



August 29, 2007

TO: Docket ID No. EPA-HQ-OAR-2006-0971

Connecticut

RE: Proposed rule for National Volatile Organic Compound Emission Standards for Aerosol Coatings

Delaware

District of Columbia

Maine

Maryland

Massachusetts

New Hampshire

New Jersey

New York

Pennsylvania

Rhode Island

Vermont

Virginia

Christopher Recchia
Executive Director

The Ozone Transport Commission (OTC) welcomes the opportunity to provide comments on the July 16, 2007 proposed rule “National Volatile Organic Compound Emission Standards for Aerosol Coatings.” OTC was created by Congress, pursuant to the Clean Air Act Amendments of 1990, to coordinate ground-level ozone planning in the Northeast and Mid-Atlantic States. Its members include: Connecticut, Delaware, the District of Columbia, Maine, Maryland, New Hampshire, New Jersey, New York, Massachusetts, Pennsylvania, Rhode Island, Virginia, and Vermont. The OTC wishes to thank EPA for finally beginning to address its obligations under Clean Air Act section 183(e) and anxiously awaits further action by EPA to fully meet these requirements.

The intent of this rule is to achieve a reduction in emissions of highly reactive organic compounds that promote formation of high levels of ozone. The recommended approach is to establish a scale called the reactivity factor for each chemical compound that participates in the photochemical oxidant chemistry of ozone formation, thus providing a means for substitution/replacement of high reactive compounds currently in use for improving ozone air quality. These substitutions are supposed to have an effect similar to reducing VOC mass, the traditional method of reducing VOC for ozone control.

The OTC believes that, although the use of a reactivity basis for reducing volatile organic compounds (VOC) may have merit, it is premature for use in a national rule as there are many unanswered questions related to ozone impacts, other air pollution impacts, and enforceability compared with a mass-based approach. Because of these uncertainties, EPA should not promulgate a reactivity-based rule for aerosol coatings at this time. Rather, EPA should move forward now with a mass-based national rule to reduce VOC emissions from this category while investigating the many uncertainties associated with a reactivity-based rule.

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Ozone Impacts

In the preamble to the proposed rule, EPA states that the substitution of less reactive VOC for more reactive VOC “can be effective in controlling ozone in episodes where NO_x is at its highest levels, such as in urban areas.” EPA goes on to say that “downwind ozone could increase due to upwind substitution of larger amounts of lesser reactive VOCs.” Contrary to EPA’s assertions that “realistic changes in formulation ... are unlikely to result in a noticeable increase in ozone downwind,” EPA does not actually know this to be the case. This is important for the simple fact that ozone nonattainment areas in the Northeastern United States have the highest recorded ozone values downwind of the urban centers and this effort has the potential to increase ozone in the very places that ozone reductions are most needed, confounding ozone attainment plans being developed by the States. Also, increases in ozone in areas downwind of urban centers could result in more impacts to agricultural and forested areas of the country. EPA needs to consider the impact this proposed rule will have on agricultural and forested areas, especially in light of the recently proposed revisions to the secondary ozone NAAQS.

The statements made related to future ozone levels seem to be expectations rather than modeled results. Given the potential for further tightening of the current ozone NAAQS, it is critical that EPA carefully study the downwind impact on ozone levels. Otherwise, implementation of this rule could worsen the ozone nonattainment problem in the Northeastern United States.

EPA states that the rule will reduce both VOC emissions and the amount of ozone generated from the use of aerosol coatings. This is not a guaranteed result, as replacement of high reactive compounds with low reactive ones could potentially result in increase of mass from the VOCs emitted into the atmosphere. Given the unknowns in photo-chemical atmospheric chemistry, this increased mass is just as likely to result in more ozone formation as not.

In addition, the experts that EPA has commissioned to study reactivity-based VOC question the use of these measures on a national basis. The June 2007 Columbia Geosciences report to NARSTO by the The Reactivity Research Working Group (NARSTO Report) states:

“... combined with the relatively small fraction of anthropogenic VOC subject to control in the eastern U. S., suggests that average O₃-reduction benefits resulting from further anthropogenic VOC management will be limited, although significant reductions are possible in specific areas. As a consequence state-level implementation, as opposed to blanket federal application, seems expedient at this time. The second reason supporting the Interim Guidance approach at present is the potential complexity and costliness of reactivity-based management schemes. This favors a staged approach, as opposed to an immediate and comprehensive implementation.”

