lubricant is critical on threaded parts to prevent thread galling that can lead to the parts seizing and being essentially cold-welded together. Failure of these applications can lead to expensive down-time and equipment losses. Aerosol anti-seize lubricants are needed for applications where these threads are difficult to reach with non-spray products.

Based on these considerations, the maximum allowed VOC content for aerosol Anti-Seize [Lubricant] cannot be less than 40 percent by weight. These products play an important role in equipment maintenance and must be applied and perform properly to prevent equipment damage and downtime. We therefore urge ARB to seek to have this issue addressed further in a 15-day notice subsequent to adoption of this regulation. [CSPA1]

> **Agency Response:** Staff agrees that the 40 percent VOC limit is justified. At the hearing, staff proposed and the Board approved a modification to increase the VOC limit to 40 percent by weight for aerosol Anti-Seize Lubricant, effective December 31, 2013. These changes were circulated to the public via a 15-day notice dated July 20, 2011.

B-38. Comment: There is a legitimate need for the use of perchloroethylene to formulate "Gear, Chain, or Wire Lubricant" and "Cutting or Tapping Oil." CSPA will support a chlorinated solvent prohibition for "Anti-Seize Lubricant" and "Rust Preventive or Rust Control Lubricant," but not for "Gear, Chain or Wire Lubricant" and "Cutting or

Tapping Oil" where perchloroethylene is needed in some products that require the solvency, volatility, viscosity, and/or low flammability that can only be obtained from chlorinated solvents. It is important to understand that although most such chlorinated solvent products are not labeled as flammable, they still require label warnings that avoid container overheating or hazardous combustion products.

Product formulators have made a concerted effort to eliminate the use of chlorinated solvents from their products. However, as a practical matter, there are limited situations where the use of this compound should not be eliminated. CSPA is willing to work with ARB to clearly define where chlorinated solvents are needed in these two categories of lubricants and which products therefore must be excluded from any prohibition. We therefore urge ARB to seek to have this issue addressed further in a 15-day notice subsequent to adoption of this regulation. [CSPA1]

> **Agency Response:** Based on this comment, at the hearing the Board directed staff to further assess the need for use of chlorinated solvents in "Cutting or Tapping Oil," and "Gear, Chain, or Wire Lubricant." After further data review and consultation with this Commenter, staff determined that the data did not support the need to use chlorinated solvents. We also note that the Commenter did not supply data to support their contention. Therefore, as part of the 15-day notice staff did not propose to change the prohibition on use of methylene chloride, perchloroethylene, and trichloroethylene in "Cutting or Tapping Oil" and "Gear, Chain, or Wire Lubricant."

B-39. Comment: CSPA suggests that the clarity of the regulation would be improved if all lubricant categories are grouped together. In other areas of the regulation, ARB has made significant improvements to the clarity of the various provisions by grouping together products and provisions so that all similar provisions, added over many years and rulemakings, can be more clearly identified. We believe that this should now be done with Lubricants, which are regulated in categories whose definitions and standards are scattered throughout the regulation. We suggest that ARB consider listing all Lubricants together in the Table of Standards. We therefore urge ARB to seek to have this issue addressed further in a 15-day notice subsequent to adoption of this regulation. [CSPA1]

> **Agency Response:** Staff agrees and at the hearing, staff proposed and the Board approved reorganizing the existing and newly regulated lubricant subcategories into a single definition in section 94508(a) of the regulation. In addition, the reorganization is reflected in the Table of Standards (section 94509(a)), subsection 94509(m), and subsection 94509(n). All of these changes were circulated to the public via a 15-day notice dated July 20, 2011.

B-40. Comment: The NAA supports the staff recommendations with the changes that the ARB staff has proposed for the Lubricant category. It is important to the success of these amendments and to the NAA that the Lubricant categories remain separate and

distinct entities. We look forward to working with the staff to accurately portray these categories. [NAA]

B-41. Comment: We support the ARB staff recommendations for the proposed changes to the lubricant category. The lubricant categories must remain separate and distinct entities. These products are developed for specific uses and require vastly different physical and chemical properties depending upon each end use. ARB staff is justified in separating these categories and not keeping the one "catch-all" category of "Special-purpose Lubricants." We will continue to work with ARB staff to ensure that lubricant categories are defined appropriately to reflect the needs and safety of all end users.

The limits being proposed are technology forcing and will be challenging to meet. That being said, we are prepared to work diligently toward achieving those limits while still providing safe and effective products to our customers in the retail, military, and law enforcement community. [RSC]

B-42. Comment: We support the ARB staff recommendations with the proposed changes to the lubricant category. The lubricant categories need to remain separate and distinct entities. These products are developed for specific uses. ARB staff is justified in separating these categories and not keeping the one category of "Special-purpose Lubricants." We will continue to work with ARB staff to ensure the lubricant categories are defined appropriately. The limits being proposed are technology forcing and will be challenging to meet. We are prepared to work toward achieving these limits and providing effective products to our customers. [CRC]

Agency Response to Comments B-40 through B-42: The Board approved staff's proposal to modify the original proposal for "Special-purpose Lubricant." The modified proposal subcategorizes the special-purpose lubricant category into "Anti-Seize Lubricant," "Cutting or Tapping Oil," "Gear, Chain, or Wire Lubricant," and "Rust Preventative or Rust Control Lubricant." The Board also approved the modification to extend the effective date to December 31, 2013, and approved the proposal to increase the VOC limit for aerosol "Anti-Seize Lubricant" to 40 percent by weight. All of these changes were circulated to the public via a 15-day notice dated July 20, 2011. The Agency's Responses to Comments B-35, B-36, and B-37 are incorporated herein.

B-43. Comment: The purpose of my letter is to protest the restrictions proposed to be placed on Special-purpose Lubricants in aerosol form.

"Special-purpose Lubricants" can include several different uses that are being lumped into one category. These products include very thick greases used on gears, anti-seize products, products used for food machinery or appliances, and many others. One product in particular was developed specifically for pintle hooks on semi-truck trailer couplings.

In all these products, the grease or lubricant is extremely thick and viscous. The aerosol tool works well with these products as long as we can use and find solvents that quickly evaporate once the product has been sprayed, thus leaving the original concentrate or lubricant developed for the particular use.

I have tried all available products that are not considered a VOC or are VOC exempt. None of the available solvents work well with the products I am dealing with. They are either too slow of an evaporator and leave the product wet and dripping off the target, or they are not soluble with the product.

I urge you to re-consider the proposal to reduce the VOC content of "Special-purpose Lubricants" as this will be detrimental to the products I have mentioned as well as other products throughout the industry. [EVEREADY]

> **Agency Response:** Staff agrees in part with the Commenter. At the hearing staff proposed, and the Board approved, a modification to increase the VOC limit for aerosol "Anti-Seize Lubricant" to 40 percent by weight, effective December 31, 2013. However, staff disagrees that the VOC limits for the other special-purpose lubricant subcategories of "Anti-Seize Lubricant (nonaerosol)," "Cutting or Tapping Oil," "Gear, Chain, or Wire Lubricant," and "Rust Preventative or Rust Control Lubricant" are not feasible. As discussed in the ISOR, the data support that the 25 percent VOC limit for aerosol products and the 3 percent VOC limit for nonaerosol products are feasible. Staff also notes that the 2006 Survey data show that products representing between 6 to 100 percent (depending on the category) of the reported products, on a sales basis, were already in compliance with the proposed VOC limits. The Agency Response to Comment B-35 is incorporated herein.

B-44. Comment: This was, as you heard, a challenging regulation, especially in some of the categories like the lubricants, which appeared to be simple from the start. But as we looked into them, there were literally hundreds of unique and special products that will have to be reformulated. It took a lot of effort on the staff's part and the industry's part to work until just now to sort out some of the issues in that category and go forward with something we think will work. [SWC; RRR representing CRC]

B-45. Comment: We would like to work with you on the specialty lubricant categories. [RRR representing RSC]

B-46. Comment: We are here to support the regulation for the specialty lubricants. Specialty lubricant category was extremely difficult to deal with, and we still have work to do on those. I want to reiterate, too, that staff was very willing to meet with us at all levels, all the way up to the executive branch. And we look forward to finishing up this regulation and we look forward to working with you in the future. [RRR representing CRC]

Agency Response to comments B-44 through B-46: Comments noted. At the hearing the Board approved staff's modifications to subcategorize the "Special-purpose Lubricant" category and extend the effective dates until December 31, 2013. The board also approved a modification to increase the VOC limit for aerosol "Anti-Seize Lubricant" to 40 percent by weight. All of these changes were circulated to the public via a 15-day notice dated July 20, 2011. The Agency's Responses to Comments B-35, B-36, B-38, and B-40 through B-42 are incorporated herein.

Spot Remover for Dry Clean Only

B-47. Comment: This letter is to communicate some concerns with the list of reported products for the 2008 Consumer and Commercial Products Survey of Spot Removers used on dry clean only garments, as well as the proposed VOC limit for this category. The following list contains the products which we do not believe adhere to the definition of Dry Clean Only Spot Removers. [Commenter provided a list of products.]

These products (and possibly others) should be removed from your analysis, as they are being used to determine the feasibility of further reducing VOC emissions from this category of chemicals. These products are water-based and are not designed to be used solely on dry clean only fabrics. These water-based spot removers cannot be used in the dry cleaning system. To be used as part of the dry cleaning process, they are applied to a water-soluble stain on the garment, at the spotting board, flushed out of the fabric, and dried before being dry cleaned. Most of these products fit the definition of the normal Spot Remover category. A couple of them fit better into the Laundry Prewash category.

If the products listed above were used in your analysis, then please note that removing their data from the analysis will significantly affect the results you are generating. The percent range of VOCs in the products will narrow and the average will be much higher. It is important to note that the proposed VOC limit on the Dry Clean Only Spot Remover category will impose significant hardships, not only on the product manufacturers, but also on the dry cleaners themselves. These products are designed to remove certain types of stains. In order to remove these stains, higher concentrations of certain chemicals, which are classified as VOCs, must be used. The products are not water-based since they are used to remove non-water-soluble stains. With a limit on the VOCs in this type of product, the dry cleaners will find themselves unable to clean garments effectively and ultimately, satisfy their customers.

In our opinion, applying a VOC limit to the Dry Clean Only Spot Remover category would eliminate the ability to produce effective products to remove stains in the dry cleaning process. It is also our opinion that the Dry Clean Only Spot Remover category should be either a "stand-alone" category or a sub-category of Dry Cleaning Fluid. We would welcome the opportunity to discuss this matter further with either yourself or your technical staff, in order for both parties to come to a better understanding of this matter. [ADCO]

B-48. Comment: The spot removers used by professional dry cleaners have evolved over the years to include a set of essential product types that are for practical reasons irreducible in numbers. Examples include protein spotters, tannin spotters, and paint/oil/grease (POG) removers. Some commenters have suggested that one product can be used on all stains. Professionals who work at the spotting board (known as "spotters") in dry cleaning facilities recognize that spot removers designed to remove specific stains are more efficient and cost effective. For example, an "alternative" LVP-VOC-based or water-based spot remover may work nearly as well on certain paint/oil/grease stains compared to a traditional POG spot remover. However, the professional "spotter" knows that using a spot remover specifically designed to remove POG stains will save them time and minimize product usage because they don't have to work on the stain as long and don't need several applications of the product. Acetone was suggested as another "alternative" to traditional POG spotters because it is exempt from VOC regulation and is a good solvent for POG-type stains. However, the flammability and ability of this solvent to dissolve acetate fibers calls into question its safety for use as an "alternative" POG spot remover.

We agree with other commenters that Dry Clean Only Spot Removers should be regulated as a separate category. ARB data presented at the July 2010 workshop show that the proposed inclusion of Dry Clean Only Spot Removers in the regulations only results in a comparatively small reduction in VOC (0.17 tons per day). This is remarkably small when you take into account the substantial reduction in the allowable VOC level in this category, i.e., (the VOC standard for nonaerosol Spot Removers is 3 percent maximum). Some consideration should be given to the minimal reduction in VOCs in comparison to the higher cost incurred by the professional dry cleaner in terms of increased labor cost (more time needed working on stains) and more product waste (more product needed to achieve equivalent stain removal).

We also agree with other commenters that the unqualified use of data from the ARB Dry Clean Only Spot Remover Survey to determine the standard for this new category may not be appropriate. Many of the spot removers reported in this Survey are water-based and contain little or no VOC. The inclusion of the water-based SRAs in the ARB survey skewed the average VOC content of products in this category as a whole to a much lower value. Therefore, it appears that ARB set the VOC limits for Dry Clean Only Spot Removers at an impractically low level 3 percent because of the unrepresentative levels of VOCs reported in the survey. A suggested approach would be to break the Dry Clean Only Spot Remover category into two or more subcategories (*e.g.*, water-based spot removers and solvent-based spot removers) and have separate standards for each subcategory.

We appreciate the opportunity to work with ARB in achieving California's air quality goals, while continuing to provide efficient and cost effective products to drycleaners. [R.R. Street]

Agency Response to Comments B-47 and B-48: As suggested by these commenters, staff evaluated the data without the products they requested be removed. After removing these products from the data, products already in compliance with the VOC limits represented over 46 percent, on a sales basis, of the products in the category. These data indicate that the VOC limits are feasible for both dry-side and wet-side "Spot Removers." Therefore, staff disagrees that a separate category for Dry Clean Only Spot Remover is necessary. The Survey data include complying water-based and LVP-VOC based products that state they are suitable for dry-side and wet-side soil spotting. Complying products make claims to remove a wide variety of soils including greases, inks, paint, oil, cosmetics, and are suitable for fabrics labeled for dry clean only.

B-49. Comment: CSPA member companies do not oppose ARB's proposal to include spot remover products used on dry clean only fabrics into the currently regulated "Spot Remover" category. In addition, CSPA does not oppose the ARB's proposed action to extend the existing prohibition on the use of methylene chloride, perchloroethylene, and trichloroethylene for the Spot Remover category to newly added products effective December 31, 2012. [CSPA1]

Agency Response: The Board approved staff's proposal to include spot remover products used on dry clean only fabrics into the currently regulated "Spot Remover" category. To allow adequate reformulation time for the newly added products the VOC limits for the "Spot Remover" category were extended from December 31, 2010, until December 31, 2012. As part of the staff's proposal, use of methylene chloride, perchloroethylene, and trichloroethylene would also be prohibited, effective December 31, 2012.

B-50. Comment: I am in strong support of the chlorinated solvents ban and the VOC limits set by ARB staff, and will comment specifically on the Dry Clean Only Spot Remover category. Currently about one-third of cleaners in California use nonperchloroethylene types of cleaning machines; the major alternatives being hydrocarbon, wet cleaning, and carbon dioxide operations. ARB's ban on trichloroethylene and perchloroethylene, along with the VOC limit, will protect the public and even more so the workers exposed to these carcinogens in the dry cleaning facilities. Water quality degradation from chlorinated solvents discharged into the environment through the sewers by dry cleaning facilities will also be abated. IRTA demonstrated a soy-based product and water-based products, which were less expensive than the solvents used nowadays in dry cleaning establishments, in its 2009 study. I have spent many hours testing these types of products at cleaning facilities and am confident they are effective for this use.

