

January 22, 2013

*via electronic transmission*

Air Resources Board  
1001 I Street, 23<sup>rd</sup> Floor  
Sacramento, California 95814

Attn: Ms. Lori Andreoni  
Manager, Board Administration and Regulations Coordination Unit  
<http://www.arb.ca.gov/lispub/comm/bclist.php>

Subject: Public Meeting to Consider Approval of the South Coast 2012 Air Quality  
Management Plan (AQMP); Board Agenda Item # 13-2-2

Dear Board Members:

The Consumer Specialty Products Association (CSPA)<sup>1</sup> appreciates the opportunity to offer comments on the ARB's consideration of the South Coast Air Quality Management District (South Coast) 2012 AQMP that includes the South Coast's State Implementation Plan (SIP) for attaining the 24-hour PM 2.5 standard and a SIP update to address the 1-hour ozone standard in the South Coast Air Basin.

CSPA participated as an active stakeholder in the South Coast rulemaking process and filed extensive comments presenting technical evidence and legal arguments substantiating that the proposed Control Measure CTS-04 was inappropriate and unnecessary. CSPA therefore supports the action taken by the South Coast Governing Board at the public meeting on December 7, 2012, to withdraw Control Measure CTS-04 from the AQMP and request that ARB scientifically study the exemption for low vapor pressure (LVP)<sup>2</sup> substances and to partner with affected businesses in conducting this study.<sup>3</sup>

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<sup>1</sup> CSPA is a voluntary, non-profit national trade association representing approximately 230 companies engaged in the manufacture, formulation, distribution, and sale of products for household, institutional, commercial and industrial use. CSPA member companies' wide range of products includes home, lawn and garden pesticides, antimicrobial products, air care products, automotive specialty products, detergents and cleaning products, polishes and floor maintenance products, and various types of aerosol products. Through its product stewardship program Product Care®, and scientific and business-to-business endeavors, CSPA provides its members a platform to effectively address issues regarding the health, safety, sustainability and environmental impacts of their products.

<sup>2</sup> The relevant definition for the term "LVP-VOC is set forth at 17 CCR § 94508(a)(98). As noted in the ARB staff report, "Currently, ARB's Consumer Products Regulation exempts low vapor pressure (LVP) substances when determining compliance with VOC limits." ARB, "Staff Report on Proposed Revisions to the PM2.5 and Ozone State Implementation Plans for the South Coast Air Basin" (Jan. 11, 2013) at p. 17.

<sup>3</sup> Minutes of the South Coast Governing Board Monthly Meeting (Dec. 7, 2012) at p. 12. The full text of the minutes is posted on the South Coast website at: <http://www.aqmd.gov/hb/attachments/2011-2015/2013Jan/2013-Jan4-001.pdf#page=2>.

CSPA appreciates the opportunity to participate in substantive discussions with ARB and South Coast scientists about existing and proposed research on the environmental fate of LVP-VOCs. We have indeed already started the process in a meeting with South Coast AQMD scientists this week, and have scheduled a meeting with ARB staff scientists next month.

CSPA also filed extensive comments with SCAQMD presenting technical evidence and legal arguments substantiating that the proposed volatile organic compound (VOC) control measures relating to coatings, solvents, adhesives and lubricants (*i.e.*, CTS-01, CST-02, and CTS-03) are ***not*** necessary for demonstrating ozone attainment.<sup>4</sup> Our comments to SCAQMD urged that the 2012 AQMP should only include commitments for reductions in emission sources that are necessary for attainment of the federal PM 2.5 standard. Moreover, to the extent that any future ozone AQMP contains Clean Air Act Section 182(e)(5) proposed implementation measures, we urged that SCAQMD focus only on NOx reductions for demonstrating progress in attaining federal one-hour and eight-hour ozone standards. In addition to being a PM 2.5 precursor, NOx is also an ozone precursor. Thus, focusing on NOx is consistent with the AQMD's efforts to continue making expeditious progress in attaining the federal one-hour and eight-hour ozone standards.

Therefore, for reasons detailed below, CSPA respectfully requests the ARB withdraw these three VOC control measures from the proposed revisions to the California SIP that will be submitted to the United States Environmental Protection Agency (U.S. EPA).<sup>5</sup>

1. The Low Reactivity of VOCs in Consumer Products Make Further Reductions Unnecessary.

The low reactivity and low ozone impact of the VOC emissions from consumer products may make it *unnecessary* to further reduce the VOC content of consumer products to attain the federal ozone standard in the South Coast Air Basin. Therefore, for reasons detailed below, the 2013 California SIP update should not include "black box" VOC emission reduction measures in the AQMP for consumer products.

a. There are very significant differences between the relative ozone impacts of equal amounts of VOC emissions from various sources.