The NARSTO Report recommends that “(c)onsiderable additional strategic planning, possibly optimized with concurrent NO_x management, should be conducted before

implementation of more widespread and comprehensive management schemes.” NARSTO goes on to state:

“Reactivity Research Work Group (RRWG) research to date has provided ample evidence that further anthropogenic VOC control will, by itself, provide only marginal O₃-reduction benefit in most areas of the eastern United States. Furthermore, it suggests strongly that additional NO_x management will be more effective under many circumstances. These features provide a strong argument that VOC reactivity regulations should not be considered in isolation but, rather, optimized in conjunction with NO_x restriction measures.”

Taken together, these comments recommend against promulgation of a national reactivity-based rule.

Other Air Quality Impacts

The proposed rule could also result in increased emissions of hazardous air pollutants and increased ambient levels of PM_{2.5}.

Hazardous air pollutants. Tables 2A, 2B and 2C of the proposal list organic compounds or solvent mixtures with their reactivity, but does not include information developed by Carter’s classification of relatively certain (category 1) or uncertainty less than a factor of 2 (category 2), nor if the compound is a hazardous air pollutant. In fact, the Tables include known hazardous air pollutants, with good toxicity information data bases and health based exposure values. The lists also contain chemicals (carbon tetrachloride and 1,1,1 - trichloroethane) with low reactivity factors that have been banned under Title VI of the 1990 Clean Air Act because they are considered stratospheric ozone depletors. It appears that the toxicity of the individual chemicals was not considered in this proposal. For example, benzene, a known human carcinogen, has a low reactivity factor (0.81), while other less toxic chemicals have high reactivity factors. So the possible end result would be the reformulation of an aerosol coating that contains more air toxics of concern. The same example holds for the diisocyanate compounds listed in the proposal. The reactivity factors for these highly toxic compounds range from 0 to 0.93. Simply stated, EPA overlooks the basic fact that all VOCs are not equal in toxic potential.

In addition, EPA makes claims regarding toxicity reductions from this proposed rule based on reduced xylene and toluene use -- without any attempt to quantify them. Since this rule has been in place in California for some years, EPA needs to analyze the reformulation data from California to determine whether that rule has improved ozone levels, if it had any negative impact on product toxicity, and whether those results could be translated to the national market.

EPA recognizes that certain chemicals could expose “the population to increased levels of potentially toxic VOC,” specifically mentioning methylene chloride, and seeks comments on possible approaches to address hazardous air pollutant emissions. The OTC opposes the voluntary program proposed by EPA. Instead EPA should remove those hazardous air

pollutants of concern from the list of approved compounds that can be used to comply with the rule.

Particulate matter. EPA has not considered any negative co-effects that may arise from the implementation of this rule on fine particulate matter, especially given the potential for increase in emissions of low reactive VOCs on a mass-basis and the impact this may have on primary organic aerosol emissions and secondary organic aerosol formation. Given that PM_{2.5} nonattainment is coincident with ozone nonattainment in many areas throughout the country, and with the revised PM_{2.5} NAAQS, this will be even more so in the near future. EPA must look at the impacts of increasing the use low reactive VOCs on PM_{2.5} before setting up a regulatory framework to encourage this substitution. This is supported the conclusions in the NARSTO Report, as follows:

“To date the RRWG has concentrated almost exclusively on O₃ control, a focus having practical value from a research-planning perspective but open to some question for at least two reasons. First, although O₃ itself possesses demonstrated adverse health and environmental effects, it also has been used frequently as an easily measurable surrogate for pollution in general, in much the same way that biological oxygen demand and coliform count have been applied in the context of water quality. One has only to note the numerous articles and reports wherein O₃ has been equated to ‘smog,’ to appreciate this point. Although this usage is largely informal and O₃ is an imperfect surrogate for numerous reason, this fact does raise the question of focusing exclusively on O₃ control.”

In a September 2005 report, “Potential Treatment and Incorporation of Aerosol-Forming Potential of Reactive Organic Compounds (ROGs) in Current Reactivity-Based Ozone Management Strategies in the United States,” commissioned by the RRWG for the peer review process of the workgroup, Dr. Praveen Amar, Director, Science and Policy, NESCAUM, explained why aerosol-forming potential of ROGs needs to be considered in any reactivity-based VOC control strategy:

“In the case of current reactivity-based ROG control strategies for ozone management alone, it is therefore important to also consider their impact on the organic aerosol fraction of measured ambient PM_{2.5}. Just as some ROGs have higher/lower potential to form ozone than other ROGs, some ROGs are capable of producing higher/lower levels of organic aerosols than others. Based on high and low ozone-forming potential of ROGs, as well as high and low aerosol forming potential of ROGs (if they were known), one could categorize various ROGs in ‘high-high,’ ‘low-low,’ ‘high-low’ and ‘low-high’ bins.