Water-based cleaners and soy based cleaners perform as well as the spotting agents used today. One of IRTA's reports provides sources for three water-based and two soy based cleaners that can be purchased from suppliers. Suppliers of the currently used spotting chemicals claim that water-based and soy based cleaners will not work. Water-based cleaners are used for cleaning parts heavily soiled with oil and grease in auto

repair facilities and there is no reason to believe they are not suitable for this application. Soy based cleaners are especially suited for cleaning ink and various other [paint, oil, or grease] materials and they work very well in this application. [IRTA]

Agency Response: The Board approved staff's proposal to include these spot removers for use on fabrics that must be dry cleaned into the currently regulated "Spot Remover" category. These newly included products would be subject to the VOC limits and the prohibitions on use of methylene chloride, perchloroethylene, and trichloroethylene effective December 31, 2012. The Agency Response to Comment B-49 is incorporated herein.

Wasp or Hornet Insecticide (Aerosol)

B-51. Comment: ARB's proposal to set a 10 percent VOC limit for this important public health product presents a significant technological challenge for manufacturers. Notwithstanding these challenges, CSPA member companies commit to expend the considerable amount of money needed to conduct the extensive research, development and engineering efforts necessary to ensure that the reformulated product remains effective and affordable to consumers – and especially for low-income households.

This product is also subject to regulation under FIFRA and the California Food and Agricultural Code. In addition to the time-consuming review and registration process there is an additional time constraint factor that further complicates manufacturers' efforts to reformulate this product category: the window of opportunity to test this product category is limited to summer months of July and August (the two months in which wasps and hornets are most active). Therefore, the December 31, 2013, effective date for this product category is both reasonable and necessary. [CSPA1]

Agency Response: The Board approved staff's proposal for aerosol "Wasp or Hornet Insecticide" of a 10 percent by weight VOC limit, effective December 31, 2013. As specified in section 94509(d) of the Consumer Products Regulation, an additional year for compliance with the VOC limit is provided to allow adequate time for these products to comply with FIFRA and CDPR requirements. In proposing the effective date staff considered the time necessary to conduct efficacy testing.

3. Comments on Other Regulatory Requirements

Alkylphenol Ethoxylate Prohibition

Comments B-52 through B-54 were submitted by Ms. Barbara Losey on behalf of the Alkylphenols and Ethoxylates Research Council (APERC). The comments consist of oral and written testimony presented at the November 18, 2010, hearing, as well as a letter dated November 17, 2010. Overall, the comments express opposition to the proposal to prohibit use of alkylphenol ethoxylate surfactants in General Purpose

Cleaner [nonaerosol], Glass Cleaner [nonaerosol], General Purpose Degreaser [nonaerosol], Heavy Duty Hand Cleaner or Soap [nonaerosol], and all forms of Oven or Grill Cleaner products. In the APERC comments, numerous exposure studies and water quality criteria are cited to support their contention that levels in California waterways are below levels of concern. In further support of their comments, an attachment to the November 17, 2010, letter (submitted as separate document due to its size) provided summaries of acute and chronic studies for various aquatic species exposed to concentrations of alkylphenol ethoxylates. All of APERC's comments are set forth below followed by ARB staff's response. Literature references cited by the ARB staff in response to these comments are not listed in this FSOR, but are included as part of the record for this rulemaking.

Acronyms used in the following comments to describe various alkylphenol ethoxylate surfactants or their breakdown products include: alkylphenol ethoxylate (APEO or APE), alkylphenol (AP), alkylphenoxy carboxylates (APEC), nonylphenol (NP), nonylphenol ethoxylate (NPE), nonylphenol ethoxycarboxylate (NPEC), nonylphenol monoethoxycarboxylate (NPEC1), nonylphenol diethoxycarboxyoxylate (NPEC2), octylphenol (OP), and octylphenol ethoxylate (OPE).

B-52. Comment: The Alkylphenols and Ethoxylates Research Council (APERC) provides the following comments in opposition to proposed regulations that would restrict the use of APEs in certain classes of consumer cleaning and degreaser products. For more than twenty years APERC and its member companies have been actively engaged in the conduct and review of toxicological and environmental fate and effects research on APs and APEs. Consequently, APERC can contribute considerable information and expertise relevant to the environmental and toxicological assessment of these substances.

At the advice of the State Water Resources Control Board (SWRCB), ARB is proposing regulatory measures to prohibit the use of APE surfactants in certain cleaning product categories. These prohibitions are proposed to ensure that cleaning products are not reformulated with APEs in an effort to meet VOC limits also being proposed by ARB. Specifically, APE surfactants would be prohibited from use in Oven or Grill Cleaner products and in the nonaerosol forms of General Purpose Cleaner, General Purpose Degreaser, and Glass Cleaner after December 31, 2012. A prohibition on use in nonaerosol Heavy-duty Cleaner or Soap products would become effective in December 2013. ARB is proposing these measures for the following reasons:

1. "APEs, in particular octylphenol and nonylphenol ethoxylates, have been found to be toxic to aquatic species;

2. They are hormone disruptors, with the primary concern focused on the estrogenic effects;

3. The SWRCB staff is concerned that any potential additional use of APEs could "adversely impact aquatic life;" and,

4. Replacements for APEs, which SWRCB considers to be “more effective and environmentally safe,” are available.

In its memo advising the ARB on this issue the SWRCB expressed concerns that:

1. “The level of aquatic toxicity posed by APEs is high enough to cause concern;

2. APEs are being discharged into coastal, estuarine, and freshwater by means of wastewater treatment plants, storm water and other sources in California (and elsewhere); and,

3. APEs seem to bioaccumulate in marine vertebrates and invertebrates and persist in environmental compartments such as sediments.”

The APERC provides the following comments to respond to the concerns raised by ARB and SWRCB and to inform the two Boards about additional available study results on APEs and their environmental degradants.

1.0. U.S. EPA water quality criteria (WQC) for NP in fresh and marine surface waters and predicted no effect concentrations (PNECs) for NP in sediment (calculated according to governmental guidelines) are available and provide a basis to conduct screening risk assessments in California.

The fact that APEs are toxic to aquatic life is not surprising or unique among surfactants; all surfactants are toxic to aquatic life. In addition, the detection of AP/APEs in measurable quantities in California waters and/or sediment is not a sufficient basis for concern, particularly since NP-equivalent concentrations of these compounds found in the aquatic environment in California generally do not exceed the U.S. EPA WQC and/or PNECs that have been calculated according to governmental guidelines for NP in sediment.

1.1. In 2006, U.S. EPA finalized acute and chronic aquatic life ambient WQC for NP (the most toxic of the NPE degradation intermediates) that are protective of aquatic species that dwell in fresh and salt water.

The U.S. EPA Office of Water conducted a significant review of the available data for NP in support of its aquatic life ambient WQC for NP. U.S. EPA utilizes a statistical extrapolation procedure that draws upon both acute and chronic toxicity data from a wide range of taxa and species to develop WQC that are “an estimate of the highest concentration to which an aquatic community can be exposed indefinitely without unacceptable effect.” In the case of NP, U.S. EPA used results from acute studies (representing 18 freshwater species and 11 saltwater species) to statistically calculate a Final Acute Value (FAV) along with results for apical endpoints related to population level assessments of organism health (*e.g.*, reproduction and growth) from chronic tests (representing 5 freshwater species and 1 saltwater species) to calculate acute-to-

chronic ratios. Since the chronic endpoints used to derive the chronic NP WQC reflect the culmination of molecular, biochemical, and tissue-level effects at the whole organism level, the NP WQC in turn address all mechanisms of action – including estrogenic effects – that result in measurable alterations in these apical endpoints. Although NP has been shown to have weak estrogenic activity, U.S. EPA noted in the NP WQC document that "the ability of [NP] to induce estrogenic effects has seldom been reported at concentrations below the freshwater Final Chronic Value of 6.5965 µg/L."

In 2006, [U.S.] EPA finalized the following acute and chronic criteria for NP in both fresh and salt waters:

> Acute WQC for NP: 28.0 µg/L (fresh water) and 7.0 µg/L (salt water)
> Chronic WQC for NP: 6.6 µg/L (fresh water) and 1.7 µg/L (salt water)

The [U.S.] EPA WQC were developed using data available for NP as of 2005. [U.S.] EPA's conclusions were consistent with a species sensitivity distribution analysis based on essentially the same chronic data set conducted by Staples *et al.* (2004), which calculated a similar freshwater chronic value (5.7 µg/L at the lower bound 10th percentile) based on 90 chronic toxicity values for NP reported for 16 species of freshwater aquatic invertebrates and vertebrates.

1.2. A review of studies published since finalization of the [U.S.] EPA WQC for NP found that more recent toxicity data do not contraindicate that the WQC are sufficiently protective of fresh and saltwater aquatic species.

Since the finalization of the NP WQC additional ecotoxicity data have been reported; therefore, Coady *et al.*, (2010) completed a comprehensive literature search for the period between 1997 and 2009. One purpose of the literature search was to identify any studies published on NP since [U.S.] EPA finalized the NP WQC. Also, in light of interest in other environmentally relevant metabolites of NPE (*e.g.*, NPE1, NPE2, NPE>1, and NPEC) studies on these compounds were also identified and reviewed.

Following the practices employed in the development of the 2006 [U.S.] EPA WQC for NP, studies were deemed valid and relevant for use in a hazard assessment – or development of WQC – if they contained a thorough description of the experimental design, had a clear linkage between reported findings and the experimental design, contained an ecologically relevant apical endpoint, such as growth, survival or reproduction, and exhibited adequate performance of controls.

As part of the literature review the authors examined studies investigating the effects of NPE and NP on secondary endpoints, such as behavioral effects, induction of biochemical markers, or alterations in cells within tissue. From these studies, the types of endpoints being measured, the range of effect concentrations associated with NPE and its breakdown products, and the possible mechanisms of action of these compounds in various aquatic species were examined. In summary, there were a total

of 30 recent studies (17 with freshwater and 13 with marine species) that examined apical endpoints (survival, growth and reproduction) relevant for risk assessment of NP in a broad range of species (*i.e.*, fish, frogs, echinoderms, crustaceans, mollusks, and diatoms). The review found that these recent studies add to the weight-of-evidence that supports [U.S.] EPA's current fresh and saltwater WQC for NP.

In summary, an abundant data set of apical and secondary endpoints in aquatic species exists for NP and is summarized in Table 1 (not included in this FSOR but is part of the rulemaking record) along with the results for other NPE metabolites. Furthermore, there are no definitive data in the recent literature to contraindicate that the current fresh and saltwater chronic WQC for NP are sufficiently protective of aquatic communities.

1.3. Adequate data are available to calculate sediment PNECs for NP using established governmental methodologies; these can be used to conduct screening assessments of concentrations of NP/NPE and OP/OPE in sediment.

In comments to SWRCB, the Southern California Coastal Water Research Project (SCCWRP) expressed concern that "we do not have a good idea of sediment threshold levels that would be protective of aquatic marine or freshwater life." However, adequate data exist and PNECs can – and have been – calculated. These are discussed below.

1.3.1. Sediment PNECs have been calculated using the equilibrium partitioning method.

PNEC (sediment) values have been calculated for NP by the Canadian government using equilibrium partitioning methods. In 2001, Environment Canada calculated an Environmental No Effect Value (ENEV) for NP in sediment of 2 µg/g (2000 ng/g) and, using Relative Toxicity Factors, calculated an ENEV of 4.0 µg/g (4000 ng/g) for NPE1 and NPE2. Also in 2001, the Canadian Council of Ministers of the Environment (CCME) calculated interim sediment quality guidelines (ISQGs) for NP and its ethoxylates of 1.4 mg/kg-dw (1400 ng/g-dw) in freshwater sediment and 1.0 mg/kg-dw (1,000 ng/g-dw) in marine sediments. These CCME ISQGs are expressed on a toxicity equivalence basis.

While equilibrium partitioning is useful to provide a rough estimate of the potential ecotoxity of a compound in the absence of ecotoxicity data in benthic species, this approach is subject to shortcomings due to its reliance on basic physical and chemical properties to determine partitioning of the chemical between water and sediment. Therefore, more accurate and relevant PNECs are derived using guidelines based on actual ecotoxicity studies in living organisms and are discussed below.

1.3.2. Sediment PNECs have been calculated using chronic ecotoxicity data from benthic organism studies conducted on NP in sediment.

Since an adequate number of ecotoxicity studies are now available to calculate toxicity-based PNECs for benthic organisms with sediment-dosed concentrations of NP, Staples *et al.* (2010) recently calculated freshwater and marine PNECs for NP of 6,150 ng/g-dw and 2,130 ng/g-dw, respectively. In addition, Staples *et al.* (2010) conducted an assessment of potential risk of NP to sediment dwelling organisms that considered the available sediment monitoring data from the literature, including data cited by SWRCB.

Table 2 (not included in this FSOR but is part of the rulemaking record) summarizes the short-term acute and sub-chronic ecotoxicity studies on NP in sediment dwelling organisms, which demonstrate the wide range of ecotoxity data that are available for this compound; however acute and sub-chronic data were not used to derive the chronic sediment PNECs for NP.

Table 3 (not included in this FSOR but is part of the rulemaking record) summarizes long-term chronic sediment toxicity data for nonylphenol using aqueous exposure and dosed sediments, which were used to derive the PNEC (sediment) values for NP. The lowest chronic No Observed Effect Concentration (NOEC) was 61,500 ng/g-dw, as determined from a 28-day survival and reproduction study on NP in the Amphipod (M) Leptocheirus plumulosus, published by Zulkowski *et al.* (2002). An assessment factor (AF) of 10 was applied in accordance with the guidance to derive the PNEC (sediment, fresh) as three chronic tests with species with different feeding and living conditions were available and a PNEC (sediment, fresh) of 6,150 ng/g-dw was derived. An AF of 50 was applied to the lowest sediment-based NOEC, since only one marine species was available, to derive the PNEC sediment (marine) of 1,230 ng/g-dw.

Table 4 (not included in this FSOR but is part of the rulemaking record) summarizes available environmental monitoring data for NP in freshwater and marine sediment (ng/g-dry weight). The whisker graphs in Figure 1 (not included in this FSOR but is part of the rulemaking record) compare the sediment monitoring results to the PNEC (sediment, freshwater) or PNEC (sediment, marine). From nine studies, 327 sediment samples were collected from fresh surface water systems in North America and Europe. From 12 studies, 132 sediment samples were collected from estuarine and coastal marine sites. Most freshwater (~93 percent) and marine (~96 percent) data are below their respective PNEC (sediment) values. Of those samples taken in California, only one sample from a coastal wastewater treatment outfall site exceeded the PNEC (sediment, marine).

