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Revisions to the California State Implementation Plan and Revision to the Definition of Volatile Organic Compounds (VOC)—Removal of VOC Exemptions for California's Aerosol Coating Products Reactivity-Based Regulation; Proposed Rule

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 51 and 52

[OAR–2003–0200; FRL–7857–6]

Revisions to the California State Implementation Plan and Revision to the Definition of Volatile Organic Compounds (VOC)—Removal of VOC Exemptions for California's Aerosol Coating Products Reactivity-Based Regulation

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: The EPA is proposing to approve a new consumer products regulation as part of the California State Implementation Plan (SIP) for ozone under the Clean Air Act (CAA) as amended in 1990. This California regulation adopts an innovative approach to reduce ozone formation from volatile organic compounds (VOC) in aerosol coating products. The EPA is also proposing to approve the use of California's Tables of Maximum Incremental Reactivity (MIR) to allow implementation of the new regulation in California. We are also proposing to revise EPA's definition of VOCs so that compounds which we previously identified as negligibly reactive and exempt from EPA's regulatory definition of VOCs will now count towards a product's reactivity-based VOC limit for the purpose of California's aerosol coatings regulation. We are taking comments on this proposal and we plan to follow with a final action.

DATES: Comments must be received on or before March 8, 2005.

ADDRESSES: Submit your comments, identified by Docket ID No. OAR–2003–0200, by one of the following methods:

- Federal eRulemaking Portal: *http://www.regulations.gov.* Follow the on-line instructions for submitting comments.
- Agency Web site: *http://www.epa.gov/edocket.* EDOCKET, EPA's electronic public docket and comment system, is EPA's preferred method for receiving comments. Follow the on-line instructions for submitting comments.
- E-mail: *a-and-r-Docket@epa.gov.*
- Fax: 202–566–1741.
- Mail: OAR Docket: OAR–2003–0200, Environmental Protection Agency, Mailcode: 6102T, 1200 Pennsylvania Ave., NW., Washington, DC 20460.
- Hand Delivery: EPA/DC, Public Reading Room, Room B102, EPA West Building, 1301 Constitution Avenue, NW., Washington, DC. Such deliveries are only accepted during the Docket's normal hours of operation, and special arrangements should be made for deliveries of boxed information.

Instructions: Direct your comments to Docket ID No. OAR–2003–0200. EPA's policy is that all comments received will be included in the public docket without change and may be made available online at *http://www.epa.gov/edocket,* including any personal information provided, unless the comment includes information claimed to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Do not submit information that you consider to be CBI or otherwise protected through EDOCKET, regulations.gov, or e-mail. The EPA EDOCKET and the federal regulations.gov websites are ''anonymous access'' systems, which means EPA will not know your identity or contact information unless you provide it in the body of your comment. If you send an e-mail comment directly to EPA without going through EDOCKET or regulations.gov, your e-mail address will be automatically captured and included as part of the comment that is placed in the public docket and made available on the Internet. If you submit an electronic comment, EPA recommends that you include your name and other contact information in the body of your comment and with any disk or CD-ROM you submit. If EPA cannot read your comment due to technical difficulties and cannot contact you for clarification, EPA may not be able to consider your comment. Electronic files should avoid the use of special characters, any form of encryption, and be free of any defects or viruses. For additional information about EPA's public docket visit EDOCKET on-line or see the **Federal Register** of May 31, 2002 (67 FR 38102).

For additional instructions on submitting comments, go to Unit I of the **SUPPLEMENTARY INFORMATION** section of this document.

Docket: All documents in the docket are listed in the EDOCKET index at *http://www.epa.gov/edocket.* Although listed in the index, some information is not publicly available, *i.e.*, CBI or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, is not placed on the Internet and will be publicly available only in hard copy form. Publicly available docket materials are available either electronically in EDOCKET or in hard copy at the OAR Docket, OAR–2003–0200, EPA/DC, EPA West, Room B102, 1301 Constitution Ave., NW., Washington, DC. The Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Public Reading Room is (202) 566–1744, and the telephone number for the OAR Docket is (202) 566–1742.

FOR FURTHER INFORMATION CONTACT: Stanley Tong, Rulemaking Office (AIR–4), Environmental Protection Agency, Region IX, 75 Hawthorne St., San Francisco, CA 94105; telephone number: (415) 947–4122; fax number: (415) 947–3579; e-mail address: *tong.stanley@epa.gov.*

SUPPLEMENTARY INFORMATION:

I. General Information

A. What Should I Consider as I Prepare My Comments for EPA?

1. *Submitting CBI.* Do not submit this information to EPA through EDOCKET, regulations.gov or e-mail. Clearly mark the part or all of the information that you claim to be CBI. For CBI information in a disk or CD ROM that you mail to EPA, mark the outside of the disk or CD ROM as CBI and then identify electronically within the disk or CD ROM the specific information that is claimed as CBI). In addition to one complete version of the comment that includes information claimed as CBI, a copy of the comment that does not contain the information claimed as CBI must be submitted for inclusion in the public docket. Information so marked will not be disclosed except in accordance with procedures set forth in 40 CFR part 2.

2. *Tips for Preparing Your Comments.* When submitting comments, remember to:

i. Identify the rulemaking by docket number and other identifying information (subject heading, **Federal Register** date and page number).

ii. Follow directions—The agency may ask you to respond to specific questions or organize comments by referencing a Code of Federal Regulations (CFR) part or section number.

iii. Explain why you agree or disagree; suggest alternatives and substitute language for your requested changes.

iv. Describe any assumptions and provide any technical information and/or data that you used.

v. If you estimate potential costs or burdens, explain how you arrived at your estimate in sufficient detail to allow for it to be reproduced.

vi. Provide specific examples to illustrate your concerns, and suggest alternatives.

vii. Explain your views as clearly as possible, avoiding the use of profanity or personal threats.

viii. Make sure to submit your comments by the comment period deadline identified.

ix. Please strictly limit comments to the subject matter of this proposal, the scope of which is discussed below. Please identify the section/subsection on which you are commenting so we can group similar comments together and better understand the context of your comment.

x. EPA requests that you also send a copy of your comments to: Andrew Steckel, Rulemaking Office Chief (AIR–4), U.S. Environmental Protection Agency, Region IX, 75 Hawthorne Street, San Francisco, CA 94105–3901.

3. *Docket Copying Costs.* A reasonable fee may be charged for copying.

B. How Do I Request a Public Hearing?

If you wish to request a public hearing to submit comments concerning this proposal please contact Mr. Stanley Tong, Rulemaking Office (AIR–4), U.S. Environmental Protection Agency, 75 Hawthorne Street, San Francisco, CA 94105, telephone (415) 947–4122. Requests for a public hearing must be made by January 27, 2005. The EPA will publish a notice of a hearing, if a hearing is requested, in the **Federal Register**. Because the State has already held a public notice and comment period for its aerosol coatings rule, any EPA hearing will be strictly limited to the proposed EPA approval of the rule and its inclusion in the California SIP and to the proposed change in the definition of VOCs for 40 CFR 51.100(s). The hearing will not cover the reactivity limits or other specifics of California's rule. If a public hearing is requested, it will be held near our Region IX office in San Francisco, CA.