“As noted earlier, the POA and secondary organic aerosol (SOA) components of PM_{2.5} in urban eastern environments constitute about half of PM_{2.5} mass on an annual basis. The organic aerosols have two components, biogenic and anthropogenic that also need to be considered in any future ozone and PM_{2.5} management strategies. The molecular identities of organic fraction of fine particles mass are being investigated by various researchers. SOAs form by gas-particles

partitioning of semi-volatile oxidation products of ROGs in the atmosphere. Information is needed but currently lacking and is subject of intense research regarding the composition, vapor pressures and gas particle partitioning of the semi-volatile organic matter in the atmospheric aerosols.”

Without the understanding of the impact reactivity-based VOC control could have on the formation of SOAs, this rule might actually result in increases in ambient levels of PM_{2.5}. Additionally, the use of highly toxic hazardous air pollutants as a VOC reduction strategy could result in greater risks from the exposure to these chemicals. EPA needs to more fully understand the implications of this approach before embarking on a strategy that could not only increase ozone emissions but also worsen the impacts of other pollutants.

Compliance and Enforcement

The recordkeeping and reporting requirements of the proposed rule require manufacturers to report basic information to the EPA Regional Offices and keep on-site all formulation data for each batch of product for 5 years. This brings to light a series of concerns related to the enforcement of these proposed regulations. The use of Regional Offices to collect national product information is cumbersome and unwise. In fact, when the State of New York requested information on variance and exceedance fee reports sent to regional offices under the National AIM rule, EPA could not produce the reports because they were not always retained.

Another concern is the length of time for retaining records to determine compliance. The record does not indicate how EPA determined how long a product would likely remain on the shelf. Therefore, there is no information related to the adequacy of retaining records of batch formulation for 5 years. If a product is available for sale longer than 5 years after manufacture, it will be difficult to determine whether that product is compliant with the rule. How did EPA determine that 5 years is an adequate period for record retention?

EPA suggests that electronic reporting of this data to a centralized database would ease in the enforcement of the rule. We support that concept. Without full electronic reporting of all formulation data in a formal structure, the burden on EPA enforcement staff would be too great to result in any effective enforcement. Even with all of this data, EPA will still need to gather sample products and test them to determine if the reported data matches the actual product formulations. This activity will require a tremendous workload commitment and resources to perform the necessary testing to determine product compliance. EPA needs to identify the resources it will use to assure compliance.

To the best of our knowledge, EPA's track record on enforcement of the Section 183(e) consumer product regulations is non-existent. EPA has not initiated a single investigation related to the consumer product regulations it has promulgated under section 183(e). Without even basic efforts to determine compliance, EPA will have no idea if and how this rule is being complied with. With a rule as complicated as this one, it will be very important to set aside the resources to investigate compliance and initiate enforcement where necessary.

These proposed regulations are not practically enforceable. Identifying the individual compounds that make up an aerosol coating product makes the determination exponentially more difficult than mass-based VOC limits. In order to determine compliance EPA will need to know the formulation of every single aerosol coating product on the market. In addition, it will need to be able to readily access this information and be able to compare it to the reactivity limits in the proposed rule. In order to avoid confusion and provide regulatory certainty, it should make baseline compliance determinations for each product formulation prior to rule implementation and at the time of each new reformulation. Still, this does not assure compliance as each batch of product manufactured could have somewhat different components than exist in the baseline formulation. While not necessarily indicative of non-compliance, the company will need to understand the tolerances its formulations have respective to the reactivity limits in the proposed rule. So for each batch, a compliance determination will need to be made by the company to assure that it meets the prescribed formulation criteria.

How does EPA determine whether product “on-the-shelf” is in compliance? It will need to determine the constituents of the product and whether those constituents meet the baseline formulation for which compliance is determined. Since it is much more efficient to determine what is in the product if the constituents are already known, EPA will need to access the batch formulation data from a company before it begins its analysis. Since each batch will differ slightly (or somewhat more based on manufacturing controls), EPA will need to determine if the constituents reported match the actual measured contents and if that actual formulation is compliant or not. This does not even speak to the ability of test results to be repeated or confirmed. This is a much more complicated scenario than what needs to be done to determine compliance with a mass-based VOC limit.