2.0. AP/APE are highly treatable in wastewater treatment plants and their degradation intermediates are not persistent or bioaccumulative in the environment; their likelihood of exceeding the [U.S.] EPA WQC for NP is low nationally and in California; and APEs are not posing a risk in California surface waters and sediments.

In its memo to the ARB the SWRCB expressed concerns that “APEs are being discharged into coastal, estuarine, and freshwater by means of wastewater treatment

plants, storm water and other sources in California (and elsewhere); and APEs seem to bioaccumulate in marine vertebrates and invertebrates and persist in environmental compartments such as sediments." The ARB Staff report states "once into wastewater, alkylphenol ethoxylates do not readily degrade and they and/or their degradation products enter aquatic environments through wastewater treatment facilities or storm water."

While APEs and their degradation intermediates are not "readily biodegradable" as defined by OECD guidelines they are highly treatable and removed from the effluent stream in wastewater treatment plants and they are inherently biodegradable.

2.1. NP and NPE are treatable in wastewater treatment plants and their degradation metabolites and are not persistent or bioaccumulative.

Biodegradation has been shown to be the dominant mechanism responsible for removal of NP, NPE, AP, and APE during wastewater treatment and in the environment. While NPE is highly treatable in wastewater treatment plants, with removal rates commonly greater than 90 percent, low levels of its degradation metabolites have been reported in effluent and surface waters. Under anaerobic conditions, the major metabolites of NPE include: NPE1, NPE2 and, to a lesser extent, NP. Under aerobic conditions, NPEC1 and NPEC2 also occur. These intermediates continue to degrade in the environment, including mineralization of the phenolic ring, to carbon dioxide.

It is important to remember that the terms "persistent" and "bioaccumulative" have very specific meanings and are based on measurable criteria. Assessments of the persistence and bioaccumulation of NP/NPE relative to these recognized criteria have been conducted by the European Union (EU), Environment Canada, Washington State and the State of Oregon. All of these concluded that NP and/or NPE, along with other AP and APEs, are not persistent or bioaccumulative. Companion papers by Staples *et al.* (2008) and Klecka *et al.* (2008) summarize and provide references to the available data on the persistence and bioaccumulative properties of NP and NPE. As such, numerous high quality studies are available to ARB and the SWRCB to confirm that NP and NPE are not persistent or bioaccumulative.

In addition, SCCWRP has noted that concentrations in the livers of [Pleuronichthys verticalis] (P. verticulis) were similar to those in the sediment and points out that "[t]hese findings are consistent with most other studies and provide very strong evidence that APEs do not biomagnify like so-called persistent organic pollutants (e.g. DDE, PCBs and PBDEs) do."

2.2. The degradation intermediates of APE occur at low levels in wastewater effluent and the aquatic environment nationally; however the likelihood of their occurrence exceeding [U.S.] EPA's WQC for NP is low.

The breakdown products of NPE (*i.e.*, NP, NPE1 and NPE2) are known to co-occur at low concentrations in the aquatic environments; therefore, Klecka *et al.* (2007)

conducted an assessment of surface water and/or sediment monitoring studies available in the published or publicly available literature to develop a statistical understanding of exposures to APE, including NPE and its metabolites in U.S. surface waters. A literature search was conducted to identify environmental monitoring studies published during the 15-year period between 1990 and 2005, which contained information on surface water and/or sediment concentrations of APE and its metabolites in U.S. waters. Nineteen reliable monitoring studies, most of which were conducted by the U.S. Geological Survey (USGS), were reviewed and the highest concentrations of all NPE metabolites were generally observed for rivers in heavily urbanized or industrialized locations with average concentrations of 1.7 µg/L, 1.2 µg/L, 2.3 µg/L, and 8.1 µg/L for NP, NPE1, NPE>1, and NPEC respectively reported. Klecka *et al.* (2007) reported NPE>1 as a group because the USGS, which provided much of the data analyzed in this paper, frequently reported in this manner. However, a review of the database that catalogued all of the raw data analyzed by Klecka *et al.* (2007) confirmed that the majority (87 percent) of the data points categorized as NPE>1 do in fact represent concentrations of NPE2.

Klecka *et al.* (2007) also used the available data to examine changes in reported concentrations of NPE metabolites over the 15-year sampling period ending in 2005. While noting that the data were drawn from a diverse set of studies with different sampling strategies and analytical methods, the authors found that maximum concentrations varied widely; however, the mean and 90th percentiles for concentrations of NPE and its metabolites remained relatively constant during this time period. Therefore, it was assumed that any apparent shifts in maximum concentrations represented a bias in sampling locations toward effluent-dominated streams. These findings together with APERC's understanding that use of NPE in consumer cleaning products has declined in recent years, make it likely that concentrations of NPE metabolites in U.S. surface waters have not increased since this study was conducted.

2.3. APEs are not posing a risk in California's surface waters and sediments: Concentrations of AP and APEs in California fresh and marine surface waters and sediment do not reach levels of concern relative to U.S. EPA WQC and PNECs (sediment) for NP in fresh and marine surface waters and sediment.

Aside from a few samples, concentrations of NP and other NPE degradation intermediates reported in California surface waters and sediment have not been show to reach levels that warrant concern relative to the U.S. EPA WQC or PNEC (sediment) values.

Levels of NP and NPE reported by SCCWRP and the San Francisco Estuary Institute (SFEI) are generally in the low or sub- µg/L range in water and ng/g dw in sediment. In 2010, the Regional Monitoring program detected <0.01 to 0.073 µg/L from nearshore surface water sites in San Francisco Bay and 22 – 86 ng NP/g dw in sediment from nearshore sites in San Francisco Bay. SCCWRP points out that high concentrations of

NP and NPE reported in an outfall in Southern California Bight by Schlenk *et al.*, (2005) were found to be an order of magnitude lower in more recent studies.

SCCWRP also cites an abstract by Bay et al., 2008 that reports measures of chemical exposure and biological response at the tissue and individual level for P. verticalis for over 600 individuals that concluded "the local population trends for P. verticalis based on trawl surveys at these outfalls have not shown any indication of steady or continuous decline." SCCWRP concluded "the results of this study coupled with the apparent absence of obvious effects on the biology in other California receiving waters suggests that we cannot attribute effects that are likely to be associated with APEs at their current environmental levels directly to this class of contaminants.

3.0. AP/APES are not a major source of estrogenic activity in wastewater treatment effluent.

ARB and SWRCB have expressed concerns about the estrogenicity of AP/APEs and the potential effects that an increase in the use of APEs might have on receiving waters.

Scientists determine whether a compound is estrogenic by testing the substance in a system that is known to respond to estrogen in a specific way. NP is approximately 103 - 106 fold less potent than the endogenous estrogen, 17β-estradiol, depending on the species and endpoint investigated, and the short chain NPE are orders of magnitude less estrogenic than NP. Depending on the test system, NPEC and the longer chain ethoxylates (NPEn>4) appear to have little or no estrogenic activity in vivo.

Estrogenic activity measures the tendency of a molecule to interact with the estrogen receptor; it is a mechanism rather than an effect. Adverse effects to aquatic organisms due to all mechanisms of toxicity from NP/NPE are addressed in the development of the WQC and PNECs described above.

The Water Environment Federation recently noted "alkylphenols, alkylphenol ethoxylates, bisphenol A, and other nonsteroidal estrogenic compounds are typically present in treated effluents at µg/L levels (compared to ng/L for hormones). However, their relative activity is such that outside of a few well-documented special cases (*e.g.*, Sheahan *et al.* 2002) their contribution to total estrogenicity of effluents is considered minimal.

4.0. The ARB and the SWRCB should rely on ongoing environmental monitoring programs to determine whether the occurrence of AP/APE will increase in California surface waters as a result of efforts to reformulate VOC containing consumer products.

The use of APEs is neither necessary, nor is it likely the preferred reformulation approach to develop low VOC cleaning products. However, to prohibit the use of APEs in heavy duty cleaning product categories may unnecessarily restrict reformulation options for formulators. APEs are highly effective surfactants and current monitoring

data in California do not indicate a need for concern about risk from the presence of trace levels of APEs or their degradants in the environment. California has ongoing programs to monitor contaminants in surface water and sediment. The state also has other regulatory mechanisms available under the Clean Water Act to assess and regulate locations that might be found to exceed the U.S. EPA WQC for NP and sources that contribute to them.

The fact that alternative surfactants are available, or that other jurisdictions have taken risk management actions related to APE surfactants, is not a sufficient basis to justify regulation to prohibit the use of these compounds in cleaning and degreasing products in California. This is particularly relevant to the currently proposed prohibition of the use of APEs, which is based entirely on a hypothetical scenario that foresees an unrealistic increase in the use of APEs in consumer cleaning products resulting in an unrealistic increased exposure and risk to the aquatic environment in California. [APERC1].

B-53. Comment: We have been conducting research and monitoring the public literature on these APE compounds for over 25 years, and we now have over 4,000 studies in our database regarding these compounds. So we offer these comments for why they should not be regulated under the current regulation. The fact that APEs are toxic to aquatic life is not surprising, because all surfactants are toxic to aquatic life. What is different about APEs from other surfactants is that probably we know more about them than we do about other surfactant alternatives that might be used in their stead. We know how much is in the environment. We know how much -- what levels are protective of the environment.

[U.S.] EPA has WQC for APs and is known the major challenge. We know that there are predicted no effect concentrations governmentally derived and otherwise for what is safe in sediments. We know the levels of APs in California waters and sediments are very, very low and that with very few exceptions do not exceed the water quality criteria or values.

The Board has expressed concern about the estrogenic activity of APEs, and APEs do display estrogenic activity that is 10,000 to a million times lower than human type hormones that are also present in the environment. [U.S.] EPA developed chronic WQC for [APs] that consider these types of effects, things like developmental and reproductive effects in aquatic organisms. In studies conducted and cited by the Southern California Coastal Water Research Project have, in the conclusions of the authors of those studies, not found any definitive links between the structure and composition in fish to any compounds, including the APEs in surface water.

So it seems that the basis in the staff report for this proposal is weak. We do not think that APEs are likely the go to in green and reformulation, but to restrict them would unnecessarily restrict formulation options for people that want to meet the VOC regulations. California has ongoing programs. [APERC2]

B-54. Comment: APEs are highly effective surfactants. The most commonly used APEs are NPEs. APERC has been in existence for over 25 years. During that time the group has conducted over $4 million in research and continuously monitored the published scientific literature on these compounds. We now have over four thousand studies on this chemical family in our database.

I offer the following comments to the members of the Board about why NP and NPE do not warrant regulation to prohibit their use in certain consumer cleaning and degreasing products.

- The fact that APEs are toxic to aquatic life is not surprising; all surfactants are toxic to aquatic life.
- What makes APEs different than other surfactants is that we know a lot more about them than most other surfactants.
- We know how much is in the environment. There are numerous ongoing monitoring studies, including in California, that routinely look at concentrations of these compounds in the environment.
- We know what levels in the environment are protective of aquatic life. U.S. EPA has finalized WQC for NP in fresh and marine surface waters that can be used to assess the risk of AP/APEs in the environment.
- We know the Predicted No Effect Concentrations (PNECs) have been calculated for NP in sediment and can be used to assess the risk to benthic species.
- We know that levels of AP\APEs in California waters and sediment are very, very low. With very few exceptions, concentrations do not exceed the WQC and PNEC values for NP.
- We know that AP\APE are not persistent or bioaccumulative. Several governmental authorities (the European Union PBT Work Group, Environment Canada, Washington State and the State of Oregon) have conducted assessments on these compounds and concluded that they are not persistent or bioaccumulative. Their half-lives in the environment are in the range of days or weeks, though longer when entrained in anoxic sediments.
- The SWRCB and ARB have expressed concern about the estrogenic activity of APs.
    - First, while AP display weak estrogenic activity in screening studies their potency is ten thousand to one million times less potent that human estrogen, which also occurs in the aquatic environment.
    - It is important to remember that estrogenicity is a mode of action -not an effect. The real test of whether a compound is an endocrine disruptor is not in the screening test, it is in more robust studies that look at adverse effects mediated by hormones.
    - The U.S. EPA Endocrine Disruptor Screening and Testing Committee (EDSTAC) agreed to the following general definition of an endocrine disruptor:

        "... an endocrine disruptor as an exogenous chemical substance or mixture that alters the structure or function(s) of the

endocrine system and causes adverse effects at the level of the organism, its progeny, populations, or subpopulations of organisms, based on scientific principles, data, weight-of-evidence, and the precautionary principle." (emphasis added)

- o U.S. EPA developed chronic WQC for NP that that considered effects caused by estrogenic modes of action, like reproductive and developmental effects.
- o Studies conducted and cited by the Southern California Coastal Water Research Project (Schlenk, 2005; Bay, 2008) have -in the conclusions of the authors -not found any definitive links between vitellogenin expression and feminization in fish to any compounds -including APs - in surface water or sediment. In fact, these authors have recommended additional study.

- So, it seems that the basis provided in the staff report to justify a prohibition of APEs in certain consumer products is weak. There are references to only a handful of studies, no acknowledgement that current levels of AP/APEs in the environment are very low, and speculation that there will be an increase in the use of APEs to reformulate to avoid VOCs in cleaning products that will be so great as to overwhelm the treatment facilities and pose risk to the environment.
- While it is not likely that APEs will be a "go to" reformulation option, such a regulation would unnecessarily restrict reformulation options for formulators trying to achieve the VOC reduction goals -based on speculation.
- APEs are highly effective surfactants and current monitoring data in California do not indicate a need for concern about risk from the presence of trace levels of APEs or their degradants in the environment.
- California has ongoing programs to monitor contaminants in surface water and sediment. The state also has other regulatory mechanisms available under the Clean Water Act to assess and regulate site-specific problem areas that might be found to exceed the U.S. EPA'S WQC for NP and sources that contribute to them.
- APERC recommends that the Board not approve the proposed regulation to prohibit APEs in certain consumer product and take more time to review the facts and science related to APEs. [APERC3]

Agency Response to Comments B-52 through B-54: ARB staff disagrees with the Commenter's position that it is not appropriate to prohibit use of APEO surfactants in the nonaerosol forms of General Purpose Cleaner, Glass Cleaner, General Purpose Degreaser, Heavy-duty Hand Cleaner or Soap, and all forms of Oven Cleaner or Grill Cleaner products. However, because use of APEOs is a water quality issue rather an air quality issue, in the interest of completeness, ARB staff asked the staff of the State Water Resources Control Board (SWRCB) to review the APERC's comments and provide a recommendation as to whether ARB's proposed prohibition should be changed or removed. SWRCB reviewed APERC's comments and submitted a detailed response to Richard Corey, Chief, Stationary

Source Division, ARB, in a memorandum dated June 20, 2011. In this memorandum the SWRCB expressed their continued support for the prohibition on use of APEOs. This memorandum was circulated for public comment as part of the 15-day notice dated July 20, 2011. ARB's response to these comments is derived from this memorandum.