Scientific studies funded by our industry strongly suggest that a mass-based inventory approach overestimates the actual impact of consumer product VOC emissions on ozone attainment in the South Coast and other areas of California. In 2002, Sierra Research, Inc. conducted a research project to create a reactivity-weighted VOC emissions inventory for the South Coast. Sierra Research used the official emissions inventory for South Coast in 2000 and the official speciated emissions profiles, as well as the official ARB estimates for "maximum incremental reactivity"

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<sup>4</sup> On July 19, 2012, CSPA filed comments on the AQMD's initial study for the draft Program Environmental Impact Report for the 2012 AQMP. On October 9, 2012, CSPA filed comments on the AQMD's revised draft 2012 AQMP. On October 23, 2012, CSPA filed comments on the AQMD's draft Program Environmental Impact Report for the 2012 AQMP. The AQMD posted copies public comments on the revised draft 2012 AQMP at: <http://www.aqmd.gov/aqmp/2012aqmp/commentletters/commentlist.html>.

<sup>5</sup> See South Coast Final 2012 AQMP, Attachment IV (A) – District's Stationary Source Control Measures at pp. IV-A-50 – A-60.

(MIR) for each species of VOC emission, to create an estimate of the maximum ozone formation potential attributable to each major category of anthropogenic emissions of organic gases in the region. This type of MIR-weighted inventory provides a much more scientifically accurate assessment of the relative ozone impact of various emissions sources than any mass-based VOC emissions inventory.

The results of that MIR-weighted VOC inventory project are presented in *Attachment A* to these comments. The study found significant differences between the total mass emissions and the ozone formation potential of those emissions, and these differences are due solely to the differing weighted MIR for the species of VOCs that make up the specific source emission. Some emissions sources therefore have a much higher ozone formation potential than their mass emissions suggest, while other emissions categories have a much lower ozone formation potential than suggested by their mass emissions. Consumer products are among the emissions categories with below average reactivity, and therefore lower ozone impact than would be expected based on mass of emissions alone.

The MIR scale provides an estimate of the maximum amount of ozone potentially formed from a VOC emission under the tropospheric conditions where ozone is most sensitive to VOCs. The conditions in the ozone attainment run are far less sensitive to VOC emissions, but although absolute VOC reactivity will decrease significantly, the relative reactivity differences between various VOCs will remain relevant.

As shown in the data in Attachment A, VOCs from consumer products have a weighted-average MIR of 1.5, well below the average for all emissions sources. Many mobile sources of VOCs have very high reactivity, including Aircraft (6.8), Farm Equipment (5.4), Heavy Duty Diesel Urban Buses (5.5), Heavy Duty Diesel Trucks (5.5), Light Duty Diesel Trucks (5.5), Medium Duty Diesel Trucks (5.5), Ships and Commercial Boats (5.3), and Trains (5.5). VOC emissions from these sources cause three to five times as much ozone formation pound-per-pound as consumer product VOCs. The VOC sources with the largest potential ozone impacts in 2000 also exhibited very high reactivity profiles, including Light Duty Passenger Cars (3.7), Light Duty Trucks (3.8), and Off-Road Equipment (4.6).

The data from this study provide important evidence that very significant differences exist between the relative ozone impacts of equal amounts of VOC emissions from various sources. Generally speaking, mobile source VOC emissions create three to five times as much ozone as equal amounts of VOC emissions from most stationary and area sources, including consumer products. These significant differences in relative photochemical reactivity of various VOC sources must be taken into account in choosing and implementing effective, workable and cost-effective ozone attainment strategies.

- b. Scientific modeling studies also document the fact that the low-reactivity of VOCs used in consumer products have negligible impacts on peak ozone levels.

Other studies also have clearly demonstrated the minimal impact of consumer product VOCs on ozone non-attainment in California. Subsequent to the statewide revision of the California SIP in 1994, CSPA and another trade association funded an air quality modeling study to determine the specific role of consumer products in ozone attainment in both South Coast and in Sacramento

regions. That study, “Impact of Consumer Products on California’s Air Quality”,<sup>6</sup> used the exact Urban Airshed Model (UAM), inventories and meteorology utilized in the attainment demonstrations for the 1994 SIP. (See Attachment B)

The study compared UAM outputs for two scenarios in the South Coast Air Basin:

- The attainment demonstration in the SIP, which included an 85 percent reduction in the VOC emissions from consumer products, and demonstrated attainment with the one-hour ozone standard in 2010; and,
- The exact same modeling run with only a 30 percent reduction in consumer products VOC emissions (the reduction already obtained by ARB regulations adopted prior to 1994).