Since the reactivity-based approach is a paradigm shift in the method of VOC control, EPA needs to fully describe the process it will use to determine compliance. It is not apparent from the rulemaking record that EPA has fully considered how compliance will be determined. Without this, EPA will not be in a position to enforce this rule and, therefore, the stated benefits of this approach will likely not be realized.

EPA Overstates the Efficacy of this Rule

This rule is unlikely to realize the ozone benefits (an equivalent 19 percent VOC reduction) that EPA claims it will. This is because the rule provides for exemptions for small manufacturers, companies that are not currently in the California market, and variances if a manufacturer cannot comply because of technological or economic reasons.

Small entities – manufacturers with capacities not in excess of 7,500 kg of total VOCs – are exempted if they provide an annual report to EPA that establishes that the products are properly exempted on the basis of VOC mass. If EPA finalizes this aspect of the regulation, it should include language that reflects that these small entities should provide information on a chemical basis in addition to the mass-based information. If EPA is to pursue a reactivity-based rule, it should understand the nature of the products it exempts as well as those it regulates. Still, this provision is unnecessary. The economic analysis performed by

the California Air Resources Board (CARB) in its aerosol coatings rule indicates that small manufacturers will not have difficulty complying with the reactivity-based approach. Therefore, the inclusion of this provision is not justified. (CARB Initial statement of reasons for the proposed amendments to the regulation for reducing volatile organic compound emissions from aerosol coating products and proposed table of maximum incremental reactivity values. May 5, 2000: 117).

New York's experience adds another reason to limit the small manufacturer exemption. All entities that fit the definition of small manufacturer will take advantage of any exemption, thereby having a substantial impact on rule penetration. It could also put these small manufacturers in a position of competitive advantage that such manufacturers will use to expand market share. EPA needs to monitor these entities closely to understand the impact this provision will have on rule efficacy.

The extension to January 1, 2011 for any product not currently in the California market will reduce the rule penetration and reduce the efficacy of the rule until much after the attainment date for most ozone nonattainment areas around the country. The variance provisions make quantification of the actual benefit of the proposed rule still more uncertain. It is not possible to predict how many of these manufacturers will be able to satisfy the technology and economic hardship provisions of the rules going well into the future. It is important for EPA to establish a centralized review of the variance provisions to assure the consistent application of these provisions nationwide.

In the May 30, 2007 guidance memorandum, "Emission Reduction Credit for Three Federal Rules for Categories of Consumer and Commercial Products under Section 183(e) of the Clean Air Act," EPA states that "it is working ... so that fully creditable emission reductions will be achieved by January 1, 2009." The extension virtually guarantees that the emission reductions will not be achieved in that time frame. EPA also needs to adjust the emission crediting allowed for SIP purposes to account for this reduced efficacy as well as the impact of the small manufacturer exemption and variance provisions.

Alternate Approach

While many areas around the country need strategies to address nonattainment issues, there are many opportunities to reduce VOC mass by implementing readily available and proven programs. Since most nonattainment areas around the country have not taken aggressive steps to limit VOCs, there are significant reductions that can be obtained from proven programs such as updating decades-old RACT programs, fuel strategies and other area source regulations (consumer products, architectural coatings and Stage I vapor recovery). EPA should look to adopt national rules for these emission sources before embarking into VOC substitution with all of the previously mentioned complications and unknowns.

If EPA chooses to move forward to address emissions from this category, EPA should establish mass-based VOC content limitations. The 1996 CARB mass based limits are technologically feasible and reduce VOC emissions from this by category by 12 percent. In addition, the 2002 CARB mass based "limits appear to be both feasible and available for

some categories of aerosol coatings.” (72 FR 38965) With all the uncertainty, especially the toxicity, PM2.5, downwind ozone, and planning/ permitting / enforceability concerns, surrounding using the proposed reactivity approach, which when fully implemented yields an equivalent 19 percent VOC benefit, EPA may be better served to establish a national rule based on the 1996 CARB rule amended with 2002 CARB mass based limits known to be feasible. This would be akin to what the states of Oregon and Washington have adopted. Given that these limits are feasible for all manufacturers, the small manufacturer exemption, extended compliance date of January 1, 2011 for non-California products and the variance provisions would all be unnecessary. This approach would, therefore, achieve most of the reductions of the proposal without imparting the serious concerns mentioned above. EPA can then undertake the necessary studies to address the above concerns and not rely on expectations that may not hold true.

OTC appreciates the opportunity to submit these comments and welcomes discussion on this matter. Please contact Seth Barna (202) 508-3012 with questions.

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