American Chemistry Council

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Mr. James Nyarady, Manager
Strategy Evaluation Section
Stationary Sources Division
California Air Resources Board
1001 I Street
Sacramento, CA 95814-2828

RE: Air Resources Board ("ARB") Suggested Control Measure ("SCM") for Architectural, and Industrial Maintenance Coatings

Dear Mr. Nyarady:

The American Chemistry Council's Solvents Industry Group (ACC SIG, formerly known as the American Solvents Council)[1] appreciates the opportunity to submit the following comments to the California Air Resources Board (ARB) concerning their proposed revisions to the SCM for Architectural and Industrial Maintenance (AIM) coatings. We request that these comments become part of the public record in the State of California. The purpose of these comments is to urge ARB to adopt a reactivity-based approach in the SCM. For reasons set forth below, reactivity-based approaches to VOC controls are clearly the most scientifically-sound and effective way to reduce the impact of VOCs on ozone levels. In contrast, we believe mass-based approaches, which fail to distinguish among VOCs based on the actual potential to contribute to ozone accumulation, are no longer scientifically-defensible.

Background Information about ACC Solvents Industry Group

The ACC SIG and its member companies have historically been very willing to work with ARB and other state and federal regulators to help achieve important air quality improvement objectives. ACC SIG has advocated for many years the greater efficiency and effectiveness of regulations built around the sound science inherent in photochemical reactivity-adjusted VOCs, as opposed to the current approach of continued reductions in mass-based VOC limits. The ACC SIG has sponsored relevant research, and has been an active participant in California's Reactivity Research Advisory Committee (RRAC) and EPA's Reactivity Research Working Group (RRWG). The ACC SIG also submitted comments to EPA in support of ARB's aerosol coatings rule and the adoption therein of a reactivity-based approach.

[1] The following companies are members of the ACC Solvents Industry Group: The Dow Chemical Company; ExxonMobil Chemical Company; Shell Chemical LP; Eastman Chemical Company; and Sasol North America, Incorporated.

Members of the ACC SIG manufacture a wide range of solvents used in coatings and other products, including solvents exempt from regulation as VOCs; solvents that are not exempt but have relatively low photochemical reactivity; and solvents that have relatively high reactivity. SIG members also manufacture solvents that are essential in water-based coatings[2]. Because solvents play an essential role in the formulation of a wide range of products, including water-based formulations, the ACC SIG believes it is important to develop regulatory strategies that reduce the environmental impact of those solvents without compromising product performance, including avoiding performance decrements that would lead to more frequent use and thus higher emissions. Photochemical reactivity is the tool that makes that possible.

Undisputed Benefits of a Reactivity-Based Approach

The key point about reactivity-based approaches is that they measure the right thing – the potential of a substance to contribute to ozone levels.[3] There is a direct connection between the metric being used and the environmental objective being pursued.

ACC SIG has advocated to ARB as recently as February 2007 the significant benefits to be gained from the use of photochemical reactivity-adjusted VOC control measures for the reduction of ozone formation potential. Those benefits include:

1. Differentiating VOC species based on their respective potential impact on ozone levels;
2. Encouraging formulators to select solvents and blends that have the least impact on ground-level ozone formation;
3. Directly measuring, enforcing and reducing the impact of VOC emissions on air quality, as opposed to the indirect and highly uncertain results from mass-based regulations;
4. More efficiently achieving the reductions in ozone formation potential needed to meet federal air quality standards;
5. Accomplishing the above while allowing manufacturers the greater formulation latitude necessary to formulate coatings that provide the required performance properties; and
6. Minimizing the impact that lower mass-based limits have had on reducing service life of coatings, thus causing a higher frequency of application, which is an unintended negative impact on air quality.

None of the above benefits will be realized if the current focus on mass-based VOC reductions is continued. That is to say, because mass-based approaches ignore relative

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2 While water-based coatings may use considerably less total solvent per gallon than their solvent-based counterparts, the inclusion of some solvent and other VOCs remains critical to achieving the application, appearance, and performance properties required in any given application.

3 We recognize that there are NOx-limited areas where changes in VOC emissions inventories have little or no impact on ozone levels. For purposes of this letter, we are assuming that emissions occur in areas where changes in VOC emissions inventories can make a difference.

reactivity – because they do *not* measure the right thing[4] – formulators have no reason to take reactivity into account when reformulating to meet tighter VOC limits. As a result, the new formulations that result might have lower overall potential to contribute to ozone levels, *but they also might not*. Moreover, if the new product formulation needs to be applied more often, there could be a double-negative result.