APERC contends that concentrations of APEOs in California waterways are low and are not expected to exceed U.S. EPA's WQC for NP in fresh and marine surface waters (U.S. EPA, 2005). Staff reviewed these NP acute and chronic WQC established by U.S. EPA for both fresh and salt water. Staff generally agrees that California specific data indicate that concentrations of APEOs in several California waterways are currently below the U.S. EPA's acute and chronic fresh and salt WQC for NP. However, this family of chemicals includes not only the most commercially used NPEs and its corresponding metabolites NPs, but also OPEs and their corresponding degradation products OPs, as well as other APEOs and variety of degradation products such as APs, APECs, and numerous forms of mono-, di-, and tri-ethoxylates formed during spontaneous environmental biodegradation and wastewater treatment processes. Whether the WQC established for NP is an appropriate benchmark for evaluating relative toxicity of this entire class of diverse organic compounds is unclear.

We also agree that the acute and chronic toxicity data for various species, provided by APERC, indicate that, at present, aquatic species are not being exposed to toxic (according to U.S. EPA's WQC for NP) concentrations of NP. Nevertheless, staff notes that APERC does not dispute that these compounds are toxic to aquatic species.

While concentrations of APEOs are generally below U.S. EPA's WQC for NP, this does not necessarily mean that the current concentrations are safe for aquatic species. For example, Environment Canada has established interim water quality guidelines for NP and its ethoxylates for the protection of aquatic life (Canada, 2002). The interim values are 1.0 µg/L for freshwater and 0.7 µg/L for marine waters. The European Union (EU) has also established an Environmental Quality Standard for NP (OSPAR, 2009). Under their Water Quality Directive, the annual average concentration is not to exceed 0.3 µg/L with the maximum allowable concentration in inland and other surface water of 2.0 µg/L. Several reported concentrations in California waterways, particularly those from the Surface Water Ambient Monitoring Program (SWAMP), are near or exceed these levels (SWRCB, 2010b). Taken on the whole these criteria values support the contention that existing concentrations of APEOs are of concern and restrictions are appropriate.

In its 2010 memorandum the SFEI noted that some studies suggest that the effects of APEOs and their degradation products may be additive (SFEI, 2010). For example, Xie *et al.* (2005) found that certain herbicide formulations containing APEOs as surfactants were "estrogenic to trout at environmentally relevant

concentrations" and noted that these effects seemed to be additive at some concentrations.

APERC also contends that concentrations of APEOs in California sediment are below PNECs for NP and provided NP PNEC sediment values calculated by the Canadian government (2002), as well as NP PNECs for benthic organisms with sediment-dosed concentrations of NP. Based on these PNECs, in general, we agree that sediment concentrations of APEOs measured in several California locations are currently below levels of concern. Nevertheless, we believe concentrations of APEOs detected in sediments remain a serious concern. For example, results of model calculations (Huang *et al.*, 2007) showed that over 86 percent of all NP input for an aquatic microcosm consisting of four compartments (surface microlayer, water phase, water sediment, with zebra fish as biota) was removed by advective outflow, while of the remaining NP over 60 percent was distributed to the sediment phase. This finding demonstrates that sediment plays a key role in the fate of NP and acts as a sink in the aquatic environment. The data also support that measures to reduce these substances are important for water quality.

SCCWRP cited 2005 data from Schlenk *et al.,* which measured some sediment concentrations in excess of the PNECs calculated for marine environments. SCCWRP further indicated that more recent data showed concentrations to be an order of magnitude lower than those found in 2005 (SCCWRP, 2010). Whether this same trend would be true for other waters is not known. As further noted by SCCWRP, very little APEO concentration data exist for other permitted discharges or in water bodies receiving these discharges.

APERC also states that APEOs are highly treatable in wastewater treatment plants (WWTP). However, SFEI's July 2010 review reached a different conclusion regarding APEOs: "Wastewater removal efficiencies are extremely variable (9 to 94 percent) and sorption to sludge is the principal pathway for removal…recent studies suggest that urban runoff may also be a pathway for entry of APEOs to aquatic environments."

APERC claims that APEOs are not persistent or bioaccumulative in the environment. Contrary to this view, various researchers' observations generally support the view that APEOs exhibit a tendency toward biomagnification, bioaccumulation, and/or bioconcentration in marine and freshwater settings. Among them, Huang *et al.* (2007) found that a comparatively high bioconcentration factor for NP in zebrafish was indicative of substantial potential for bioaccumulation in a food chain, and that depuration was slow and ultimately incomplete within this study's time frame. These observations are consistent with Sumi *et al.*'s findings (2007) on the propensity of common carp to bioaccumulate NP, in addition to exhibiting various signs of endocrine disruption when exposed to ambient concentrations found in several rivers and a lake in Japan.

Staff also notes that in its "Nonylphenol and Nonylphenol Ethoxylates Action Plan" (Action Plan) U.S. EPA indicates that NPEs are "moderately bioaccumulative in mollusks, are persistent in the aquatic environment, and accumulate in soils and sediments" (U.S. EPA, 2010).

Moreover, the EU determined NPEs containing more ethoxylate groups may not be broken down entirely during wastewater treatment. The NP group is particularly stable and can remain intact throughout normal wastewater processing. Data also indicate that NP and NPEs continue to be discharged from wastewater treatment works (Environment Agency, 2010). Further, the EU determined that these chemicals have a tendency to accumulate in the tissues of plants and animals (Environment Agency, 2010).

To be inclusive, we note that Canada found that APEOs, while mildly bioaccumulative in aquatic organisms, did not meet criteria to be considered bioaccumulative under their Persistence and Bioaccumulation Regulations (Canada, 2002).

APERC's comments express some skepticism about the capacity of APEOs to act as endocrine disruptors. However, recent research not referenced by APERC indicates that APEOs such as NP have some capacity to act as endocrine disruptors. For example, Baker *et al.* found (2009) that NP induced up-regulation of vitellogenin in some fish species; this metabolic response is typically associated with exposure to estrogenic substances, and is thus frequently employed in assays of a prospective endocrine disruptor's biological activity. Vajda *et al.* (2008) assessed the impact of an estrogenic WWTP effluent on white suckers' (*Catostomus commersoni*) reproduction. Gonadal intersex, altered sex ratios, and other changes associated with exposure to estrogenic wastewater contaminants were identified in fish downstream from the WWTP outfall but not at the upstream site. Chemical analyses determined that the WWTP effluent contained a complex mixture of endocrine-active chemicals including alkylphenols. The evidence of endocrine disruption has also been observed in male fathead minnows (*Pimephales promelas*) exposed to WWTP effluent (Barber L. *et al.*, 2007). Results indicated that the reproductive potential of native fishes may be compromised in wastewater-dominated streams. Of particular concern would be effluent concentrations for discharges to saltwater because the WQC for salt water are much lower than those for fresh water. In its recent document, the EU also determined that NP has the potential to mimic hormones, namely estrogen (Environmental Agency, 2010).

Additionally, as have been reported in several recent studies, APEOs and their metabolites may also exert nonendocrine related deleterious effects on the shoaling behavior of various fish species at environmentally relevant concentrations (Ward *et al.*, 2008). These researchers found that 4-nonylphenol, a common anthropogenic contaminant of coastal waters, could disrupt shoaling behavior at environmentally relevant concentrations. Shoaling is a group behavior common to many fish species that is important in reducing mortality due to predation, enhancing

foraging success, improving hydrodynamic efficiency, and for providing enhanced opportunities for locating suitable mates. Yet another study (Hanson *et al.*, 2010) concluded that the increasing occurrence, distribution, and concentration of environmental contaminants, including environmental estrogens (EE), in aquatic habits may also compromise the hypo-osmoregulatory ability of fish. Reported results indicated that EE reduced salinity adaptation of rainbow trout (*Oncorhynchus mykiss*) used in this study. Though not emphasized by SCCWRP or SFEI reviewers, we consider that this line of research warrants further consideration in evaluating the potential aquatic toxicity of APEOs.

ARB staff agrees with APERC's contention that use of APEOs is neither necessary, nor is it likely the preferred reformulation approach to develop low VOC cleaning products. However, the fact that APEOs are highly effective surfactants, as noted by APERC, coupled with a robust data set indicating aquatic toxicity, provides a basis to determine whether restrictions are appropriate. Because they could be used in cleaning products allowing continued use would only exacerbate an existing problem. Staff disagrees with this Commenter's belief that current monitoring data in California do not indicate a need for concern about risk from the presence of trace levels of APEOs or their degradants in the environment.

The prohibition is not solely based on the availability of other surfactants as the Commenter suggests. Instead, the prohibition is based on ARB's obligation to prevent adverse impacts from occurring as a result of ARB's regulatory actions, particularly when viable alternatives exist, as is the case here. The fact that there is an abundance of other safer, effective surfactants allowed ARB staff to consider a prohibition. Absent such alternatives, a prohibition could render reformulated products technologically and commercially unfeasible. State law requires VOC standards set by ARB to be technologically and commercially feasible.

Additionally, the prohibition is not based on the actions in other jurisdictions to restrict APEO use. However, we believe actions of other jurisdictions, including U.S. EPA, Canada, and the EU, to restrict or prohibit APEO use provide corroborating evidence that the prohibition is warranted. Moreover staff notes that a large association representing the affected industry, the CSPA, does not object to the prohibitions on use of these surfactants (see Comment 55 and C-11).

Finally, APERC contends that rather than prohibiting use of APEO surfactants, concentrations should be monitored to evaluate occurrence of increases. We agree that APEO concentrations should be monitored. Through periodic surveys ARB intends to continue tracking use in consumer products. Additional data may also be generated if NP and NPE are added to chemicals to be reported under U.S. EPA's Toxic Release Inventory. However, we do not believe that more data are necessary to determine that APEOs are at levels of concern in California waterways. Moreover, we do not believe it is prudent public policy to wait to take action until data indicate APEO levels are increasing over existing concentrations.

In summary, the comments submitted by APERC did not change the recommendation of SWRCB staff. SWRCB staff, in their June 20, 2011, memorandum, continue to support prohibiting the use of APEOs in the nonaerosol forms of General Purpose Cleaner, Glass Cleaner, General Purpose Degreaser, Heavy-duty Hand Cleaner or Soap, and all forms of Oven Cleaner or Grill products due to concerns on the level of aquatic toxicity posed by APEOs. To protect and prevent further pollution of California waterways from use of these surfactants in cleaning products ARB staff believes, and the Board agreed, that the prohibition is necessary.

B-55. Comment: Proposed Section 94509(m)(3) would prohibit the use of alkylphenol ethoxylate (APEO) surfactants in five categories of products for which revised VOC limits are proposed. Since these and other surfactants are reported in the 2006 Survey as grouped organics, adequate data do not exist to determine to what degree these surfactants are used in the[se] categories of products. Although we do not believe that this prohibition is justified based on the environmental impacts of the low levels of use of APEOs in these products, and know of no reason to believe that any additional APEOs would be used in reformulating these products to meet the lower VOC limits, CSPA will not oppose the addition of this prohibition. [CSPA1]

Agency Response: Comment noted. Staff's analysis of Survey data, as well as product label review, indicate that APEOs are used somewhat in General Purpose Cleaner (nonaerosol), General Purpose Degreaser (nonaerosol), Glass Cleaner (nonaerosol), and all forms of Oven or Grill Cleaner. However, the proposed prohibition is not based on quantifying current use, but rather is designed to prevent use from beginning as products are reformulated. The Board approved staff's proposal to prohibit use of APEOs in General Purpose Cleaner (nonaerosol), General Purpose Degreaser (nonaerosol), Glass Cleaner (nonaerosol), and all forms of Oven or Grill Cleaner.

Most Restrictive Limit Provision

B-56. Comment: ARB's proposed revision to the Most Restrictive Limit Provision, title 17 CCR § 94512(a)(3) provides clear regulatory language to address situations in which product category definitions may have the unintended effect of excluding each other (thus potentially causing the product to be outside the scope of ARB's statewide regulation). CSPA generally supports the 'bright line' guidance provided by this proposed revision because this is the type of clarity needed for manufacturers to ensure that their products comply with the appropriate and applicable VOC limits.

However, CSPA believes that ARB may have unintentionally removed an important text of the existing regulation stating that this provision does not apply to certain Disinfectant/Sanitizer products. Thus, CSPA urges ARB to restore the following text from the existing regulation:

Notwithstanding the foregoing above, this provision does not apply to Disinfectant/Sanitizer products labeled as “Bathroom and Tile Cleaners,” “Glass Cleaners,” “General Purpose Cleaners,” “Toilet/Urinal Care Products,” “Metal Polishes,” “Carpet Cleaners,” or “Fabric Refreshers” that may also make disinfecting/sanitizing or antimicrobial claims on the label.

Unless this language is restored, the adoption of the amended language may have the unintentional immediate effect of changing the regulatory status of many products that make disinfection/sanitization claims, resulting in those products no longer being in compliance with current VOC limits. We urge ARB to address this issue in a subsequent 15-day notice. CSPA also requests the opportunity to work with ARB staff in the future to identify and remedy any additional problems related to the proposed revision to 17 CCR § 94512(a)(3). [CSPA1]

> **Agency Response:** Regarding support for revisions to the Most Restrictive Limit provision, comment noted. With regard to the inadvertent deletion of regulatory language, ARB staff agrees. At the hearing the staff proposed, and the Board approved, modifications to the Most Restrictive Limit clause to restore the provision for certain products that makes ancillary disinfecting, sanitizing, or antimicrobial claims on the label. The provision clarifies that these products are 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.” All of these changes were circulated to the public via a 15-day notice, dated July 20, 2011.

Reorganization of Section 94509

B-57. Comment: CPSA generally supports ARB’s decision to develop three tables to summarize applicable restrictions on the use of certain chemical compounds in specifically enumerated product categories. ARB’s new tables set forth at 17 CCR, §§ 94509(m)(1)-(2) and § 94509 (n)(1) enhance the overall clarity of the regulation. Under the current regulation these prohibitions are spread out in seven different subsections of 17 CCR § 94509. At a minimum, presenting pertinent information in three tables eliminates duplicative language in the seven subsections contained in the current regulation. As a practical matter, this is the type of information that is more clearly presented in a table format rather than in formal regulatory language.

We believe, however, that an inadvertent error was made in deleting subsection 94509(q)(5) which exempts some Penetrants from the requirements of that section. We support this being corrected in a 15-day notice subsequent to adoption. [CSPA1]

> **Agency Response:** Regarding support for providing tables to consolidate provisions related to prohibiting various toxic compounds, comment noted. With regard to the inadvertent deletion of regulatory language, ARB staff agrees. At the hearing, staff proposed and the Board approved a modification to the original

proposal to restore an exclusion for Penetrant products used on energized equipment. The revised provisions for Penetrant products (see section 94509(m)(7)) were circulated to the public via a 15-day notice, dated July 20, 2011.