C. Throughout This Document, ''We,'' ''Us'' and ''Our'' Refer to EPA

D. How Can I Get Copies of This Document and Other Related Information?

1. In addition to accessing the official public docket at *http://www.epa.gov/edocket/*, you can also inspect copies of the submitted SIP revision at our Region IX office during normal business hours. EPA requests that you contact the person listed in the **FOR FURTHER INFORMATION CONTACT** section to schedule your inspection. You may also see copies of the submitted SIP revision during normal business hours by appointment at the California Air Resources Board, Stationary Source Division, Rule Evaluation Section, 1001 ''I'' Street, Sacramento, CA 95814.

2. A copy of California's aerosol coating products regulation can also be downloaded from the following internet addresses. Please be advised that these are not EPA Web sites and may not contain the same version of the regulations that were submitted to EPA. *http://www.arb.ca.gov/consprod/regs/aeropnt.pdf http://www.arb.ca.gov/consprod/regs/Aeropnt.doc*

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I. The State's Submittal

A. What Regulations Did the State Submit?

Table 1 lists the regulations addressed by this proposal with the date that they were adopted and submitted to EPA by the California Air Resources Board (CARB).

TABLE 1.—SUBMITTED REGULATIONS

Regulation title	Adopted	Submitted
Aerosol Coating Products	5/1/2001	3/13/2002
Tables of Maximum Incremental Reactivity (MIR) Values	5/1/2001	3/13/2002

On May 7, 2002, we found that this submittal meets the completeness criteria in 40 CFR Part 51, Appendix V, as required before formal EPA review.

B. Are There Other Versions of This Regulation?

There is no previous version of the aerosol coating products regulation approved by EPA into the SIP, although CARB adopted an earlier version of this regulation on March 23, 1995, and submitted it to us on December 18, 1998. On November 19, 1998, CARB adopted amendments to this earlier regulation. The CARB did not submit these amendments to us as a SIP revision. There is no previous stand-alone version of the Tables of MIR values in the SIP applicable to aerosol coatings. Today, we are proposing approval of the CARB aerosol coatings rule submitted to us on March 13, 2002. While we can act on only the most recently submitted version of this regulation, we have reviewed materials CARB provided with the previous SIP submittals for informational purposes. Thus, this version of the aerosol coatings rule replaces the earlier versions developed by CARB and, if we approve it, will be the first such rule in the California SIP.

C. What Is the Purpose of the Submitted CARB Regulation?

The regulation covers aerosol coatings, aerosol clear coatings, and aerosol stains. It applies to any person who sells, supplies, offers for sale, applies, or manufactures for use in California any aerosol coating subject to the limits in the regulation. The regulation imposes reactivity-based VOC limits on these products for purposes of reducing ozone caused by VOC emissions.

In the current SIP submittal, CARB has developed a new approach for regulating VOC emissions from aerosol coatings. Traditionally, the VOC emissions from aerosol and other coatings have been controlled by limiting the mass of all VOCs in a product, and VOC content limits of aerosol coatings were expressed as a maximum percent by mass of all VOC. The new approach taken by CARB incorporates the concept of VOC photochemical reactivity. This concept relies on the fact that the same weight/amount of some VOCs (*e.g.*, xylene) has the potential to form more ozone, or to form ozone more quickly, than the same weight/amount of other VOCs (*e.g.*, propane) once they are emitted into the ambient air under the same conditions.

The CARB estimates that its previous mass-based VOC control rule for aerosol coatings resulted in statewide aerosol coating VOC emissions reductions of 9

tons per day (tpd) from the 1989 baseline estimated VOC emissions of 30 tpd of VOC. The CARB calculates that the new reactivity-based aerosol coatings rule in the current submittal would achieve the ''equivalent'' of an additional 3.1 tpd of VOC mass-based reductions statewide. In other words, CARB estimates that this rule will achieve reactivity-based VOC reductions that would be the equivalent of 12.1 tons of mass-based VOC reductions from the 1989 baseline, measured in terms of ozone reduction. The CARB intends its new regulation to encourage manufacturers to reduce use of VOCs with higher reactivity, thereby achieving more ozone reductions than through traditional VOC mass-based regulations.

III. EPA's Evaluation and Action

A. How Is EPA Evaluating the Regulation?

Generally, SIP regulations must be enforceable (see section 110(a)(2)(A) of the CAA), must at a minimum require Reasonably Available Control Technology (RACT) and Reasonably Available Control Measures (RACM) in nonattainment areas (see, for example, sections 172(c)(1), 182(a)(2)(A) and 182(b)(2)), must not interfere with attainment and reasonable further progress or any other applicable requirement of the CAA, and must achieve the pollution reduction requirements of the CAA (see section 110(l)). The CARB's aerosol coatings regulation applies to both ozone attainment and non-attainment areas statewide. Because this regulation covers nonmajor area sources that are not covered by a Control Techniques Guidelines (CTG) document, it is not subject to the RACT requirements for ozone nonattainment areas (CAA, section 182(b)(2)).

Guidance and policy documents that we used to help evaluate enforceability requirements includes: Issues Relating to VOC Regulation Cutpoints, Deficiencies, and Deviations; Clarification to Appendix D of November 24, 1987 **Federal Register,**'' (Blue Book), May 25, 1988, (revised 1/11/90), Office of Air Quality Planning and Standards. We also relied on several technical reports and journals to evaluate CARB's SIP submittal. These reports and journals are referenced in footnotes in the body of this proposal and are included in the docket for this proposal.

B. Does the Regulation Meet the Evaluation Criteria?

We believe that the aerosol coatings rule will improve the SIP by establishing stringent VOC limits for this product category, by improving enforcement through labeling and reporting requirements, and by creating an incentive for the use of solvents with relatively low contribution to ozone formation. The regulation is generally consistent with relevant policy and guidance regarding enforceability. Our approval of the rule would also be consistent with CAA section 110(l), because there is no prior version of the aerosol coatings regulation in the SIP and ozone reductions resulting from the approval of this regulation into the SIP will help in the State's efforts to achieve attainment with the national ambient air quality standard (NAAQS) for ozone. RACT requirements do not apply to the source category covered by the CARB rule because RACT applies to major stationary sources in nonattainment areas and source categories covered by a CTG. Because of their widespread use in relatively small amounts, aerosol coatings are considered area sources rather than major stationary sources. EPA has not issued a CTG or a rule for this category. However, even though federal RACT or consumer product requirements do not yet apply, CARB took the initiative in 1995 to go beyond basic federally mandated VOC reduction requirements by adopting an aerosol coatings regulation with two tiers of aggressive mass-based VOC limits. In its current SIP submittal, CARB is amending its existing regulation by replacing the mass-based limits with reactivity-based limits intended to achieve additional ozone reduction benefits.

Although CARB's existing mass-based aerosol coatings regulation has significantly reduced emissions from aerosol coatings, CARB has concluded that more reductions are needed to help reduce the high ozone concentrations in Southern California and the Central Valley. The CARB also believes that some VOC mass-based limits in the previous version of the rule presented particularly difficult reformulation challenges for manufacturers of water-based coatings,[1] and the State concluded that it may not be feasible to achieve additional VOC reductions from a traditional VOC mass-based program. The current SIP submittal relies on the relative reactivity concept, that is, the fact that individual species of VOC react in the atmosphere to form different amounts of ozone or to form ozone at different rates. The CARB hopes to target VOC emission reductions to better control a product's contribution to ozone formation by encouraging reductions of higher reactivity VOCs, rather than by treating all VOCs in a product alike through a mass-based rule. The submitted regulation therefore consists of reactivity-based limits that replace the existing mass-based VOC limits for aerosol spray coatings.