This is not mere speculation – it has already occurred. The analysis of data gathered and published by ARB in the 2001 and the (Draft) 2005 AIM Coatings Surveys and the 2001 and (Draft) 2005 Reactivity Analyses clearly demonstrate that, in some cases, reductions in mass-based VOC limits have already yielded a negative impact on air quality. For example, comparing the flat coatings category for 2001 and 2005, the reports indicated the following:

A. The total volume of coating reported sold in California rose by 2.47 million gallons (7.1%).
B. The sales-weighted average VOC (SWAVOC) was reduced from 96 grams per liter to 82.
C. The total mass of VOC emissions was reduced from 11.3 million pounds to 10.0 million, a decrease of 1.3 million pounds of emissions per year (11%).
D. The real air quality impact, as measured on <u>maximum ozone formation potential, for this category INCREASED</u> by 1.4 million pounds of ozone, an increase of 5.4 %.

This increase resulted from changes in the species of VOC used, which action was driven by the necessity of reducing mass of VOC, with no requirement to consider reactivity when doing so.

Clearly, in this case the purely mass-based VOC limits in the current SCM (and SCAQMD Rule 1113) have failed to achieve the required improvements in air quality, and have in fact made the situation worse. Considerable money and effort was expended by regulators and industry to produce the *appearance* of progress which in *reality* yielded a step backward in the overall ozone control strategy. Such a result could not have occurred if a reactivity-based approach had been used, but if mass-based approaches are used, negative results could occur with greater frequency as tighter VOC limits become harder to reach.

The preceding information was presented by the ACC SIG to ARB staff in February 2007.[5] In addition to demonstrating how mass-based approaches can produce unintended negative results, specific examples of coatings applications where reactivity-based approaches could lead to very large environmental benefits without compromising product performance were also provided. The ACC SIG believes that the ARB AIM Coatings Team members recognized the benefits that photochemical reactivity-adjusted VOC control measures could provide across all AIM coatings categories, including waterborne architectural coatings.

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4 Imagine an air toxics program that focused only on total HAPs, and mandated reductions of total HAPs without consideration of the toxicity of individual HAPs or their substitutes.

5 Solvents Industry Group presentation entitled, "Reactivity-Based Control Strategies – The Time is Now," is included as Attachment I.

ARB staff identified certain issues that would have to be addressed to bring about a change in the compliance and enforcement strategies within the AQMDs, and expressed concern about the time required to develop such a leading-edge approach to air quality regulations. However, the goal of any air quality regulation must be to reduce the environmental impact of the relevant product type(s) as efficiently as possible, while minimizing the economic impact of the changes being driven. Regulations solely based upon reductions of the mass of VOC emitted can no longer be assumed to continue to bring about meaningful ozone reductions from the use of solvents in open applications. We firmly hold that the use of reactivity-based approaches is not and should not be a fall-back regulatory strategy, but should be the presumptively preferred approach. We challenge both ARB and SCAQMD, who have been leaders globally in air quality management controls, to be the agents of change and the leaders willing to step forward to make meaningful and lasting improvements in air quality management that will demonstrate significant and positive results to their constituents and stakeholders.

And while we are calling upon ARB and the SCAQMD to show leadership, in reality, we are simply asking agencies to apply in this SCM the same good science that has been accepted and used in other California and federal regulatory programs, including:

- The ARB's use of reactivity in fuels regulations controlling VOC emissions. In 1991, the Board approved the Low Emission Vehicles and Clean Fuels regulation that allowed for the use of reactivity adjustment factors (ARB, 1990).
- ARB's successful implementation of the use of photochemical reactivity as the basis for the 2000 Aerosol Coatings SCM and its subsequent acceptance by EPA as a part of the California State Implementation Plan.
- The Publication in September 2005 by the EPA of an "Interim Guidance on Control of Volatile Organic Compounds in Ozone State Implementation Plans," which specifically "encourages states to consider recent scientific information on the photochemical reactivity of volatile organic compounds in the development of state implementation plans designed to meet the national ambient air quality standards for ozone."
- The announced intent of EPA to propose a new national VOC regulation for aerosol coatings which is based on the ARB reactivity-based aerosol coatings rule.