Amendments to ARB Method 310

B-58. Comment: Regarding the proposed addition [to ARB Method 310] of test methods for aromatic content, there are many analytical methods that may be used for analyzing the aromatic content in hydrocarbon solvents, but there is no one single method that can be used to conduct an accurate analysis. We understand that this was described more completely in a telephone conversation between ARB staff and representatives of a CSPA member company. Moreover, there may be confounding factors in some analytical methods. As a threshold matter, the chemist must know which compounds are contained in the product that is being analyzed. Then, the analytical chemist must select the method that is most appropriate for measuring those specific compounds. For example, a method used for an LVP-VOC would not be appropriate for a non-LVP-VOC.

Thus, CSPA believes that having a list of analytical methods is useful, but urges ARB to include a caveat or disclaimer that care must be taken in determining the most appropriate method or methods to use. In addition, CSPA believes that the methods listed by ARB and any other method that can be demonstrated to be equivalent to the listed methods should be allowed to be used. This is particularly true for the ultraviolet absorption method that is commonly used in industry for detecting aromatic content. [The commenter provided a matrix assessing the capabilities and limitations of the various analytical test methods listed by ARB to support their contention.] [CSPA1]

Agency Response: Staff is committed to using the most appropriate method to analyze for aromatic compound content. Numerous methods were evaluated and staff determined that ASTM D 5443-04 "Standard Test Method for Paraffin, Naphthene, and Aromatic Hydrocarbon Type Analysis in Petroleum Distillates Through 200^{o} C by Multi-Dimensional Gas Chromatography (November 1, 2004)," with several modifications, would be the most versatile and effective method to analyze for aromatic compound content. We also note that provisions in Method 310 allow use of alternative test methods that are shown to accurately determine the concentration of VOCs in consumer products. Such alternatives must be approved by the ARB's Executive Officer.

4. Other Comments

Economic Impacts Analysis

B-59. Comment: CSPA generally concurs that ARB's economic impact assessment for this proposal is performed consistent with other rulemakings, but questions some cost estimates.

The proposed regulation would require reformulation of 1,467 products (see page V-37) and estimates total industry costs of approximately $50 million (annual costs of $5 million over 10 years) (see page VIII-109). This works out to $34,000 per product. While many product reformulations can be accomplished for this cost, many others will require up to ten times as much to reformulate. In addition, as VOC limits are further and further reduced, it becomes more and more likely that initial reformulations will not prove commercially feasible, requiring further costs, or even loss of product markets. Among the most questionable assumptions and cost estimates seen in Chapter VIII were the following:

(a) Zero recurring costs for more expensive ingredients in nonaerosol "General Purpose Cleaner." It appears that this is based on the difficult-to-explain assumption that these products do not contain any surfactants, and will comply by reducing the use of LVP-VOC solvent by two percent and increasing the use of LVP-VOC glycol ethers by 0.5 percent (see Appendix D-3). The ingredients listed for existing products do not conform with any existing products (or the category as a whole) and the changes in ingredients postulated for complying products make even less sense.

(b) Low-Estimate reformulation costs for reformulating insecticides of $1,641 for Flying Bug and $298 for Wasp or Hornet. These costs are at least one and possibly two orders of magnitude low. The regulatory paperwork alone far exceeds these estimates for these FIFRA-regulated products.

(c) Zero recurring costs for more expensive ingredients for "Flying Bug Insecticide" that is based on *reducing* the level of surfactants from 2 percent to 1 percent, *reducing* LVP-VOC solvents from 9 percent to 8 percent, and *reducing* LVP-VOC Glycol Ether from 5 percent to 4 percent. We know of no sensible reason to predict that VOC reductions will be made in a manner that *reduces* costly non-VOC ingredients.

(d) The assumption that the already underestimated low-estimate of nonrecurring costs is incurred per company instead of per product in calculating total industry costs (see Table VIII-3). There is no possible economy of scale that would allow a company to reformulate their entire product line for a few hundred dollars.

(e) The assumption that pesticide and disinfectant (FIFRA-registered) products barely exceed other household products in the low-estimate of nonrecurring product development costs (Appendix E, Table E-1) and in the high-estimate cost actually cost less to reformulate (Appendix E, Table E-2). In the categories regulated, FIFRA products will always cost significantly more to reformulate. This explains some of the anomalous cost estimates noted above. [CSPA1]

Agency Response: Staff agrees in part with this Commenter in that the costs to reformulate many products will be in excess of $34,000. However, the Commenter has oversimplified how the cost to reformulate a product would be derived. The

Staff Report does not explicitly set forth the costs of reformulation on a per product basis over the span of 10 years as the Commenter has attempted to do. Rather, staff's economic analysis estimates the cost per category. Nevertheless the cost per product can be calculated using figures in Chapter VIII. As has always been done, staff determines both a low cost and a high cost scenario for each product category based on specific assumptions. These two costs are averaged to yield what staff believes to be the most likely cost scenario. The more appropriate method to determine total reformulation costs per product would be to use the average costs shown in Table VIII-4, Column C3. This value would be divided by the number of noncomplying products (shown in Table VIII-3, Column A) and multiplied by 10 (years determined to be the investment's useful lifetime). This method results in costs ranging from $4,387 for a nonaerosol Metal Polish or Cleanser product to $159,151 for an aerosol Wasp or Hornet Insecticide. Thus, staff concludes that the cost of some product reformulations will be lower than estimated by the Commenter but many will be in excess of $34,000.

As to part (a) of this comment, the sample complying formula is but one of several reformulation options. It is a nonconfidential generic representative formulation of reported complying products. We compared this formulation to a generic representative formulation of a noncomplying product. In this case the compliant formula is lower in cost. Use of surfactants is another reformulation option. However, we disagree that adding a small amount of surfactant would appreciably change the cost of the overall formula. We note that the Commenter has selected but one assumption of the overall analysis used to determine reformulation costs for nonaerosol General Purpose Cleaner products. We also note that the Commenter does not take issue with the overly conservative assumption in the analysis that all General Purpose Cleaner products will expend the costs of antimicrobial efficacy testing and be required to comply with FIFRA and CDPR requirements. In reality, only a small number of products will incur this cost. Overall, the results of the economic analysis indicate the costs for this category to be among the highest at approximately $2 million.

In responding to part (b) of this comment, we generally agree with the Commenter that most companies will incur costs higher than staff's lower estimate for Flying Bug Insecticide and Wasp or Hornet Insecticide. The low cost is but one part of the equation to determine cost. Note that the Wasp or Hornet Insecticide high cost estimate of almost $141,000 is about 470 times larger than the low cost cited by the Commenter. Likewise, for Flying Bug Insecticide the high cost estimate of over $56,000 is about 34 times larger than the low cost. Because the average of the low and high cost are used in the analysis (*i.e.,* over $70,000 for Wasp or Hornet Insecticide and $29,000 for Flying Bug Insecticide) the nonrecurring costs used by staff are orders of magnitude higher than the low cost estimate.

In responding to part (c) of this comment, we disagree with the Commenter. The generic formula set forth in Appendix D of the Staff Report is based on actual reported complying product formulations. We note that the formulation includes

increasing the use of water while reducing organic solvent content. This is a realistic formulation and would result in cost savings.

Staff generally agrees with part (d) of this comment. As stated by the Commenter, ARB's economic impact assessment for this proposal is performed consistent with other rulemakings. The assumption that the nonrecurring cost is incurred per company in the low cost scenario is consistent with past rulemakings. As unlikely as it might be to have an economy of scale that would allow a company to reformulate their entire product line for a few hundred dollars (low cost scenario); it is equally unlikely to have such an inefficient economy of scale that would require the category reformulation costs to be incurred for every single product as is assumed for the "high cost" scenario. The costs represent the range of expected costs. As staff has always done, the average of these two scenarios, not the low cost, is used in the overall economic impacts analysis. Staff believes the average cost scenario provides the best estimate of overall cost.

As to part (e) of this comment, staff agrees that it is likely that products that must conduct efficacy testing and comply with FIFRA and CADPR requirements will have among the highest nonrecurring costs. While the Commenter is focused on generic tables in Appendix E which form the basis for estimating nonrecurring costs, the actual nonrecurring costs for each category used in the analysis are shown in Table VIII-2. Reviewing the costs in this table, Columns A_1 and A_2 show that with few exceptions, the nonrecurring cost estimates to reformulate Wasp or Hornet Insecticide ($140,855) and Flying Bug Insecticide ($56,402) are among the highest.

B-60. Comment: The assumption that "we do not expect manufacturers to sell and distribute California-only products" may become less valid in the future. In a recent survey of member companies relating to 'reasonably prudent precautions' taken to avoid non-California products being distributed in the state, CSPA found that a growing percentage of products are now being formulated for sale outside of California, and products whose sales are primarily or solely in California could occur if provisions become too restrictive for effective products to be sold in the state. [CSPA1]

Agency Response: Comment noted. At such time that the assumptions used in staff's economic analysis are no longer valid, ARB staff will conduct its economic analysis accordingly. The Agency Response to Comment B-59 is incorporated herein.

B-61. Comment: We've worked long and hard with your staff to seek [to insure] these new VOC limits and other provisions proposed for adoption today are technologically feasible and maintain the many benefits that our products provide. Staff has estimated that this rule would require $50 million for our industry to reformulate. This may be true if all of our research and development efforts are successful. While this might not seem like much in these days of billion-dollar fiscal problems, it is important to note that these costs are not spread evenly across our industry. Most of the nearly 1,500 products that we will need to reformulate over the next few years are manufactured by small

companies with limited resources for research and development. And we cannot be certain that they will find those resources or that they will be successful in their research and development efforts if they find them. [CSPA2]

Agency Response: Staff agrees with the Commenter that the VOC limits and other provisions are technologically feasible and preserve commercial feasibility. We note that the staff's analysis includes costs associated with research and development, and these costs consider that initial efforts may not be optimal. As to the costs being borne by small companies, this too is considered in the economic analysis. One aspect of the analysis is to calculate the return on owner's equity, a measure of lost profitability due to the amendments. In this analysis typical businesses are considered—which may be either small or large businesses. Staff has determined that of the four industries impacted by this rulemaking, the percentage reduction in profitability ranges from less than 1 percent for Polish and Other Sanitation Good Manufacturing to less than 3 percent for Soap and Other Detergent Manufacturing. The mean percentage reduction in profitability is 1.6 percent.

Therefore, we have determined the costs of reformulation, which include research and development should not adversely impact profitability. Nevertheless, the Staff Report does acknowledge that some businesses with very little or no margin of profitability may experience an adverse economic impact.

Technological and Commercial Feasibility

B-62. Comment: We request that ARB staff work with us to reevaluate these challenging new VOC limits in the future if one or more of the VOC limits prove to be technologically or commercially infeasible. [CSPA3]

B-63. Comment: SCJ would ask that ARB continue its existing practice of seeking industry comment at a reasonable time in the future and, if necessary, conducting a technical review before the effective date of new limits. [SCJ]

Agency Response to Comments B-62 and B-63: As a matter of course staff routinely seeks input from stakeholders prior to the limits becoming effective as to whether they are on track to comply within the timeframe provided.

B-64. Comment: CSPA Continues to Disagree with ARB's outlined interpretations of the terms technological and commercial feasibility. ARB outlines in the ISOR its interpretation of the key statutory term, "technologically and commercially feasible," which all VOC limits set for consumer products are required to be (pages III-12 to III-14). CSPA continues to disagree with the interpretation outlined, and believes that the argument presented in the ISOR not only misrepresents industry's position, but also posits an extreme interpretation that has seldom if ever been used by ARB, and should not be used in the future.

ARB argues that technological and commercial feasibility must be evaluated separately, and that a limit can be established to be technologically feasible if at least one product in the category is in compliance or the limit can reasonably be met through 'additional development efforts.' CSPA continues to disagree that one or a few complying products in a category—products that may be used for different purposes by different consumers—can demonstrate that a VOC limit is feasible for all of the products in a broad category. CSPA even more adamantly disagrees that product technology posited by ARB that has never been developed or marketed can be deemed to be technologically or commercially feasible by ARB. In interpreting the term "commercial feasibility," ARB uses the International Harvester case to argue that all consumer preferences do not have to be met as long as "basic market demand" is met. The example given relates to glass cleaners, where products without the smell of ammonia is a consumer preference, and can be used to replace VOC solvents. This example is not only technically incorrect as it relates to product technology, but also as it relates to CSPA's position. It is not consumer 'preference' that we believe must be maintained for a limit to be considered feasible, but the effectiveness of the product in accomplishing the tasks for which it is used.

Moreover, CSPA believes that ARB has sought to assure the feasibility of its proposed limits and other provisions in a manner more consistent with our interpretation of the term technologically and commercially feasible than the interpretation outlined in this ISOR. It is vitally important that ARB continue to do so, and not revert to an extreme and unreasonable interpretation that would result in limits that would not allow effective products in California, and result in loss of consumer benefits, loss of California businesses that rely on effective products, or forcing consumers to substitute other products or materials that may result in higher air quality impacts. [CSPA1]

> **Agency Response:** ARB staff notes the longstanding difference with the Commenter in ARB's interpretation of the terms 'technological' and 'commercial' feasibility. ARB's interpretations of these terms dates from the early 1990's, and ARB continues to believe that the interpretations of the terms outlined in the Staff Report is valid. However, ARB staff agrees that, in general, ARB attempts to establish limits and other regulatory provisions that allow for a broader range of technologies to be available.

B-65. Comment: CSPA generally concurs with ARB's assessment that the 2006 Consumer and Commercial Products Survey and other related data collection provides adequate data upon which to base the VOC limits proposed in this rule (page V-34). CSPA's concerns raised in these comments primarily relate to the interpretation of that data in establishing technologically and commercially feasible standards. This may not be true, however, for all of the provisions being proposed. Alkylphenol ethoxylate surfactants, for instance, were reported in the 2006 Survey as grouped organics along with other non-speciated LVP-VOCs, and the survey cannot provide adequate data on the extent of their use, or the costs that might be incurred by the proposed prohibition. [CSPA1].

Agency Response: We concur with the Commenter that the 2006 Survey, along with the 2008 Spot Remover survey update, provide the necessary data to develop the amendments. Related to the APEO provisions, we agree that, if present in formulations, the survey did not require these compounds to be speciated and any amounts would be included in 'nonspeciated LVPs.' Staff is are aware of some usage, however, due to some survey respondents providing more thorough speciation or through information provided on product labels. The provision, however, is proposed as a mitigation measure to ensure APEO surfactants are not used in the nonaerosol forms of General Purpose Cleaner, General Purpose Degreaser, Glass Cleaner, and all forms of Oven or Grill Cleaner products are reformulated to comply.

State Implementation Plan (SIP)

B-66. Comment: ARB overstates the degree to which it has been established that this regulation is necessary to meet ozone standards. In the Initial Statement of Reasons (ISOR), it is noted that the reductions from this rulemaking are part of the State Implementation Plan (SIP) adopted by ARB in 2007, and would be the "third increment toward fulfilling the commitment for VOC reductions for consumer products" (page I-4). It is further stated that, "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 standard for ozone" (page I-5). In addition, it is noted that future population growth is projected to cause increased emissions from consumer products (page IV-25).