Although EPA is supportive of reactivity-based programs, we recognize that they may be more complex to develop, enforce, and evaluate than mass-based programs. As a result, it is particularly important for us to evaluate the State agency's ability to implement such programs. The CARB has addressed these concerns partly through an extensive public process spanning over 3 years in the development of the aerosol coatings rule. The CARB held eight public workshops and over 20 meetings with industry, leading scientists, local air districts, and EPA. The CARB also gathered detailed information on the sales and composition of aerosol coatings, funded extensive research on VOC reactivity scales and their applicability to environmental conditions in California, and took steps intended to ensure that no backsliding would occur from adoption of the relative-reactivity approach. To account for potential changes in MIR values as scientific knowledge improves, CARB also committed to improve and update its program by including in its Board resolution [2] the provision ''[t]o review the Tables of Maximum Incremental Reactivity (MIR) Values 18 months after the effective date of the amendments, and every 18 months thereafter, to determine if modifications to the MIR values are warranted.'' The CARB will also ''[r]eview the reactivity-based limits before January 1, 2007 to determine if modifications are necessary to reflect changes to the MIR values and return to the Board with any recommended modifications to the reactivity-based limits.'' [3]

Additional details about the comparison of reactivity-based reductions to VOC mass-based reductions, the appropriateness of CARB's reactivity research to areas outside of California, and the evaluation of the effectiveness of CARB's regulation are provided in the Background section below.

[1] California Air Resources Board, ''Initial Statement of Reasons for the Proposed Amendments to the Regulation for Reducing Volatile Organic Compound Emissions from Aerosol Coating Products,'' Chapter VII, page 60, May 5, 2000.

[2] State of California Air Resources Board Resolution 00–22, June 22, 2000, Agenda Item No. 00–6–1.

[3] State of California Air Resources Board Resolution 00–22, June 22, 2000, Agenda Item No. 00–6–1.

Information normally found in a Technical Support Document (TSD) is incorporated into this proposed rule. A separate TSD has not been written for this proposed rulemaking.

C. Public Comment and Final Action

Because EPA believes the submitted aerosol coatings regulation fulfills all relevant requirements, we are proposing to approve it into the California SIP as authorized in section 110(k)(3) of the CAA. We are also proposing to approve the use of CARB's Tables of MIR values in California for the purpose of implementation of the aerosol coatings regulation. We intend to grant SIP credit for the ozone equivalent VOC mass-based reductions that are achieved by CARB's reactivity-based regulation. Details on the methodology CARB used to determine the equivalent VOC mass-based tonnage reduction achieved by its reactivity regulation is discussed in the CARB staff report.[4]

Currently, EPA's regulatory definition of VOC (40 CFR 51.100(s)) excludes certain compounds, such as methane and ethane, which EPA has determined to have negligible photochemical reactivity with respect to the formation of ozone. California's reactivity-based regulation, however, requires the inclusion of the assigned MIR scale reactivity value of each organic compound present in the volatile portion of a product, even if the compound's reactivity value is so low that EPA has previously determined it to be negligibly reactive and therefore exempt.

In order to approve CARB's aerosol coatings rule, EPA proposes to modify our regulatory definition of VOC so that compounds previously excluded will now be counted towards a product's reactivity-based VOC limit for the limited purpose of CARB's aerosol coatings reactivity-based regulation. Under 40 CFR 51.100(s), EPA has excluded compounds from the definition of VOC in recognition of the fact that individual organic compounds differ with respect to their incremental contribution to ozone formation. EPA's exemption-based system separates organic compounds into reactive and negligibly reactive compounds. The CARB's reactivity-based regulation makes this distinction unnecessary because CARB's rule assigns each compound a reactivity factor that accounts for its relative contribution to ozone formation. These previously exempted compounds will continue to be excluded from the Federal definition of VOCs for other purposes.

We will accept comments from the public on this proposed approval of the CARB aerosol rule into the SIP and the proposed modification of our definition of VOC for the next 60 days. Unless we receive convincing new information during the comment period, we intend to publish a final approval action that will incorporate the regulations listed in Table 1 into the federally enforceable SIP and modify our definition of VOC to support CARB's aerosol coating rule.

The EPA, with CARB's assistance, intends to evaluate the performance of this reactivity-based regulation in 3 years. This will allow time to compile data on the implementation of, and compliance with, the regulation, and will allow time to conduct additional technical analysis such as modeling efforts needed to evaluate the effect of the regulation on ambient ozone levels. We encourage CARB to use this time to collect data on the costs and effectiveness of this regulation, both to the regulated entities and to the regulators. In particular, EPA is interested in how implementation of this regulation affects the development of detailed emission inventories, as well as industry compliance costs, including recordkeeping and compliance testing, manufacturing or material costs, product quality and price. Towards this goal, we are relying upon CARB's Board resolution [5] which ''[d]irects the Executive Officer to take the following actions: (1) Monitor the progress of manufacturers in meeting the reactivity-based VOC limits, (2) propose any future regulatory modifications that may be appropriate, and (3) continue to evaluate emerging technologies for aerosol coatings to determine if additional ozone reductions will be feasible in the future.''

The proposed approval of CARB's aerosol coatings regulation based upon VOC reactivity is limited to this source category for this State. EPA believes that relative reactivity-based regulations may help provide the flexibility necessary to achieve further emissions reductions from some source categories to address persistent ozone nonattainment problems in areas of the country that need further reductions in VOC emissions to come into attainment with federal ozone standards. EPA is committed to continuing its support of research on the suitability of relative reactivity-based regulations to other geographic regions and to other source categories through the national Reactivity Research Working Group (RRWG) of which CARB and EPA are members.[6] The purpose of the RRWG is to encourage and sponsor research on scientific questions concerning VOC reactivity which may be of interest to regulators. This group is affiliated with NARSTO (formerly known as the North American Research Strategy for Tropospheric Ozone) and is a voluntary organization currently composed of industry, government and academic representatives. The group has an open membership and anyone may attend the meetings and participate.

The EPA is specifically seeking public comment on how reactivity-based programs might affect industry compliance and recordkeeping costs to support effective implementation and enforcement, and how industry and regulatory agency costs and staff requirements might change with respect to emission inventories.

We are not seeking comments on the reactivity limits or other specifics of CARB's rule; nor are we seeking comments on EPA's VOC exemption process. The EPA has previously published in 63 FR 48792 (September 11, 1998) its views on reactivity as it relates to the regulation of VOC emissions from consumer products pursuant to CAA § 183(e) and this proposal should not be construed as a change in the Agency's interpretation of that provision. When commenting, please indicate which section of this proposal you are commenting on so we can group similar comments together.

III. Background Information

A. Why Was This Regulation Submitted?

Ground level ozone, commonly referred to as ''smog,'' is a serious air pollutant that harms human health and the environment. Ground level ozone is a complex problem that is difficult to control in part because ozone is not emitted directly by specific sources. It forms in the air when there are chemical reactions between nitrogen oxides (NO_X) and VOCs in the presence of heat and sunlight. Therefore, one way to reduce ozone levels in many areas is to control emissions of VOCs. Section 110(a) of the CAA requires States to submit regulations that control VOC emissions as part of the State's SIP.