In point of fact, the ARB 2005 Architectural Coatings Survey Draft Reactivity Analysis (January 2007) itself states the following:

- "During the June 2000 Board hearing, Board members approved the latest SCM update and adopted resolution 00-23. This Resolution directed the ARB staff to work with industry and other stakeholders in assessing the ozone-forming potential (i.e., reactivity) of architectural coatings, and to evaluate the feasibility of developing a reactivity-based control strategy." (Pg 1-3)
- "We expect an equal or greater air quality benefit (with reactivity) compared to a mass-based strategy, because VOCs with the greatest ozone forming potential will be targeted rather than treating all VOCs equally." (Pg 1-5)
- "If a coating contains a small amount of a highly reactive compound, it could have a relatively high reactivity rating even if it has a low level of volatile organic

compounds (VOCs). Similarly, a coating that has a high VOC content may have a relatively low reactivity rating, if it contains compounds that aren't very reactive." (Pg E-1)

The ACC SIG strongly supports the development of Photochemical Reactivity-Adjusted VOC limits as a basis for all AIM Coatings in the 2007 revision of the SCM. The scientific basis of this approach will lead to a better and more effective environmental policy toward air quality, and will deliver dramatically improved environmental conditions for the people of California. Specifically, the ozone formation potential from open solvent emissions will be dramatically reduced in a much shorter time period than current mass-based VOC regulations will deliver. We have provided real-world reactivity-adjusted VOC (RAVOC) formulation examples that easily demonstrate 75-85% reductions in ozone formation potential today, without sacrificing product performance.

We believe the potential for such large benefits outweigh any regulatory challenges associated with changing from mass-based to reactivity-based programs.[6] Further, we believe ARB is well-positioned to make the change, and that the regulatory hurdles are not as difficult as some might argue. Speciated end-user data are available in California through your highly successful and market-leading end-user surveys. ARB has the ability to set compliance and tracking measures such as labeling requirements, record-keeping requirements and "spot" compliance audit requirements. The choice of a metric may be subject to some debate, but the potential metrics discussed may all have benefits. The use of a MIR-based RAVOC metric provides a weighted average case, against a SCAQMD-type atmosphere, in units of measure (UOM) that align directly with current mass-based VOC UOMs. It's easy to calculate and inherently easy for stakeholders to interpret.

Some may have concern that reactivity-based approaches would reduce incentives to use water-based coatings' technologies. We believe that is unlikely to be the case. As demonstrated in the ACC SIG's recent February 2007 presentation to ARB (See Page 6 of attached presentation to ARB – "Reactivity in Waterborne Architectural Coatings Categories"), water-based products require the use of solvents, and in fact, can make a significant contribution to total VOC emissions because of their large volumes of use. Moreover, because some water-based products use solvents with relatively high reactivity, the ACC SIG presentation to ARB demonstrated that there are opportunities for significant improvement in the environmental performance of these products using reactivity-based approaches. Once such improvements have been made, it would seem highly unlikely that a solvent-based formulation would then have a lower potential to contribute to ozone levels than the water-based product. Thus, we believe reactivity-based approaches can lead to improvements in the environmental performance of both water-based and solvent-based coatings formulations, without inviting any shift from the former to the latter. Mass-based approaches, in contrast, would tend to overlook opportunities to achieve significant improvements in the performance of water-based technologies.

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6 We also believe mass-based programs have their own regulatory deficiencies and imperfections, such as the lack of control over substitution decisions, such that the actual impact on ozone levels of lower mass-based limits is largely a matter of guesswork.

In separate comments, the National Paint and Coatings Association has recommended that ARB adopt an AIM Coatings Rule that includes a Low-Reactivity Innovative Products (IPE) exemption on for the AIM SCM (whereby the IPE would, on a case-by-case basis, exempt an AIM Coating from its mass-based VOC control limit in cases where the manufacturer provides data to show that use of the coating will result in less ozone-formation potential due to use of lower reactivity VOCs as compared to a representative coating product which complies with the mass-based VOC limit). The ACC SIG certainly agrees that any mass-based approach should at least allow this alternative reactivity-based compliance option. However, the ACC SIG firmly believes that photochemical reactivity should be the primary basis for managing the VOC controls of all EPA Rule 183(e) end-use categories, and not used merely as a fallback or secondary option.

Conclusion

In summary, ACC SIG recommends that ARB and SCAQMD utilize all regulatory protocols and procedures at their disposal to allow for additional time to study these alternatives more thoughtfully and carefully before approving the 2007 AIM Coatings SCM, with the goal of implementing a reactivity-based regulation that will result in the most benefit to the environment and to the people of California. We stand ready to continue to actively aid your effort to produce a leading-edge air quality/ozone prevention policy that has the potential to make the ARB and SCAQMD regulations more effective in meeting the important environmental objective of reducing ozone levels.

Please advise how we can further assist you toward this end. We appreciate the opportunity to submit these comments. If you have any questions, please contact Barbara Francis at (703) 741-5609 or by email at Barbara_Francis@americanchemistry.com.

Sincerely,

Sharon H. Kneiss

Sharon H. Kneiss
Vice President, Products Divisions

Attachment

cc: Barbara Fry, Chief
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