Later in the ISOR, ARB states:

> Because significant further VOC emissions reductions are necessary to attain the national and State ozone standards, the reductions from the amendments proposed in this report are therefore 'necessary' within the meaning of section 41712 of the Health and Safety Code. In addition, section 41712(b)(1) of the Health and Safety Code provides that the "necessity" of a regulation is to be evaluated in terms of both the State and federal standards.
>
> The applicable State and federal laws show that both the U.S. Congress and the California Legislature intended progress toward clean air be made as quickly as possible. The CCAA specifically declares that it is the intent of the Legislature that the State air quality standards be achieved "...by the earliest practicable date..." (See Health Technical Support Document Chapter V – 40 and Safety Code, sections 40910 and 40913(a); see also the uncodified section 1(b)(2) of the Act (Stats. 1988, Chapter 1568)). A similar intent is expressed in the federal Clean Air Act, which declares that the federal air quality standards are to be achieved "...as expeditiously as practicable..." (See sections 172(a)(2), 181(a), and 188(c) of the federal Clean Air Act).

> For all of the reasons described above, the proposed amendments are 'necessary' within the meaning of section 41712 of the Health and Safety Code.

CSPA disagrees that these arguments are adequate to demonstrate that this regulation is "necessary to attain the federal and State ambient air quality standard for ozone" as required by section 41712(b)(1) of the Health and Safety Code.

Although it is true that further VOC reductions for consumer products were included in the California SIP adopted in 2007 (but not yet approved by [U.S.] EPA), there was no attempt in the SIP process to determine whether or not each of the reduction goals set for various emission categories were necessary to attain the ozone standard. The process by which the SIP goals were designated involved essentially reducing all VOC emission sources and all NOx emission sources until modeling showed attainment of the standard at all locations in the modeled region. But different sources have very different impacts on ozone formation per mass emissions, due to varying photochemical reactivity and geographic differences in where the emissions occur. CSPA believes that sensitivity runs must be included in SIP development if ARB is to meet its requirement to demonstrate that the reduction goal for consumer products is 'necessary.'

Subsequent to the 1994 California SIP revision, CSPA and other consumer product industry associations conducted a study to assess the sensitivity of ozone in the South Coast and Sacramento air basins to consumer product VOC emissions. Our 1997 attainment remodeling study was conducted under 2010 attainment to overall VOC emissions. The results of that study demonstrated that even under highly VOC-limited conditions where ozone formation is highly sensitive to overall VOC levels, ozone formation was *not* at all sensitive to consumer product VOC emissions.

The attainment demonstration modeling for the 2007 SIP and South Coast Air Quality Management Plan (AQMP), on the other hand, was under atmospheric conditions that are far more NOx-limited, and far less sensitive to overall VOC emissions. We therefore had reason to expect that consumer product VOC emissions should have even less relative impact on ozone attainment in this 2023 attainment scenario. To determine whether this was indeed the case, CSPA contracted in 2007 with Sierra Research and Environ to conduct a remodeling study, co-funded by nine national consumer product industry associations, to determine the ozone sensitivity of consumer product VOC emissions in the South Coast in 2023, and determine what level of emission reductions might actually be necessary. The remodeling study was completed along with the final report from the study, "Assessment of the Need for Long-Term Reduction in Consumer Product Emissions in the South Coast Air Basin."

The results of the Sierra Research study clearly demonstrated that ozone attainment status in the South Coast district would not be impacted in 2023 if no further reductions in consumer product VOC emissions are made after 2014. The data show that the 50 tons per day of additional statewide consumer products VOC emissions reductions suggested in the South Coast AQMP would have no impact on ozone attainment anywhere in the South Coast. These VOC emission reductions would likely cost the

consumer products industry more than $1 billion just to determine their feasibility, despite not being necessary for ozone attainment.

The modeling data supplied by South Coast to Environ for their modeling runs also provided important information regarding the District consumer product measures proposed in the AQMP as CTS-01, CTS-03 AND CTS-04, which are listed as seeking 1.9, 2.1 and 5.8 tons per day VOC reductions in South Coast, respectively, and appear to be included by the District as "backstop" measures to be implemented only if the similar state consumer product measures are not implemented. Environ and Sierra Research indeed found that two of these three measures were not used to make additional reductions in the consumer products inventory in the ozone attainment demonstration for 2023. The reduction commitment for CTS-01 is made to other emissions categories and no reduction was made to consumer products emissions. The reduction commitment for CTS-04 was not used to reduce any emissions category. Only the reduction from CTS-03 was used in the District's attainment runs.

CSPA continues to believe that the results of these types of source-sensitivity studies provide important information to support the development of effective ozone attainment strategies. It is important that the control measures in the SIP be focused primarily on those emissions sources (both VOCs and NOx) that play a significant role in ozone non-attainment in the South Coast and other nonattainment districts. The need to carefully consider the relative ozone impacts of various emission sources also provides further reasons for the allocation of emissions reductions in the "Black Box" to remain unspecified in this SIP revision. This would allow further data to be developed to show what emissions sources and reductions are actually necessary for ozone attainment. [CSPA1]

Agency Response: This Commenter suggests that VOC reductions from consumer products are neither necessary nor justified to meet ozone standards. The Commenter goes on to question the need for consumer products emission reductions related to the State Strategy for California's 2007 State Implementation Plan (SIP), which are to be achieved by 2014. The Commenter also provides information that, in the Commenter's view, suggests that VOC emission reductions from consumer products beyond 2014 are unnecessary.

As to the portion of the comment directed toward the 2007 SIP, staff disagrees. The SIP is California's plan to meet stringent air quality standards mandated by the federal government for both 8-hour ozone and PM2.5. Both the Staff Report and the SIP documents contain a wealth of information to establish the necessity of the proposed amendments. Data show that consumer products are one of the largest sources of anthropogenic VOC emissions in California. In fact consumer products emissions represented the largest source of VOC emissions in the South Coast Air Basin in 2010. Regardless of whether the photochemical reactivity of consumer products emissions is lower than some other source categories, reductions from consumer products cannot be ignored in plans designed to attain the NAAQS. ARB is addressing the other categories through various mobile source control programs.

Our need for VOC reductions is so great that even with the increasingly stringent controls in place for the other VOC categories such as mobile sources, the South Coast would not attain the standards without achieving emission reductions from consumer products.

In addition to specific commitments for consumer products and numerous other source categories in the 2007 SIP, emission reductions from long-term measures are needed to attain the ozone standard by the 2024 attainment date. The amount of emissions needed from these as-yet-undefined measures is often referred to as the "Black Box." Emission reductions from all specified measures, including those for consumer products, and the "Black Box" measures were relied upon for the attainment demonstration modeling. Additional measures still need to be identified to fulfill the "Black Box" emission reduction commitments. To suggest that the consumer product measures may not be needed, especially with the significant amount of emission reductions still needed from long-term measures to meet these commitments, is inconsistent with modeling results. It is also unfair to other source categories that would be required to reduce emissions further if consumer products are 'excused' from further regulation. Modeling results consistently show the need for all source categories to reduce emissions.

Comments on Future Activities

B-67. Comment: One thing that's become apparent to those of us who have been involved in this ongoing VOC reduction in the last few decades is we're moving not only into an area of diminishing returns, but an area where sometimes the categories have insignificant returns. Some of the categories that we looked at in the lubricants area had potential reductions of 20 pounds. That's the equivalent of three gallons of gasoline spread across the state of California. That's not a lot. As you heard Mr. Fratz say, we think the cost of the regulation to the industry will be in the millions of dollars, which differs greatly from the estimates that staff has prepared.

But what I would like to suggest is going forward we look to alternatives next year. We're going to be back again doing another regulation and hopefully a successful one. But there are opportunities for the consumer products industry to work with ARB to achieve greater and more significant reductions in VOCs and possibly in greenhouse gases by using alternative methods than this command control and reduce that we've been using. We have a Committee that's been established, and we'd like to work possibly with the Board or staff on some of those ideas going forward. [SWC]

Agency Response: Staff acknowledges that in some instances the VOC reductions from the proposed limits are low. However, given the serious air quality problems in California it is incumbent upon staff to look for all feasible, cost-effective reductions. The staff's proposal does this. We agree with the Commenter that the compliance costs with the amendments are likely to be in the millions. Staff estimates that over the course of 10 years industry compliance cost related to reformulating products will be $50 million.

The portion of the comment related to pursuing alternative regulatory approaches in the future is not directed at the proposed amendments. However, for completeness staff responds as follows. Staff agrees that further VOC reductions *via* the setting of additional or lower VOC limits are becoming challenging. This was acknowledged in the 2007 SIP in which a commitment was made to explore innovative reduction approaches in the longer term. Staff appreciates the willingness of affected stakeholders to work with us on developing such an approach.

B-68. Comment: CSPA supports ARB's planned actions to clarify the distinction between general purpose versus specialty products. CSPA supports ARB's decision, as noted in the Initial Statement of Reasons (page ES-16) to develop an enforcement advisory to provide needed clarity regarding the distinction between "general purpose" or "multi-purpose" products and products that are formulated to serve a specific purpose only. It is important to clarify this issue since it could impact the feasibility of some of the limits being considered in these 2010 Amendments. CSPA looks forward to working with other interested stakeholders and ARB staff on this important clarification. [CSPA1]

Agency Response: Comment noted. Staff intends to continue working with this Commenter, as well as with other stakeholders, to develop advisories to facilitate implementation of the regulation prior to the effective dates for the categories being regulated in this rulemaking.

B-69. Comment: CSPA Supports ARB's Planned Action to Clarify the Provisions Relating to "Minimum Recommended Dilution" and "Incidental Use." Under the current regulation, the applicable "minimum recommended dilution" requirements do not apply to recommendations for the "incidental use of concentrated product to deal with limited special application such as hard-to-remove soils or stains." 17 CCR §§ 94509(b)(1). CSPA supports ARB's decision, as noted in the Initial Statement of Reasons (page ES-16), to develop an enforcement advisory to provide needed clarity regarding this provision. CSPA also looks forward to working with other interested stakeholders and ARB staff on this important clarification. [CSPA1]

Agency Response: This comment is not directed at the proposed amendments. However, ARB staff responds as follows: We acknowledge the comment and will continue to work with the Commenter to develop advisories to facilitate implementation of the regulation.

B-70. Comment: We hope to soon hear a report back from staff regarding CARB's commitment to develop an Airborne Toxic Control Measure (ATCM) to mitigate methylene chloride emissions from Paint Remover or Stripper products. We encourage you to direct staff to continue working and move forward with this process as soon as possible. [CCA, *et al.*]

Agency Response: This comment is not directed at the proposed amendments. However, ARB staff responds as follows: We acknowledge the comment and, as resources allow, in the future, staff will resurvey the Paint Remover or Stripper category to evaluate available alternatives to products containing methylene chloride.

C. Comments on the July 20, 2011, Notice of Public Availability of Modified Text and Availability of an Additional Document for Public Comment and Agency Responses (15-Day Notice)

1. Support for Modifications Contained in the July 20, 2011, 15-Day Notice

C-1. **Comment:** CSPA commends ARB staff's concerted efforts to ensure that all interested parties had an opportunity to participle in an open and transparent public effort to develop the 2010 Amendments to California's comprehensive Consumer Products Regulation. While the new VOC limits set forth in the Modified Text will impose very costly and technologically difficult reformulation challenges, CSPA supports these changes made to the rule as originally proposed. Therefore, CSPA member companies will initiate expedited research, development and engineering efforts necessary to reformulate products to comply with these aggressive new VOC limits by the December 31, 2013, deadline. [CSPA4]

Agency Response: Staff acknowledges the support for the modifications contained in the July 20, 2011, "Notice of Public Availability of Modified Text and Availability of an Additional Document for Public Comment."

2. Comments on Specific Categories

Lubricants

C-2. **Comment:** The changes detailed in this document appear to be consistent with the November 18, 2010, board hearing. First, the staff is to be commended for simplifying and clarifying the lubricant definition section of the regulation and adding definitions such as Firearm Lubricant to clarify which lubricants are not subject to the regulation. [3R]

Agency Response: Staff acknowledges the support for the modifications contained in the July 20, 2011, "Notice of Public Availability of Modified Text and Availability of an Additional Document for Public Comment."

C-3. Second, the reference to food-servicing environment under the Lubricant definition should be clarified. Currently, any product that is used in a manufacturing setting is exempt from the ARB's consumer product rule. A significant portion of food

grade lubricants are used in Meat and Poultry plants as well as other manufacturing settings which process food or food containers. Products used in these manufacturing facilities should not be subject to the consumer product regulation. Therefore, I would request that this issue be clarified to ensure that food grade lubricants for use in [a] manufacturing facility are not subject to the consumer product regulation. [3R]

Agency Response: Staff agrees that food grade lubricants that are used in meat and poultry plants, as well as other manufacturing settings which process food or are used to produce food containers, are not subject to the Consumer Products Regulation. Use of food grade lubricants in these manufacturing facilities is considered an industrial use as defined in the definition of "Institutional Product" or "Industrial and Institutional (I&I) Product" contained in section 94508(a) of the regulation.

C-4. Comment: CSPA supports the modifications to sections 94508(a) and 94509(a). CSPA supports ARB's action to reorganize the definition of the term "Lubricant" to add the definitions of subcategories of lubricant products that had been defined elsewhere in Section 94508(a). This reorganization helps to provide greater clarity that will assist manufacturers in ensuring that their products comply with applicable limits on volatile organic compounds (VOCs). [CSPA4]

Agency Response: Staff acknowledges the support for the modifications contained in the July 20, 2011, "Notice of Public Availability of Modified Text and Availability of an Additional Document for Public Comment."

C-5. Comment: CSPA supports ARB's action to create four specifically defined lubricant subcategories. The proposed regulation issued in September 2010 sought to regulate "Special-purpose Lubricant," a category that included a diverse variety of 277 nonaerosol products and 201 aerosol products. This broad category of specialty (*i.e.*, niche) products included, among other things, lithium greases, moly greases, Teflon-based, cutting oils, food-grade, anti-seize, chain and cable, gear and gun oil. All of these products have different uses for different consumers and different formulation requirements that could not fit into a single "one size fits all" category with one regulatory limit. Thus, CSPA supports ARB's action to delete the proposed definition and VOC limit for the "Special-purpose Lubricant" and to develop new definitions and separate VOC limits for the following four lubricant subcategories:

- Anti-Seize Lubricant;
- Cutting or Tapping Oil;
- Gear, Chair, or Wire Lubricant; and
- Rust Preventative or Rust Control Lubricant.

The new definitions now included provide needed clarity for both manufacturers and ARB's Enforcement Division to more accurately determine which lubricant products are subject to the proposed new VOC limits set forth at 17 CCR § 94509(a). The modified

definition for Dry Lubricant is especially important to avoiding deterring innovative new technologies.