B. What Is Photochemical Reactivity?

There are thousands of individual species of VOC chemicals that can

[4] California Air Resources Board, ''Initial Statement of Reasons for the Proposed Amendments to the Regulation for Reducing Volatile Organic Compound Emissions from Aerosol Coating Products,'' Chapter II, page 37, May 5, 2000.

[5] State of California Air Resources Board Resolution 00–22, June 22, 2000, Agenda Item No. 00–6–1.

[6] See ''VOC Reactivity'' at *http://www.cgenv.com/Narsto/*.

combine with NO_X and the energy from sunlight to form ozone. The impact of a given VOC on formation of ground-level ozone is sometimes referred to as its ''reactivity.'' It is generally understood that not all VOCs are equal in their effects on ground-level ozone formation. Some VOCs react extremely slowly and changes in their emissions have limited effects on ozone pollution episodes. Some VOCs form ozone more quickly, or they may form more ozone than other VOCs. Others not only form ozone themselves, but also enhance ozone formation from other VOCs. By distinguishing between more reactive and less reactive VOCs, however, it should be possible to decrease ozone concentrations further or more efficiently than by controlling all VOCs equally.

Assigning a value to the reactivity of a compound is not straightforward. Reactivity is not simply a property of the compound itself; it is a property of both the compound and the environment in which the compound is found. The reactivity of a single compound varies with VOW–NO_X ratios, meteorological conditions, the mix of other VOCs in the atmosphere, and the time interval of interest. Designing an effective regulation that takes account of these interactions is difficult, and implementing and enforcing such a regulation carries the extra burden of characterizing and tracking the full chemical composition of VOC emissions.

1. History of EPA's VOC Policy

Historically, EPA's general approach to regulation of VOC emissions has been based upon control of total VOCs by mass, without distinguishing between individual species of VOC. EPA considered the regulation of VOCs by mass to be the most effective and practical approach based upon the scientific and technical information available when EPA developed its VOC control policy.

EPA issued the first version of its VOC control policy in 1971, as part of EPA's SIP preparation guidance.[7] In that guidance, EPA emphasized the need to reduce the total mass of VOC emissions, but it also suggested that substitution of one compound for another might be useful when it would result in a clearly evident decrease in reactivity and thus tend to reduce photochemical oxidant formation. This latter statement encouraged States to promulgate SIPs with VOC emission substitution provisions similar to the Los Angeles County Air Pollution Control District's (LACAPCD) Rule 66,[8] which allowed some VOCs that were believed to have low to moderate reactivity to be exempted from control. The exempt status of many of those VOCs was questioned a few years later, when research results indicated that, although some of those compounds do not produce much ozone close to the source, they may produce significant amounts of ozone after they are transported downwind from urban areas.[9]

In 1977, this research led EPA to issue the second version of its VOC policy under the title ''Recommended Policy on Control of Volatile Organic Compounds,'' (42 FR 35314, July 8, 1977) offering its own, more limited list of exempt organic compounds. The 1977 policy identified four compounds that have very low photochemical reactivity and determined that their contribution to ozone formation and accumulation could be considered negligible. The policy exempted these ''negligibly reactive'' compounds from VOC emissions limitations in programs designed to meet the ozone NAAQS. Since 1977, the EPA has added other compounds to the list of negligibly reactive compounds based on new information as it has been developed. In 1992, the EPA adopted a formal regulatory definition of VOC for use in SIPs, which explicitly excludes compounds that have been identified as negligibly reactive [40 CFR 51.100(s)]. To date, EPA has exempted 53 compounds or classes of compounds in this manner.

In effect, EPA's current VOC exemption policy has resulted in a two-bin system in which most compounds are treated equally as VOCs and are controlled and a separate smaller group of compounds are treated as negligibly reactive and are exempt from VOC control.[10] This approach was intended to encourage the reduction of emissions of all VOCs that participate in ozone formation. From one perspective, it appears that this approach has been relatively successful. EPA estimates that, between 1970 and 2003, VOC emissions from man-made sources nationwide have declined by 54 percent. This decline in VOC emissions has helped to decrease average ozone concentration by 29 percent (based on 1-hour averages) and 21 percent (based on 8-hour averages) between 1980 and 2003. These reductions have occurred even though, between 1970 and 2003, population, vehicle miles traveled, and gross domestic product have risen 39 percent, 155 percent and 176 percent respectively. [Latest Findings on National Air Quality: 2002 Status and Trends, EPA 454/K–03–001, August 2003; and The Ozone Report Measuring Progress through 2003, EPA 454/K–04–001, April 2004; Environmental Protection Agency, Office of Air Quality Planning and Standards, Research Triangle Park, North Carolina]

On the other hand, some have argued that a reactivity-based approach for reducing VOC emissions would be more effective than the current mass-based approach. One group of researchers conducted a detailed modeling study of the Los Angeles area and concluded that, compared to the current approach, a reactivity-based approach could achieve the same reductions in ozone concentrations at significantly less cost—or for a given cost, could achieve a significantly greater reduction in ozone concentrations.[11] EPA recognizes that, in theory, a well designed reactivity-based program, in which each individual VOC is regulated more or less stringently based on its actual contribution to ozone formation, would be more efficient than the current approach. On the other hand, there are significant practical difficulties involved in designing, implementing, and enforcing such a program. We believe that the CARB program we are proposing to approve today will help EPA and other States to evaluate whether the benefits of a reactivity-based approach are sufficient to outweigh these practical difficulties.

We also recognize that, in spite of the progress that most parts of the country

[7] U.S. Environmental Protection Agency. ''Requirements for Preparation, Adoption, and Submittal of Implementation Plans.'' **Federal Register,** 36 FR 15486–15506 (1971).

[8] County of Los Angles, Air Pollution Control District (1972). Rules and Regulations. Rule 66 (1966). Amended November 2, 1972.

[9] Dimitriades, B. ''Oxidant/03 Air Quality Benefits from Emission Substitution.'' In: ''Proceedings. Hydrocarbon Control Feasibility. Its Impact on Air Quality'' (and references herein). Speciality Conference, Air Pollution Control Association, April, 1977.

[10] It should be noted that EPA has also taken VOC reactivity into consideration in other ways, such as the development of the consumer and commercial product regulations under CAA § 183(e). EPA considered VOC reactivity as a factor in developing the federal consumer products program as directed by the statute, and EPA's approach was confirmed by the courts. *See, Allied Local & Regional Mfrs. Caucus* v. *EPA,* 215 F.3d 61 (D.C. Cir. 2000), cert. denied 532 U.S. 1018 (2001). The EPA plans to develop its own regulation for aerosol coating products under CAA § 183(e). Our future regulation may differ from CARB's regulation. If this turns out to be the case, a process will need to be developed to verify that the State's requirements and limits are at least as stringent as those in the national standard.