The results showed that both scenarios demonstrated attainment of the one-hour ozone standard of 0.12 ppm in both South Coast and Sacramento. In both airsheds, the additional consumer product emissions, despite their very significant mass, had such small impacts on peak ozone formation that insufficient ozone was formed to cause non-attainment. This result was attributed to both the low reactivity of the consumer product emissions, and the geographic distribution of those emissions that lessened impacts on peak ozone levels. Aerosol consumer products exhibit especially low reactivity, since aerosol propellants tend to among the least reactive of all VOCs in the emissions inventory.

During the 2007 California SIP revision, another modeling study was conducted by our industry to assess the necessity of further reductions of consumer product emissions for ozone attainment. The 1997 attainment remodeling study was conducted under 2010 attainment conditions that remained highly sensitive to overall VOC emissions. Therefore, the results of the 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 was under atmospheric conditions that are far more NOx-limited, and far less sensitive to overall VOC emissions than in 1997.

We therefore had reason to expect that consumer product VOC emissions should have even less relative impact on ozone attainment in the 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 CSPA and eight other national consumer product industry associations, to determine the ozone sensitivity of consumer product VOC emissions in the South Coast Air Basin in 2023, and determine what level of emission reductions might actually be necessary. The remodeling study was completed after the adoption of the 2007 AQMP, but prior to the adoption of the 2007 California SIP. The final report from the study, “Assessment of the Need for Long-Term Reduction in Consumer Product Emissions in the South Coast Air Basin”<sup>7</sup> was submitted as part of the record for the 2007 SIP. (See Attachment C)

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<sup>6</sup> Sierra Research Report No. SR97-07-01 (July 1997) and addendum Report No. SR98-03-01 (March, 1998). See Attachment B.

<sup>7</sup> Sierra Research Report No. SR2007-09-03, September 12, 2007. See Attachment C to these comments.

The results of the 2007 Sierra Research study clearly demonstrated that ozone attainment status in the South Coast Air Basin 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 Air Basin. 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. Clearly those control measures were neither effective nor cost-effective.

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 that play a significant role in ozone non-attainment in the South Coast and other non-attainment districts.

The need to carefully consider the relative ozone impacts of various emission sources provides further reasons that the commitment for future emissions reductions in the “black box” should not be allocated to consumer products. CSPA urges the ARB to consider these data and adhere to the EPA 2005 Interim Guidance,<sup>8</sup> which would result in only including commitments of for reductions in emissions sources that are actually necessary for ozone attainment in the South Coast Air Basin.

2. The Vision for Clear Air Modeling Provides Further Evidence that NOx Reduction Is the Key to Clean Air in California.

Concurrent with the development of the proposed 2012 AQMP, South Coast has been working with the ARB and the San Joaquin Valley Unified Air Pollution Control District (San Joaquin Valley) on a long-term plan for air quality and climate management entitled, “Vision for Clean Air: a Framework for Air Quality and Climate Planning.” A public review draft of that plan was released last month.<sup>9</sup> This longer-term plan, extending to 2050 and beyond, uses a fundamentally different modeling tool based on the Argonne National Laboratory Vision 2011 Model, but clearly comes to the same conclusion: NOx reductions are key to California’s Clean Air future for both the South Coast and San Joaquin Valley Air Basins. VOCs are not even mentioned in the 40-page document, and the only mention of “reactive organic gases” is to confirm that the modeling tool used is able to forecast both ROG and NOx. In contrast, the term “NOx” is mentioned a total of 72 times and the document includes extensive discussions about the reduction levels needed to achieve attainment with applicable state and federal ozone standards.<sup>10</sup>

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<sup>8</sup> 70 Fed. Reg. 54046-51 (Sept. 13, 2005).

<sup>9</sup> “Vision for Clean Air: a Framework for Air Quality and Climate Planning,” Public Review Draft (June 27, 2012). (Hereinafter referred to as “the Vision for Clean Air.”) The full text of the document is posted on the ARB’s website at: [http://www.arb.ca.gov/planning/vision/docs/Vision\\_for\\_Clean\\_Air\\_Public\\_Review\\_Draft.pdf](http://www.arb.ca.gov/planning/vision/docs/Vision_for_Clean_Air_Public_Review_Draft.pdf).