CSPA believes that this approach will result in emission reductions equal or greater than those estimates for the limits proposed by ARB, while providing clearer definitions and less uncertainly regarding what products are subject to what limits. The revised definitions clarify that the following subcategories of lubricants are not regulated: Industrial-Use Only (not Consumer Products), Special-Purpose Silicone Lubricant, Gun Oil, and Special-Purpose Dry Lubricants. It also clarifies that Food Grade products from the 2006 Survey are subject to regulation in these categories only if they are used in food service as opposed to solely being used in food manufacturing operations. [CSPA4]

Agency Response: Staff acknowledges the support for the modifications contained in the July 20, 2011, "Notice of Public Availability of Modified Text and Availability of an Additional Document for Public Comment."

C-6. Comment: The stringent new 25% VOC limits for the aerosol product forms of Cutting or Tapping Oil, Gear, Chair, or Wire Lubricant and Rust Preventative or Rust Control Lubricant present significant reformulation challenges. The large numbers of products in these three categories of specialty lubricants will require manufacturers to commit a significant amount of resources to reformulate to meet this stringent 25% VOC limit. Nevertheless, CSPA members accept this challenge and will commit the resources necessary to meet the new 25% limits for these products by the December 31, 2013, effective date. [CSPA4]

Agency Response: Comment noted.

C-7. Comment: The new 40% VOC limit for aerosol form of Anti-Seize Lubricant presents a significant reformulation challenge. Aerosol anti-seize lubricant compounds generally consist of five major components: grease, graphite flakes, soft metal particles such as copper and aluminum, solvents and propellant. To produce a properly functioning aerosol version of Anti-Seize Lubricants, these compounds must be miscible with and thinned with an appropriate solvent that allows for proper packaging. The compound is dispensed from the aerosol by the action of an appropriate amount of propellant that provides additional viscosity reduction and proper delivery characteristics.

In order for the anti-seize lubricant compound to function properly after delivery, the dispensed product must return to its original grease state as rapidly as possible. This requires the use of a fast evaporating thinning solvent. Although acetone is a fast evaporating VOC-exempt solvent, it cannot be used in large amounts because it is not miscible with the petroleum-based greases that are used, causing them to coagulate and come out of solution. Slower evaporating solvents prevent the recovery of the grease by maintaining the diluted form. Therefore, LVP-VOC solvents are not suitable for dilution for this reason.

Thus, it will be difficult for manufacturers to reformulate their products to meet the new 40 percent VOC limit for this Lubricant subcategory. Nonetheless, CSPA members accept this challenge and will commit the necessary resources to resolve these technological challenges and to produce compliant products by the December, 31, 2013, effective date. [CSPA4]

Agency Response: Comment noted.

C-8. Comment: Manufacturers need a reasonable amount of time to reformulate the newly regulated Lubricant subcategories to comply with the stringent new VOC limits. Reformulating products to comply with the VOC limits for the aerosol forms of the newly regulated Lubricant subcategories presents difficult technological challenges. Manufacturers need a reasonable amount of time to conduct the necessary research, development and engineering (RD&E) efforts needed to create new product formulations and to conduct stability testing for producing the reformulated products. It generally requires 30 months for companies to complete the three primary RD&E "stage-gates" to produce new technology [that] can be introduced as a viable product in the marketplace.

During the first phase – "project ideation" – which typically requires 3 – 6 months, manufacturers: develop and test various product formulations, design and make test product prototypes, conduct legal (*e.g.*, patent) reviews and financial assessments, and conduct and evaluate consumer testing.

During the second phase – product development – which typically requires 6 – 12 months, manufacturers conduct the following actions, which may be an iterative process to ensure proper development and execution: conduct technical testing to assess the stability, compatibility and efficacy of the new formulation, conduct consumer testing to assess the commercial feasibility of the new formulation, and define the manufacturing process.

During the final phase – commercialization and product launch – which generally requires as much as 12 -15 months, manufacturers: finalize the manufacturing process design and new product formulation "recipe," build required tooling for the manufacturing production lines, complete all regulatory and legal reviews, confirm product claims, complete quality control plan and approve the final new formulation for production.

It will be a difficult challenge for manufacturers to complete all the steps necessary for the successful development and commercialization of a new product formulation to comply with the proposed technology-forcing VOC limit by December 2013 – especially since this final regulation will not be published (and thus, have the force of law) until the end of 2011. Thus, manufacturers will have roughly two years to complete the complex reformulation process. While manufacturers have realistic concerns that they can accomplish all that is needed to done within this timeframe, CSPA members will initiate

expedited action to reformulate their products that comply with the aggressive new VOC limits by the December 31, 2013, deadline. [CSPA]

Agency Response: Comment noted.

C-9. Comment: CSPA reiterates our members' concerns that there are legitimate needs to formulate low-flammable Gear, Chain and Wire Lubricants and Cutting and Tapping Oil products. In general, product formulators continue to make a concerted effort to eliminate the use of chlorinated solvents (*i.e*., methylene chloride, perchloroethylene, and trichloroethylene) from their products. However, as a practical matter, there are limited situations where the use of perchloroethylene should not be eliminated. CSPA member companies' customers have a legitimate need for low-flammability Gear, Chain and Wire Lubricants and Cutting and Tapping Oil products. Therefore, CSPA continues to urge the ARB to withdraw the proposed ban on the use of perchloroethylene for these two narrowly-defined lubricant product subcategories. *See* proposed 17 CCR § 94509(m)(1).

CSPA strongly believes that customers have legitimate worker safety reasons for using low-flammability Gear, Chain and Wire Lubricants and Cutting and Tapping Oil products. Therefore, CSPA continues to urge the ARB to withdraw the proposed ban on the use of perchloroethylene for these two narrowly-defined lubricant product subcategories. [CSPA4]

Agency Response: Staff continues to disagree with the comment. Based on the Commenter's November 16, 2010, comment, at the hearing the Board directed staff to further assess the need for use of chlorinated solvents. However, after further data review and close consultation with this Commenter, staff determined that the data did not support the need to use perchloroethylene. Therefore, as part of the July 20, 2011, 15-day notice staff did not propose to change the prohibition on use of perchloroethylene in "Cutting or Tapping Oil" and "Gear, Chain, or Wire Lubricant." The Agency Response to Comment B-38 is incorporated herein.

3. Other Regulatory Requirements

Most Restrictive Limit

C-10. Comment: CSPA supports the clarifications made to the Most Restrictive Limits requirements in Section 94512. CSPA fully supports the new language included in section 94512(a)(3), which applies this provision only to categories whose definitions mutually exclude each other, and in section 94512(a)(4), which clarifies that the Most Restrictive Limit does not subject various regulated products with antimicrobial claims to the limits for Disinfectant or Sanitizer. These changes to the language originally proposed are fully necessary to assure that these products remain technologically and commercially feasible under this regulation. [CSPA4]

Agency Response: Staff acknowledges the support for the modifications contained in the July 20, 2011, "Notice of Public Availability of Modified Text and Availability of an Additional Document for Public Comment."

Prohibition on Use of Alkylphenol Ethoxylate Surfactants

Comments C-11 and C-12 were submitted in response to an additional document ARB staff placed into the record *via* the "Notice of Public Availability of Modified Text and Availability of an Additional Document for Public Comment" dated July 20, 2011. The document was a memorandum entitled "Response to Comments Submitted by the Alkyphenols and Ethoxylates Research Council on Air Resources Board's Proposals to Prohibit Use of Alkylphenol Ethoxylate Surfactants in Certain Consumer Products." The memorandum was submitted by the State Water Resources Control Board Division of Water Quality (WRCB or SWRCB) to Mr. Richard Corey, Chief, Stationary Source Division, ARB. The submitted comments relate to the proposed amendments to prohibit use of alkylphenol ethoxylate surfactants in the nonaerosol forms of General Purpose Cleaner, General Purpose Degreaser, Glass Cleaner, Heavy-duty Hand Cleaner or Soap, and all forms of Oven or Grill Cleaner products.

Acronyms used to describe this class of compounds or their degradation intermediates in comments C-11 and C-12 include alkylphenol ethoxylate (APE or APEO), nonylphenol ethoxylates (NPEs), octylphenol ethoxylates (OPEs), nonylphenol (NP) and octylphenol (OP).

C-11. Comment: CSPA continues to believe that restrictions on APE Surfactants are not warranted. As we noted in our comments on the proposal last year, CSPA questions the need for section 94509(m)(3), which will prohibit the use of APE surfactants in five categories of products for which revised VOC limits are proposed. Since these and other surfactants were reported in the 2006 Survey as grouped organics, adequate data do not exist to determine to what degree these surfactants are used in these categories of products. Although we continue to believe that this prohibition is not justified based on the environmental impacts of the low levels of use of APEs in these products, since we have no reason to believe that any additional APEs would be needed in reformulating these products to meet the lower VOC limits, CSPA will not oppose the addition of this prohibition. [CSPA4]

Agency Response: Comment noted.

C-12. Comment: APERC is disappointed by the general disregard of the WRCB for the weight-of-scientific evidence regarding the aquatic toxicity and risk of APEs such as NPEs and OPEs and their degradation intermediates, including nonylphenol NP and OP as well as for established U.S. EPA Water Quality Criteria (WQC) for NP. In spite of the extensive set of studies available for this family of compounds, the Board states "we are not in a position to make far-reaching generalizations about the environmental fate and comparative toxicity of this large class of substances from the relatively narrow dataset for NP, OP and their ethoxylates." Nevertheless, the Board has done just that in

supporting recommendations to prohibit the use of these compounds based on a minimal number of select studies and initiatives in other regions, which were not relevant to exposures in California.

In addition, APERC is concerned by the use of this ARB regulatory process on VOCs to ban the use of these non-VOC compounds in certain applications based on opinion, speculation and without appropriate risk assessment. Given the lack of evidence that APEs and their degradation intermediates are posing a risk to the aquatic environment in California, WRCB would more appropriately address their concerns about these compounds through additional monitoring and risk assessment.

WRCB's response memo still does not provide a specific or sufficient basis for the Board's concerns regarding the aquatic toxicity or risk of APE surfactants or their degradation intermediates in California. WRCB has not shown that the use of APEs present a risk to the aquatic environment in California. Rather, the WRCB recommendation to prohibit the use of APEs in certain cleaning products is based primarily on a hypothetical scenario that foresees an unlikely increase in the use of APEs in consumer cleaning products resulting in an unrealistic increase in risk to the aquatic environment in California.

Despite WRCB's concurrence with APERC's conclusion that aquatic concentrations of APs and APEs are generally below the U.S. EPA WQC for NP; they suggest that "with the wealth of effective alternative safer surfactants available there is no need for exposing aquatic species to even low concentrations of these chemicals." The fact that alternative surfactants are available, or that other jurisdictions have taken risk management actions related to APE surfactants is not a sufficient basis to justify a regulation to prohibit the use of these compounds in cleaning and degreasing products in California, particularly since aquatic concentrations in the state generally conform to U.S. EPA WQC for NP and other environmental benchmarks established for AP and APEs in other jurisdictions. In addition, the prohibition of APE surfactants and the availability of alternative surfactants does not ensure that "safer" alternatives will be selected.

Therefore, in the absence of credible evidence that there is a risk to aquatic species or human health APERC again recommends that the ARB reserve judgment on this recommendation to prohibit APE surfactants in certain products until appropriate risk assessments are conducted in order to determine whether such a prohibition is justified.

The following comments respond to concerns raised in the June 20, 2011, WRCB memo and provide clarification on several points of apparent confusion to WRCB from APERC's initial comments on this matter.

1. NP is an appropriate benchmark for assessing the risk of NP/NPE and OP/OPE in the aquatic environment and there is adequate scientific basis to assess these compounds in aggregate.

The WRCB memo concurs with APERC's conclusions that concentrations of APEs generally fall below the U.S. EPA WQC for NP; yet goes on to say that this does not necessarily mean that current concentrations are safe for aquatic species and questions whether NP is an appropriate benchmark for assessing the risk of AP/APE. However, the memo does not provide any basis, other than opinion, to challenge the U.S. EPA NP WQC as being protective of aquatic species on both an acute and chronic basis.

Section 1.0 of APERC's previous comments describes the significant review of the abundant available data for NP by the U.S. EPA Office of Water in support of its aquatic life ambient WQC for NP. U.S. EPA utilizes a statistical extrapolation procedure that draws upon the abundant available toxicity data for NP from a wide range of aquatic taxa and species to develop WQC that are "an estimate of the highest concentration to which an aquatic community can be exposed indefinitely without unacceptable effect." Since the chronic endpoints used to derive the chronic NP WQC reflect the culmination of molecular, biochemical and tissue-level effects at the whole organism level, the NP WQC in turn addresses all mechanisms of action - including estrogenic effects - that result in measurable alterations in these apical endpoints. Studies cited in the June 20th WRCB memo as evidence of the estrogenic activity of NP (*e.g.* Baker *et al.*, 2009, Vajda *et al.*, 2008) provide this kind of mechanistic data; however they do not contradict the validity of the U.S. EPA WQC for NP. APERC's previous comments also point out that the U.S. EPA WQC for NP are also protective of effects mediated by its weak estrogenic activity noting "the ability of nonylphenol to induce estrogenic effects has seldom been reported at concentrations below the freshwater Final Chronic Value of 6.5965 ug/L."

As WRCB points out, in addition to U.S. EPA other jurisdictions have determined that adequate data exist to establish aquatic and sediment concentrations for NP that are protective of aquatic species under conditions of chronic exposure. Other peer reviewed publications have also reviewed the weight of evidence regarding the ecotoxicity of NP and support the U.S. EPA WQC for NP.

Basing WQC and risk assessments of NP/NPE and OP/OPE on the abundant dataset that is available for NP is a common sense and conservative approach based on the structural similarities of this family of compounds. Environment Canada, the Canadian Council of Ministers and the State of Minnesota have taken this conservative approach as the basis for developing environmental guidelines and water quality standards due to the fact that NP is more toxic and estrogenically active than the ethoxylates. In addition, and as described in APERC's earlier comments, other assessments of data published since the finalization of the NP WQC also support this U.S. EPA benchmark.

In summary, sufficient data existed for U.S. EPA and other jurisdictions to develop water quality guidelines or other environmental benchmarks that are protective of aquatic species, including effects that may be estrogenically mediated, with indefinite exposure. In addition, methodologies exist to address the aggregate exposure and risk of AP and APEs to aquatic species in California.

2. WRCB does not provide adequate justification for its concern about NP in sediment in California.

WRCB's memo acknowledges that sediment monitoring for NP and NPE in California indicates concentrations are below Predicted No Effect Concentrations (PNECs) calculated for NP in sediment by the Canadian government and others. The Board also acknowledges that sediment monitoring data provided by the Southern California Coastal Water Research Project (SCCWRP) indicates that sediment levels of NP are declining. Despite this, WRCB still believes that "concentrations of APEOs detected in sediments remain a serious concern" apparently based primarily on modeling done by Huang *et al.* (2007).

APERC provided several references that provide a review of the weight of the scientific evidence on the physical properties, environmental fate and partitioning of AP/APEs in previous comments. These acknowledge that NP partitions to sediment due to its hydrophobic nature.