[11] A. Russell, J. Milford, M. S. Bergin, S. McBride, L. McNair, Y. Yang, W. R. Stockwell, B. Croes, ''Urban Ozone Control and Atmospheric Reactivity of Organic Gases,'' Science, 269: 491–495, (1995).

have made in reducing ozone concentrations, further reductions in VOC emissions will likely be needed to bring a number of areas into attainment with the 8-hour ozone standard. In particular, in areas where significant VOC emission controls are already in place, further mass-based emission reductions may be difficult or very expensive to achieve. In such situations, regulations that distinguish between individual VOCs and create an incentive to shift production and use from more reactive VOCs to less reactive VOCs may provide the flexibility necessary to continue progress towards attainment of the ozone NAAQS.

2. History of CARB's Reactivity Work

Regulatory authorities in California have been experimenting with the concept of reactivity-based regulations for some time. The first regulation in California that took reactivity into account was Rule 66,[12] adopted in the mid 1960s by LACAPCD. This rule restricted emissions of certain classes of compounds which were defined by the rule as photochemically reactive based on their chemical structure (*e.g.,* compounds having olefinic type of unsaturation) to 40 pounds per day, but allowed up to 3000 pounds per day emissions for many other organic compounds which were not defined by the rule as photochemically reactive. In other words, Rule 66 sought to regulate certain VOCs more than others, based on the assumption that some VOCs participate more in ozone formation. Rule 66 was very influential at the time and versions of it were adopted by several other States. However, the VOC control approach taken by Rule 66 has been superseded by EPA's definition of VOC (57 FR 3941, February 3, 1992), which was based on the 1977 EPA policy statement and which only exempted a smaller number of negligibly reactive compounds.

Like EPA's 1977 policy, Rule 66 was really a ''two bin'' system which tightly controlled certain compounds, which were defined as more photochemically reactive, and applied a much lesser level of control to a large class of compounds, which were regarded as less reactive. The main difference between Rule 66 and the later EPA VOC definition approach was the criteria for classifying compounds as exempt (or subject to lesser control), with the EPA definition allowing a much smaller group of compounds to be considered non-reactive or exempt.

In 1991 California adopted regulations intended to differentiate between species of VOC based upon a reactivity scale, instead of a two bin system. The 1991 rules were the Low-Emission Vehicles and Clean Fuels regulations that CARB intended to reduce VOC emissions by mass from motor vehicles generally, but which also took into account VOC reactivity differences in organic gas when comparing the emissions from alternatively fueled vehicles (AFVs).[13] [14] Although not a full-blown attempt to regulate VOCs by their relative reactivity, CARB nonetheless began the exploration of the MIR scale as a mechanism to distinguish between VOCs and encourage reduction of more reactive VOCs.

Today's proposal addresses CARB's most recent effort to utilize the concept of VOC relative reactivity and the MIR scale to regulate VOC emissions. This rule reflects a major shift from the traditional mass-based control strategies for reduction of VOC emissions and introduces this concept in a far more significant way than in CARB's previous actions. In connection with the SIP submittal for this aerosol coatings rule, CARB has provided additional supporting information in the form of journal articles and reports which describe VOC reactivity research efforts.

3. What Research Has Been Conducted in Reactivity?

Much of the work on reactivity scales that CARB used as a basis for its aerosol coatings rule was done at the University of California at Riverside by William P. L. Carter. Carter investigated 18 different ozone reactivity scales.[15] All of these scales are based on chamber studies intended to evaluate the impact of a given VOC on ozone formation under certain assumed conditions. The three most prominent scales he developed were:

i. Maximum Incremental Reactivity (MIR) scale—an ozone yield scale derived by adjusting the NO_X emissions in a base case to yield the highest incremental reactivity of the base reactive organic gas mixture.[16]

ii. Maximum Ozone Incremental Reactivity (MOIR) scale—an ozone yield scale derived by adjusting the NO_X emission in a base case to yield the highest peak ozone concentration.

iii. Equal Benefit Incremental Reactivity (EBIR) scale—an ozone yield scale derived by adjusting the NO_X emissions in a base case scenario so VOC and NO_X reductions are equally effective in reducing ozone.

In addition to Carter's work, there have been other attempts to create reactivity scales. One such effort is the work of R. G. Derwent and M. E. Jenkins, who have published articles on a scale called the photochemical ozone creation potential (POCP) scale.[17] This scale was derived for the conditions prevalent in Europe. The POCP scale is roughly consistent with those of Carter although, as expected, there are some differences because the POCP scale is based on European conditions.

The CARB has relied most heavily on Carter's research for its regulatory development and CARB has used the MIR scale for development of the aerosol coating regulation.[18] The MIR scale is designed using certain assumptions about meteorological and environmental conditions where ozone production is most sensitive to changes in hydrocarbon emissions and, therefore, is intended to represent conditions where VOC emission controls will be most effective. The MIR scale is expressed as grams of ozone formed per gram of organic compound reacted. Each compound is assigned an individual MIR value, which enables the reactivities of different compounds to be compared quantitatively. Individual MIR values now exist for many commonly used compounds, and a list of these individual values comprises a scale.

To evaluate reactivity scales and ensure that VOC reactivity is used appropriately in its proposals, CARB created the Reactivity Scientific Advisory Committee (RSAC), a group of leading researchers in the field of atmospheric science. This group reviews CARB's reactivity related work

[12] The South Coast Air Quality Management District (SCAQMD), the successor agency to LACAPCD, renamed this Rule 442.

[13] California Air Resources Board ''Proposed Regulations for Low-Emission Vehicles and Clean Fuels-Staff report and Technical Support Document,'' State of California, Air Resources Board, Sacramento, CA, August 13, 1990.

[14] California Air Resources Board ''Proposed Regulations for Low-Emission Vehicles and Clean Fuels-Final Statement of Reasons,'' State of California, Air Resources Board, July, 1991.

[15] Carter, William P. L., ''Development of Ozone Reactivity Scales for Volatile Organic Compounds,'' J. Air & Waste Manage. Assoc., 44: 881–899, (1994).

[16] The CARB's reactivity regulation defines the term Reactive Organic Compound (ROC) as any compound that has the potential, once emitted to contribute to ozone formation in the troposphere. ROCs include compounds which are excluded from EPA's definition of VOCs as found in 40 CFR 51.100(s).

[17] See, for example, R. G. Derwent and M.E. Jenkin, ''Hydrocarbons and the Long-Range Transport of Ozone and PAN Across Europe,'' Atmospheric Environment, 25A, No. 8, 1661–1678, (1991).

[18] California Air Resources Board, ''Initial Statement of Reasons for the Proposed Amendments to the Regulation for Reducing Volatile Organic Compound Emissions from Aerosol Coating Products,'' Chapter II, page 12, May 5, 2000.

and convenes periodically in meetings which are open to the public to comment on CARB's work.

The EPA has been closely following the scientific literature on reactivity scales, and is interested in how such reactivity scales might be applied to national programs or programs in other States. Because reactivity depends on the characteristics of the environment as well as the compound, scales are developed to represent a particular set of environmental conditions in certain geographic locations. It is not clear whether a single scale can represent actual ozone formation over the whole country where meteorological and environmental conditions vary considerably. Many scales, including the MIR scale are derived for ozone formed during one day of reaction time. The EPA is interested in whether such scales adequately represent the ozone formation from VOCs during multi-day stagnation events or long-range transport of pollutants, in such places as those seen in the Northeast section of the country, which may take place over several days.