<sup>10</sup> The 53-page appendix to Visions for Clean Air has only one mention of VOCs in relation to diesel engine after-treatment systems, on page 31. The text of this document is posted on the ARB website at: [http://www.arb.ca.gov/planning/vision/docs/Vision\\_for\\_Clean\\_Air\\_Appendix\\_Public\\_Review\\_Draft.pdf](http://www.arb.ca.gov/planning/vision/docs/Vision_for_Clean_Air_Appendix_Public_Review_Draft.pdf).

It is also important to note that the new transportation, fuel and energy sector technologies that the Vision for Clean Air projects as necessary for clean air and climate change mitigation would also result in significant reductions in VOCs as well as NO<sub>x</sub> from those sources. In general, these sources of VOCs have much higher photochemical reactivity than emissions from consumer products, and therefore will provide more than adequate VOC reductions as a side benefit to the NO<sub>x</sub> reductions needed for ozone and particulate matter standards attainment. These factors provide more evidence that further VOC reductions from consumer products are not necessary or cost-effective, and should not be included in the 2012 AQMP.

3. The U.S. Environmental Protection Agency's (EPA's) 2005 Interim Guidance on SIP development provides clear instructions that relative reactivity and ozone formation potential should be considered in SIPs, and that alternative fates and availability also should be considered.

EPA provided clear guidance to states in 2005 that differences in VOC reactivity should be considered in the development and implementation of SIPs. In its "Interim Guidance on Control of Volatile Organic Compounds in Ozone State Implementation Plans,"<sup>11</sup> EPA "...encourages States to consider recent scientific information on the photochemical reactivity of volatile organic compounds (VOCs) in the development of State implementation plans (SIPs) designed to meet the national ambient air quality standard (NAAQS) for ozone."<sup>12</sup> That guidance also states that, "By distinguishing between more reactive and less reactive VOCs, it should be possible to decrease ozone concentrations further or more efficiently than by controlling all VOCs equally."<sup>13</sup> The Interim Guidance goes on to provide the specific guidance regarding factors that States should consider, including the following:

- The potential for alternative (non-atmospheric) fates and limited availability for ozone-forming photochemical reactions.
- Prioritizing control measures using reactivity metrics.
- Targeting emissions of highly reactive VOCs with control measures.
- The fate of VOC emissions and their availability for atmospheric reactions.

As we demonstrated in our comments to SCAQMP, new data have shown that not only do LVPs have limited if any ability to contribute to VOC emissions and ozone formation, but many VOCs also have limited availability due to alternative environmental fates. (See Attachment D) In regard to this important issue, the Interim Guidance, EPA instructs that:

States should also consider emerging research on the actual availability of VOCs for atmospheric reaction. In estimating VOC emissions, especially from coatings, solvents, and consumer products, it is often assumed that the entire volatile fraction is emitted and available for photochemical reaction, unless captured by specific control equipment. In some situations, however, otherwise volatile compounds may be trapped in liquid or solid

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<sup>11</sup> 70 *Fed. Reg.* 54046-51 (Sept. 13, 2005).

<sup>12</sup> *Id.* at 541046, col. 3.

<sup>13</sup> *Id.* at 541047, col. 2

phases or adhere to surfaces such that they are not actually released to the atmosphere. Once emitted into the atmosphere, VOCs may also be scavenged by rain, form particles, or deposit on surfaces. Taking this behavior into account should lead to more accurate VOC emissions inventories and photochemical modeling. It may also allow States to consider volatility thresholds or other approaches designed to reflect atmospheric availability in certain types of regulatory programs.

CSPA urges the ARB to follow the 2005 Interim Guidance and consider the relative reactivity and ozone impacts and atmospheric availability of various compounds to determine which, if any, VOC control measures are considered for inclusion in any revised and updated ozone SIP.

### SUMMARY AND CONCLUSIONS

CSPA appreciates the opportunity to comment on this update of the California State Implementation Plan. In these comments we commit to working with ARB to conduct scientific studies on the LVP exemption that we hope will lead to significant improvements in ozone attainment planning and ozone control. We also urge ARB to take the following actions relating to the SIP update:

- Remove the three control measures relating to VOCs in coatings and consumer products (CTS-01, CTS-02 and CTS-03);
- Consider existing scientific data that further VOC reductions from consumer products are not necessary, and do not have to be part of the “black box” of future emission reductions; and,
- Adhere to EPA’s 2005 Interim Guidance on the Control of Volatile Organic Compounds (VOCs) in Ozone State Implementation Plans in considering the relative reactivity and ozone impacts of sources, and consider alternative fates.

If you have any questions, please contact us at (202) 872-8110.

Respectfully submitted,



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Attachments (4)