WRCB relies on a simplistic modeling study by Huang *et al.* (2007) to assess the fate of NP using glass aquaria as microcosms. In this study the microcosm environment consisted of water, 2 cm sediment plus its top microlayer, and fish. The flow-through rate was fairly rapid (half-life of 46 minutes equating to 31 turnovers per day), so biodegradation and other loss processes were minimized. As expected, some partitioning in sediment occurred in this study.

It is well established that NP, a hydrophobic compound, partitions to sediment; however biodegradation does continue, albeit more slowly in anaerobic sediments, and half-lives of AP/APE in sediment do not meet criteria to be classified as persistent under established international definitions. Many compounds partition to sediment and this fate characteristic in and of itself does not provide cause for concern; nor does this type of fate data support WRCB's contention that "measures to reduce these substances are important for water quality". This is especially true based on the monitoring data from California, which show NP/NPE do not exceed sediment PNECs and appear to be declining.

3. Both of WRCB's memos regarding APEs indicate some confusion regarding the appropriate characterization of AP and APE with regard to their persistence and bioaccumulation properties.

WRCB is correct in assuming that APERC's previous comments question the validity of various researchers' observations that support their view that AP/APEs "exhibit a tendency toward biomagnification, bioaccumulation and/or bioconcentration". As noted in APERC's previous comments, it is important to remember that the terms "persistent" and "bioaccumulative" have very specific meanings and are based on measurable criteria. Assessments of the persistence and bioaccumulation of NP, NPE and AP/APE relative to these recognized criteria have been conducted by the EU, Environment Canada, Washington State and the State of Oregon. All of these concluded that NP

and/or NPE, along with other AP and APEs do not meet these criteria and therefore should not be classified as persistent or bioaccumulative.

Companion papers by Staples et al. (2008) and Klecka *et al.* (2008), summarize and provide references to the available data on the persistence and bioaccumulative properties of NP and NPE. As such, numerous high quality studies are available to ARB and the WRCB to confirm that NP and NPE are not persistent or bioaccumulative. In addition, SCCWRP has noted that concentrations in the livers of *Pleuronichthys verticulis* were similar to those in the sediment and points out "These findings are consistent with most other studies and provide very strong evidence that APEs do not biomagnify like so-called persistent organic pollutants (*e.g.* DDE, PCBs and PBDEs) do."

Out of the dozens of studies available and the weight of evidence reviews conducted by governmental authorities and in the peer-reviewed published literature, WRCB selected two studies from 2007 as a basis to support its statements that AP/APE are persistent and bioaccumulative.

WRCB cites a study by Huang *et al.* (2007), also discussed in section 2 above, as evidence that NP is persistent and bioaccumulative. In this study the zebrafish that were in the system showed fluctuating concentrations in their tissues over the course of the study and calculated bio[co]ncentration factors (BCFs) ranged from about 220 to 540, which only indicate a low to moderate tendency to bioaccumulate and do not warrant designation as a bioaccumulative compound according to international definitions. In addition, these authors reported a relatively rapid depuration of NP after fish were put in clean water with an initial decline in tissue concentrations of about 30 to 3 mg/kg in the first 10 hours. While the microcosm data from Huang *et al*. (2007) are inadequate to be used to assess degradation or persistence due to the very rapid flow-through rate of the water, the bioconcentration data show BCFs that are comparable with known literature values and do not meet criteria to be classified as bioaccumulative.

The other study cited by WRCB, conducted by Sumi *et al.* (2007), reported a range of concentration in muscle tissue from wild carp collected from field sites in Japan. Field bioaccumulation factors (BAFs) that incorporate exposure from water and food sources ranged from 65 to 188, which also do not meet criteria to be classified as bioaccumulative.

The BCF with zebrafish from Huang *et al.* (2007) and the field BAF with wild carp from Sumi *et al.* (2007) are consistent with previously compiled BCF and BAF data for NP and continue to support weight-of-evidence based conclusion that NP is not a bioaccumulative compound according to U.S. EPA and international bioaccumulation criteria.

WRCB has adopted a casual use of the terms "persistent" and "bioaccumulative" that is essentially meaningless as well as in conflict with established definitions. WRCB also

draws on informal and incorrect characterizations of AP/APEs as persistent and bioaccumulative as in the case of the U.S. EPA action plan document for NP and NPE. U.S. EPA characterizes the NP/NPE action plan document as a "screening level review," along with the caveat that it is based on "EPA's initial review of readily available use, exposure, and hazard information". It notes that there are "conflicting reports in the literature on the biodegradability of NP and NPEs" pointing out that in standard tests NP and NPE are "inherently biodegradable". The action plan document cites a 2002 Canadian assessment as saying NP "is considered persistent in the environment" yet overlooks the Canadian assessment that specifically assessed the weight-of-evidence for the persistence and bioaccumulative properties of APs and APEs in 2006 and concluded that this category of compounds is neither persistent nor bioaccumulative.

4. WRCB's memo indicates some confusion about the point that APERC made about the estrogenic activity of AP/APE and the contribution of AP/APE to the total estrogenicity of wastewater effluent.

APERC's previous comments noted that AP/APEs are not a major source of estrogenic activity in wastewater treatment effluent; however WRCB's response memo indicates that there was some confusion or misunderstanding about the point being made by APERC.

WRCB states "APERC's comments express some skepticism about the capacity of APEOs to act as endocrine disruptors" and goes on to describe studies that show that NP is weakly estrogenic (*i.e.* vitellogenin expression is a biomarker of activity).

APERC has never disputed that NP, OP and, to a considerably less extent their one and two mole ethoxylates, are weakly estrogenic compounds, while higher APE are not estrogenic.

The evidence for estrogenicity with NP was comprehensively assessed in the U.S. EPA WQC report, which concluded that while NP was weakly estrogenic, conventional apical endpoints related to survival, growth and development, and reproduction were affected at lower concentrations than those triggering weakly estrogenic biomarkers or responses. In an update to the dataset compiled by the U.S. EPA for the WQC, Coady *et al.* (2010) concluded that their original findings were further supported by more recent studies. Several studies examining, for example, gene expression of various molecular markers of estrogenic responses were cited by WRCB in their response to APERC.

APERC stated in their original comments that AP and APE do not comprise a major source of estrogenic activity in wastewater treatment plant effluent. In addition to the studies previously provided in APERC comments, the study by Sumi *et al.* (2007), which was cited in WRCB's response, further confirms this conclusion. Sumi *et al.* (2007) collected water samples from rivers in Japan and measured OP, NP, and several natural and synthetic hormones. Estrogenic activity in the water samples, measured using a yeast two-hybrid assay, was only detected in one river. In that river, the total concentration of NP and OP was 7.47 μg/L, while the total concentration of the

hormones was 28.9 μg/L. Given that the hormones are 1000 to 1 million times more potent than NP and OP it is clear that NP and OP do not contribute substantially to the estrogenic activity in that river.

5. WRCB has not provided any additional data to support a conclusion that the presence of AP or APEs in the aquatic environment in California present a risk to the environment or human health and inappropriately relies on initiatives related to these compounds under other jurisdictions to justify a recommendation to prohibit their use in certain products.

As noted in APERC's previous comments and above, WQC for ambient surface water and PNECs for sediment organism exist for NP; these provide an adequate basis to conduct screening risk assessments on AP/APE in California waters. The WRCB memo acknowledges that exceedances of these WQC in California are low yet predicates much of its concern about the aquatic toxicity of AP/APEs on these few sporadic exceedances as well as on initiatives related to these compounds in other jurisdictions.

Most notably, WRCB references the U.S. EPA action plan for NP and NPE. It is important to note that U.S. EPA has described its chemical action plan documents as preliminary summaries of available hazard, exposure, and use information on chemicals that outline the risks that each chemical may present and identify the specific steps the Agency is taking to assess and address those concerns. The most important component of the chemical management program is the determination of whether chemicals present an actual risk to the environment or public health.

WRCB is correct that as part of the NP/NPE action plan U.S. EPA issued an Advanced Notice of Proposed Rulemaking (ANPRM) to solicit public comment on whether additional ecotoxicity testing is necessary to assess the risk of these compounds. In response, APERC submitted substantive comments, which may also be of interest to the WRCB. These described the extensive ecotoxicity dataset for these compounds and explained why adequate data exist to assess the aquatic risk of these compounds. APERC also responded to U.S. EPA's interest in data on exposure of laundry workers to NPEs by providing modeled exposure data developed according to [U.S.] EPA guidelines that showed extremely high margins of safety for this occupational exposure.

WRCB also notes that the chemical action plan for NP and NPE notes "concern about potential risk to human health" from these compounds; however this concern is based solely on information contained in a screening level Hazard Characterization document on alkylphenols. This Hazard Characterization document was developed as part of [U.S.] EPA's High Production Volume (HPV) Challenge Program, which was conceived as a voluntary initiative aimed at developing and making publicly available screening level data for high volume chemicals. Each submission contains data on a checklist of 18 specific tests. The Alkylphenols Category document does not reflect the abundant data for NP and does not address NPE. Also, the [U.S.] EPA action plan document for NP and NPE overlooks governmental assessments that support the human safety of

current uses of NP and NPE. Most notable, is [U.S.] EPA's own 2006 assessment on the use of NPEs as inert ingredients in pesticide products. This assessment, which also considered data on NP, was conducted as part of a reassessment of all inert ingredients as mandated by Food Quality Protection Act (FQPA). It concluded there is a reasonable certainty that no harm to any population subgroup will result from aggregate exposure to NPEs when used as an inert ingredient considering dietary and non-occupational exposures. This [U.S.] EPA assessment also found no concern for increased sensitivity to infants and children from NPEs. It also concluded NP and NPE are not carcinogenic. In addition, governmental risk assessments conducted in Canada and the European Union concluded that current uses of NP/NPEs pose no concern for the safety of humans.

These governmental assessments are consistent with and supported by the results of a five-generation rat study sponsored by the U.S. National Institute of Environmental Health Sciences (NIEHS) and conducted by the National Center for Toxicological Research (NCTR), which concluded that "NP was <u>not</u> a selective reproductive or developmental toxicant."

U.S. EPA has not responded to the comments received in response to the ANPR; therefore it is premature for WRCB to presume what the Agency's findings will be. In addition, the fact that U.S. EPA has an action plan for NP and NPE does not provide an adequate basis to recommend a regulatory action, particularly an action as extreme as prohibiting the use of a family of surfactants in certain products. U.S. EPA is still in the process of assessing the risk of NP and NPE and has not taken any action to restrict their use. Considering that environmental monitoring data in California do not indicate more than sporadic exceedances of WQC and sediment PNECs, it is APERC's view that WRCB's recommendation to prohibit APEs in certain products is not justified. [APERC4]

<u>Agency Response to Comment C-12</u>: ARB staff disagrees with the Commenter and incorporates the Agency Responses to Comments B-52 through B-54 herein. The Commenter contends that the prohibition on use of APEOs in the nonaerosol forms of General Purpose Cleaner, General Purpose Degreaser, Glass Cleaner, Heavy-duty Hand Cleaner or Soap, and all forms of Oven or Grill Cleaner products is not justified and is based on inadequate data. The APERC provides no new information to support their contention, but rather chooses to suggest that peer reviewed literature cited by State Water Resources Control Board (SWRCB) staff is not suitable to support the prohibition.

First of all, the APERC contends that APEOs are not VOCs. This is incorrect. The compounds do meet ARB's definition of VOC. However, because these compounds also meet the definition of LVP-VOC, the regulations provide an exemption from counting percentages of such compounds, but only when considering compliance with VOC limits.

Staff reiterates that the prohibition is not based solely on the availability of other surfactants. Instead, the prohibition is based on ARB's obligation to prevent adverse environmental impacts from occurring as a result of ARB's regulatory action. There is in fact an abundance of other safer, effective surfactants, and it was the availability of these alternatives that allowed staff to consider a prohibition. Without such alternatives, a prohibition could render reformulated products technologically and commercially unfeasible. State law requires VOC standards set by ARB to be technologically and commercially feasible.

APERC contends that NP is an appropriate benchmark for assessing the risk of APEO concentrations in the environment, and further indicates that WQC for NP established by other jurisdictions is a conservative approach to determining whether APEOs present an environmental hazard. We disagree and believe the more conservative approach is to employ the precautionary principle and prohibit their use. The fact that APEO concentrations in California waterways are generally below U.S. EPA's WQC does not mean that low levels of APEO in California waterways should be considered safe to all aquatic species. ARB staff reiterates, and APERC concurs, that on some occasions measured concentrations of APEOs exceeded U.S. EPA's WQC for NP.

With regard to sediment levels, APERC contends that the justification for concern is inadequate and dismisses as "simplistic" studies reviewed by staff. We disagree and stand by the conclusion that levels of APEOs in sediments is cause for concern.

APERC further contends that SWRCB's June 20, 2011, memorandum indicates confusion as to whether APEOs are persistent and bioaccumulate. This is untrue. U.S. EPA, Canada, and the European Union (EU), among others, all conclude that APEOs are at least mildly bioaccumulative and persistent even though they do not meet a particular jurisdiction's technical criteria to be considered as such. In fact, APERC agrees that the data cited by SWRCB indicate that APEOs have a low to moderate tendency to bioaccumulate. Whether APEOs tend to bioaccumulate or persist in aquatic environments does not change the overall conclusion that APEOs are toxic to aquatic species. The APERC agrees that these compounds are toxic, as stated in their November 17, 2010, comments (see Comment B-54).

APERC also contends that SWRCB is confused about APERC's earlier comments related to APEO's estrogenic activity. This is incorrect. We agree with APERC statements that several APEOs are weakly estrogenic.

Finally, the APERC contends that SWRCB in their June 20, 2011, memorandum did not provide any additional data to support the conclusion that APEOs in California aquatic environments present a risk to the environment or human health. APERC further contends that SWRCB staff inappropriately relies on initiatives related to these compounds under other jurisdictions to justify a recommendation to prohibit their use in certain products. Regarding these comments, no additional data were

necessary to support the conclusion that APEOs present a potential hazard to California's aquatic environment. The justification was provided in their September 20, 2010, memorandum based on information received from San Francisco Estuary Institute, Southern California Coastal Water Research Project, and an earlier July 19, 2010, memorandum from State Water Resources Control Board. We believe it is appropriate to evaluate actions related to restricting APEO use in other jurisdictions, including the EU, which has already placed prohibitions on use of APEOs.

To conclude, the APERC provided no additional data that would indicate the prohibition on use of APEOs in the nonaerosol forms of General Purpose Cleaner, General Purpose Degreaser, Glass Cleaner, Heavy-duty Hand Cleaner or Soap, and all forms of Oven or Grill Cleaner products should be changed. We believe the SWRCB's June 20, 2011, memorandum provides additional information to support the prohibition on APEO use in the nonaerosol forms of General Purpose Cleaner, General Purpose Degreaser, Glass Cleaner, Heavy-duty Hand Cleaner or Soap, and all forms of Oven or Grill Cleaner products.