To help answer such questions, EPA and CARB are participating in the RRWG, which sponsored three atmospheric photochemical modeling studies to examine how changing the reactivity of the mix of VOC emissions might affect ozone formation across wide geographical areas over time. The three areas that researchers studied were the Houston area, North Carolina, and the eastern half of the United States. The EPA anticipates that these three studies and follow-up efforts will help to answer many questions about the potential use of relative reactivity in developing, implementing, and enforcing VOC regulatory programs.

C. Why Is Use of the Relative Reactivity Concept Appropriate in California's Aerosol Coatings Rule?

There are five classes of nonattainment for the 1-hour ozone standard, ranging from marginal to extreme. The Los Angeles—South Coast Air Basin Area and the San Joaquin Valley—San Joaquin Valley Air Basin in California are currently the only areas in the nation in the worst category of extreme nonattainment (40 CFR 81.305 and 69 FR 20550). Under the 8-hour standard, there are no areas classified under the ''extreme'' ozone non-attainment category. South Coast is classified as severe non-attainment and San Joaquin is classified as serious non-attainment under the 8-hour standard. Because of the elevated ozone levels in Los Angeles, the San Joaquin Valley and elsewhere in California, CARB has adopted many innovative rules and regulations to help reduce ozone precursor emissions. These efforts include adopting regulations which go beyond current federally-mandated VOC reduction requirements, such as regulating a wider variety of area and mobile sources and establishing aggressive emission standards that force development of new low-emission technologies.

As one such effort, CARB already adopted a statewide regulation in 1995 limiting the VOC mass content of 35 categories of aerosol coatings. This regulation contained two tiers of VOC limits and a provision to extend the compliance deadline for up to 5 years for each aerosol coating category if it was determined that the limits were not feasible. On November 19, 1998, CARB amended the regulation to relax the limits for 12 coating categories after determining that the original limits were not feasible even with the 5-year extension. CARB made limits for 11 other categories more stringent. The CARB also extended the compliance date to January 1, 2002, for all 35 product categories covered by the aerosol coating rule to provide time for manufacturers to comply with the new limits.

In the current SIP submittal, CARB has determined that even with the extended compliance date, some of the VOC content limits remain technologically challenging. In order to preserve the air quality benefits of its 1998 rule, while at the same time allowing manufacturers greater flexibility in reformulating their products, CARB is replacing its pre-existing mass-based VOC limits for aerosol spray coatings with reactivity-based limits that are designed to achieve equivalent air quality benefits. The CARB's explicit goal was to develop reactivity-based limits that would ensure that the ozone reduction commitment from its second tier mass-based VOC limits would not be compromised.[19] For the reasons set forth below, EPA believes that CARB's amended aerosol spray coating regulation achieves this goal.

1. Equivalency of Air Quality Benefits

i. Sufficient information about the source category. In order to determine equivalent ozone reductions and set appropriate limits, CARB collected detailed product speciation information and sales data from manufacturers. For the aerosol coatings category, CARB found that over 80 percent of the species of VOCs typically used as ingredients were well-studied and an additional 17 percent of the species typically used would need only minor adjustment for uncertainty in their MIR values. In other words, CARB concluded that the reactivity values of over 95 percent of the VOCs generally used in the specific category of aerosol coatings were fairly well-studied and understood.[20] The accuracy and completeness of the VOC inventory, and the availability of scientifically reviewed and published reactivity values for those VOCs used in aerosol coatings may not be available for other consumer product categories. The CARB's reactivity regulation defines the term ''reactive organic compound'', or ''ROCs,'' as any compound that has the potential, once emitted, to contribute to ozone formation in the troposphere. The ROCs include compounds which EPA has excluded from the regulatory definition of VOCs found in 40 CFR 51.100(s). To minimize confusion to the reader, we will continue to use the term ''VOC'' in the remainder of this proposal, instead of ''ROC.'' When the term ''VOC'' is used in the context of CARB's reactivity-based aerosol coatings rule, the reader should remember that this refers to all VOCs, including those compounds that are excluded from EPA's regulatory definition of VOC. The accurate identification and measurement of individual VOC compounds and development of accurate MIR values is crucial to the effectiveness of a reactivity program.[21]

ii. Sufficient information about the reactivity scale and its applicability to California. In conjunction with this SIP submittal, CARB provided a listing of approximately 50 research articles to help support its conclusion that this aerosol coatings regulation based upon VOC relative reactivity is appropriate for conditions in California and that the MIR scale chosen by CARB is the most appropriate scale for this regulation.

As stated earlier, CARB relies on the work of Carter in the development of the scale for the aerosol coatings rule. Carter investigated 18 different ozone reactivity scales and concluded ''[t]hat the MIR scale (or a scale similar to it,

[19] California Air Resources Board, ''Initial Statement of Reasons for the Proposed Amendments to the Regulation for Reducing Volatile Organic Compound Emissions from Aerosol Coating Products,'' Executive Summary, page 2, May 5, 2000.

[20] California Air Resources Board, ''Initial Statement of Reasons for the Proposed Amendments to the Regulation for Reducing Volatile Organic Compound Emissions from Aerosol Coating Products,'' Chapter IV, page 36, May 5, 2000.

[21] B.J. Finlayson-Pitts, J.N. Pitts Jr, ''Atmospheric Chemistry of Tropospheric Ozone Formation: Scientific and Regulatory Implications,'' J. Air Waste Manage. Assoc. 43:1091–1100, (1993).

such as one based on integrated ozone over the standard) is appropriate for regulatory applications where a reactivity scale is required.'' [22] He determined that, while different reactivity scales might give different reactivity orderings of VOCs, for most VOC species the general rankings among the different scales were very similar. He also found that even relatively large variations in the base ROG mixture [23] had, in most cases, only a small effect on relative reactivity. For example, a two-fold increase in the amount of aromatics in the base mixture of VOCs in the chamber study resulted in less than a 20 percent change in the relative MIR reactivity. From this it could be inferred that significant changes in the ambient mixture of VOCs in the atmosphere would not significantly change the relative MIR value.

The various studies conducted to date show good agreement in reactivity values for most VOC species between normalized reactivity scales generated by airshed models and Carter's box-modeled calculations. For example, Bergin *et al.*,[24] summarized a number of papers comparing reactivity scales predicted by airshed models to those predicted by Carter using a box-model. Most of the papers are based on simulations conducted with the Carnegie Mellon/California Institute of Technology model (CIT) for Los Angeles using the ozone episode of August 27–29, 1987. Bergin reports that airshed model-derived spatially weighted results behave similarly to MIRs.[25] The report further states that the greatest differences were found for formaldehyde and other compounds whose reactivities were highly dependent on photolytic reactions, and in general, airshed model results for Los Angeles agree well with MIRs, and further show that individual organics have very different ozone formation impacts.

While Bergin's reactivity assessment indicates a general support for the concept of relative reactivity, she also points out that gaps exist in the current knowledge base of the scientific community and points to areas where further investigation is needed. For example, Bergin acknowledges that although airshed model results for Los Angeles agree well with MIRs, such a study has not been conducted for other regions. Also, Bergin suggested that additional work is needed to examine the effects of aromatics under several different conditions, and that Eastern transport conditions should also be examined in a multi-day scenario. The RRWG is currently reviewing studies which examine the reactivities in the eastern half of the United States which will help to answer some of these questions.

Similarly, recent work by Martien and Harley found that ''[f]or most species studied'' * * * ''[r]eactivity scales developed by 3-D modeling resulted in similar rankings of individual VOC when compared to reactivity scales developed by Carter using a box model.'' [26] They also point out that ''[S]ite-to-site differences (in reactivity values) can be large when absolute reactivity scales are considered. The variation in reactivity across sites is reduced when reactivity is measured on a relative rather than absolute scale. Differences in relative reactivity may still occur as a function of location, with differences likely to be magnified where absolute reactivities are low.''

One study submitted by CARB to EPA attempts to address the issue of whether the MIR scale adequately represents VOC reactivity in transport scenarios. Kaduwela and his associates [27] assessed for the first time whether box-model based scales are applicable to regional-scale domains, which include transport of pollutants through urban and rural areas. They did this by conducting grid-based photochemical simulations in a regional domain in central California for five compounds and found a linear correlation between box-model based scales and regional grid-based scales. These studies indicate a correlation between box-model scales used in Carter's work and the more detailed scales. Therefore, CARB concludes that the box-model's lack of physical detail and shorter episode time does not limit the suitability of the MIR values with respect to concerns about transport within California.

During an October 1999 RSAC meeting, a member of the public asked the RSAC whether the scenarios used to calculate MIRs are realistic. The RSAC committee ''[r]esponded that the relative reactivity doesn't change between scenarios and that, in a study which examined an exposure metric calculated by a 3-D model, the relative reactivities correlated well with MIRs.'' [28] At the same meeting, a member of the public also asked the RSAC if MIR conditions were appropriate for California. The committee's response was that whether MIR conditions were appropriate for California was a policy decision. The CARB's SIP submittal states [29] that ''[w]hile the MIR scale has been extensively tested as appropriate for use in California, we caution that our research has focused on California atmospheric conditions only. As such, the suitability of using the MIR scale for regulatory purposes in other parts of the United States has not been demonstrated, and may not be appropriate.''

iii. Approach to Uncertainty. Although the MIR values are calculated with what a peer reviewed report [30] describes as a ''state-of-the-science'' chemical mechanism, the reactivity values of some VOCs are still uncertain,[31] while those of other VOCs have been more thoroughly studied and will not likely change with further research. To account for this uncertainty, CARB has applied Carter's uncertainty ranking which defines 6 categories or ''bins'' to describe the ''certainty'' of the chemical mechanism used to determine the MIR values. The uncertainty scale is subjective, but it is described as Carter's best judgment of the certainty scientists currently have of an organic compound's chemical

[22] W.P.L. Carter, ''Development of Ozone Reactivity Scales for Volatile Organic Compounds,'' J. Air Waste Manage. Assoc. 44:881–899, (1994).

[23] From Carter's article on ''Development of Ozone Reactivity Scales for Volatile Organic Compounds,'' the term ''base ROG mixture'' means the mixture of Reactive Organic Gases (ROGs) initially present or emitted in the Empirical Kinetic Modeling Approach (EKMA) scenarios except for biogenic VOCs, VOCs present aloft, or VOCs added for the purpose of calculating their incremental reactivities.

[24] M. Bergin, W.P.L. Carter, J. Milford, P.J. Ostrowski, A.G. Russell, Reactivity Assessments, Reactivity Research Working Group (May 5, 1999). (*ftp://ftp.cgenv.com/pub/downloads/RRWGdoc/assess-2.pdf*).

[25] M. Bergin, W.P.L. Carter, J. Milford, P.J. Ostrowski, A.G. Russell, Reactivity Assessments, Reactivity Research Working Group, Page 12, (May 5, 1999). (*ftp://ftp.cgenv.com/pub/downloads/RRWGdoc/assess-2.pdf*).

[26] P. Martien, R.Harley, ''Development of Reactivity Scales via 3-D Grid Modeling of California Ozone Episodes,'' Final report prepared for California Air Resources Board, May 2002.

[27] A. Kaduwela, V. Hughes, L. Woodlouse, P. Allen, J. DaMassa, A. Ranzieri, ''Photochemical Reactivity of Organic Compounds in Central California: A Grid-Based Modeling Study,'' Presented at Stanford University, CA July 26–28, 1999.

[28] Minutes of the Reactivity Scientific Advisory Committee, October 8, 1999, *http://www.arb.ca.gov/research/reactivity/rsac/oct99-min.html*.

[29] State Implementation Plan (SIP) Submittal letter from Michael Kenny (CARB) to Wayne Nastri (US EPA, Region IX), March 13, 2002.

[30] W.R. Stockwell, ''Review of the Updated Maximum Incremental Reactivity Scale of Dr. William Carter,'' Prepared for the California Air Resources Board, Page 151, November 29, 1999—A copy can be found in section 4N of CARB's SIP submittal for this rule.

[31] California Air Resources Board, ''Initial Statement of Reasons for the Proposed Amendments to the Regulation for Reducing Volatile Organic Compound Emissions from Aerosol Coating Products,'' Chapter II, Page 13, May 5, 2000.

reaction mechanism and its effect on that compound's estimated MIR value [32]. If the MIR value of a compound is relatively certain or if there are some uncertainties but the MIR value is not expected to change significantly, the compound is assigned to bin one. If the current mechanism is probably incorrect and biases in atmospheric reactivity predictions are uncertain, the compound is assigned to bin six. When calculating an equivalent ozone reduction, CARB identifies which of the 6 bins a compound is in, and then multiplies the compound's MIR value with a factor of between 1 and 2 to compensate for the uncertainty of that MIR value. The uncertainty factors associated with each bin were developed by CARB with input from Carter. The CARB applies an uncertainty factor of 1.0 to compounds classified within uncertainty bins one and two; a factor of 1.25 to compounds in bin three; a factor of 1.5 to compounds in bin four; and a factor of 2.0 for compounds in bins five and six. For certain hydrocarbon solvents defined under the regulation, CARB uses an uncertainty factor of 1.15. The CARB also developed a methodology for those compounds used in aerosol coatings that did not have published MIR values. The methodology, which was reviewed by the RSAC, provides an estimate for the presumed upper limit MIR value. No adjustment factor is applied to the upper limit MIRs as the method infers the highest reactivity of the chemical.[33]

Other researcher [34] [35] [36] looking into the aspects of uncertainties in chemical reaction rate parameters, used in the model to calculate MIRs, believe that the uncertainties in the chemical rate parameters have directionally similar effects on the reactivities of most compounds. That is, if compound ''a'' had a higher reactivity value than compound ''b,'' then after taking into account the uncertainties in their chemical rate parameters, compound ''a'' would generally still have a higher reactivity value than compound ''b.'' These researchers conclude that the significance of these uncertainties could be minimized by using reactivities in a relative sense, as CARB has done in this rule.

iv. Do Federal VOC exemptions apply to CARB's program?

Because CARB's regulation attempts to account for the actual contribution to ozone formation by each organic compound, it does not exempt any reactive compounds, including those that EPA has exempted from the definition of VOC pursuant to 40 CFR 51.100(s). In order to get a more accurate calculation of a product's impact on ozone formation, CARB uses the assigned reactivity value of each compound, however high or low its MIR value. Therefore, compounds such as acetone, which are excluded from EPA's definition of VOCs in 40 CFR 51.100(s), are counted towards the compliance limit under CARB's reactivity-based regulation.

v. No backsliding. In developing the proposed reactivity limits, one of CARB's goals was to ensure that the ozone reduction commitment from the existing mass-based VOC limits for aerosol spray coatings would not be compromised. In certain situations, however, a reactivity-based regulation could result in increased ozone concentrations over a traditional VOC mass-based regulation. For instance, because the MIR scale is based on a 1-day simulation, during a multi-day episode, a manufacturer could substitute the proper amount or too much of a lower reacting compound for a higher reacting one and thereby increase ozone formation over longer periods of time.

While we believe there are circumstances under which ozone formation could potentially increase because of use of reactivity-based VOC limits, we also recognize that the same unintended consequences can occur with current mass-based VOC rules. The CARB reported [37] that one company intended to comply with stricter CARB VOC mass-based limits by using less total VOC, but also by increasing the amount of much more reactive VOCs to compensate for solvency needs in the product. The CARB also reported that another large company indicated that its compliance strategy with more stringent VOC mass limits would be to increase the aromatic content (increasing reactivity) in its products. In these instances, CARB points out that the increased reactivity of the VOC emissions likely reduces the benefits of the lower mass of VOC emissions. There is no evidence to suggest, however, that regulated entities will always choose to use smaller amounts of higher reactivity compounds in place of lower reactivity compounds when a product's mass-based VOC limit is reduced. In any event, it is impossible to predict whether the use of smaller amounts of more reactive VOCs will result in more ozone without knowing how the identity and proportions of the other VOC ingredients in the product will change. While we acknowledge that there is the potential for this unintended consequence of mass-based controls, we generally believe that achieving significant mass reductions of VOCs is directionally correct in most situations. As noted above, however, EPA believes that reactivity-based approaches such as the one developed by CARB may be a promising alternative to mass-based approaches in some cases where additional VOC controls are necessary.

Revisions to the SIP should contribute to progress towards reaching attainment with the NAAQS and not relax emission standards or retreat from emission reduction goals already achieved. Towards these goals, CARB has assured EPA that there will be no backsliding as a result of the use of the relative reactivity approach. With assistance from CARB, EPA intends to monitor the effectiveness of the aerosol coatings rule to ensure that the rule obtains the intended and required reductions in ambient ozone levels.

2. Evaluation and Revision

The development, maintenance, evaluation, and revision of a reactivity-based VOC regulation requires significant resources and technical expertise. The CARB's commitment to the reactivity concept is evidenced by funding, between 1989 to the present, over $4,000,000 worth of research on reactivity related projects including modeling, chemical mechanism development, atmospheric chemistry and VOC speciation.

Similarly, we believe that additional resources and technical expertise are needed to implement and enforce a reactivity-based regulation than for a traditional mass-based regulation. For example, under a mass-based VOC regulation, analysis of a coating to

[32] W.R. Stockwell, ''Review of the Updated Maximum Incremental Reactivity Scale of Dr. William Carter,'' Prepared for the California Air Resources Board, Page 122, November 29, 1999—A copy can be found in section 4N of CARB's SIP submittal for this rule.

[33] California Air Resources Board, ''Initial Statement of Reasons for the Proposed Amendments to the Regulation for Reducing Volatile Organic Compound Emissions from Aerosol Coating Products,'' Chapter IV, pages 32–37, May 5, 2000.

[34] Y. Yang, W.R. Stockwell, J.B. Milford, ''Uncertainties in Incremental Reactivities of Volatile Organic Compounds,'' Environ. Sci. Technol., 29, 1336–1345, (1995).

[35] M.S. Bergin, A.G. Russell, J.B. Milford, ''Effects of Chemical Mechanism Uncertainties on the Reactivity Quantification of Volatile Organic Compounds Using a Three-Dimensional Air Quality Model,'' Environ. Sci. Technol., 32, 694–703, (1998).

[36] N.L. Kelly, T.Y. Chang, ''An experimental Investigation of Incremental Reactivities of Volatile Organic Compounds,'' Atmospheric Environment, 33, 2101–2110, (1999).

[37] California Air Resources Board letter from Michael Kenny to Deborah Jordan, U.S. EPA, Region IX, dated July 24, 2000.

determine compliance largely requires simply determining the weight difference of a sample before and after heating it in an oven [38]. This testing is relatively easy and inexpensive, thereby facilitating enforcement by the regulating authority or others.

In contrast, determining compliance of the same product with a reactivity-based regulation is more complex and consequently more expensive. Here, the laboratory needs to identify and quantify each individual VOC present in the sample, possibly with multiple gas chromatography with mass spectrometry (GC/MS) runs. In order to determine compliance, the regulatory agency then must multiply the concentration of each compound in the aerosol coating by its MIR value and then sum the results to determine the product's total MIR value. In some cases, the MIR values for isomers of compounds are different, such as for ortho, meta and para xylenes (MIR = 7.49, 10.61, and 4.25 respectively). Speciation of isomers increases the complexity of the analysis. In addition, the identification of hydrocarbon solvents by boiling point range and aromatic content will add an additional step to the analysis. The CARB laboratory staff routinely uses GC/MS techniques to analyze products for a relatively small number of compounds excluded from EPA's regulatory definition of VOC which may be in consumer products, so CARB has some experience with these analytical techniques. Further, CARB is ''[f]ully prepared to vigorously enforce this regulation'' and their ''[e]nforcement inspectors and laboratory staff have expertise and resources to collect and test aerosol coating products to verify compliance with the regulation.'' [39]

Because any complex regulation can potentially multiply the opportunities for non-compliance, whether intentional or inadvertent, EPA believes that an intensive program to monitor and enforce compliance is a critical element to any VOC reactivity-based regulation.

D. Are California's Relative Reactivity-Based Regulations Appropriate for Areas Outside of California?

1. The CARB's technical support for this program in California does not necessarily demonstrate that VOC reactivity-based programs would be appropriate or effective in other areas or for other regulatory programs. The CARB's SIP submittal cautions that its research has focused only on California atmospheric conditions and that the suitability of the MIR scale for regulatory purposes in other areas has not been demonstrated. The CARB further states [40] that VOC relative ''[r]eactivity needs to be examined for the rest of the country.'' and that they ''[s]upport these investigations and plan to continue CARB's participation in the RRWG.''

EPA is aware that only recently has there been published, coordinated scientific research to attempt to address questions concerning the use of VOC reactivity-based regulations in other locations. For example, a recent NARSTO report describes limitations to ozone control using a VOC reactivity-based approach. The NARSTO report suggested that the approach might only be effective when the ambient conditions are ''[V]OC limited and where natural hydrocarbon emissions are not dominant.'' [41] In addition, the NARSTO report states that ''[t]he reactivity of specific VOCs can change from locale to locale, and thus the specifics of the approach must be regionally tailored.'' As noted earlier, the RRWG has sponsored a series of recent studies exploring these issues.

One of the concerns with the representativeness of MIR values is that they are based on a model which simulates reactions over a single day and may not account for slower reacting compounds which might continue to form ozone over several days. These slower reactions could result in more ozone formation than is predicted by the MIR scale in areas experiencing multi-day stagnation events or increased ozone formation in downwind areas due to pollutant transport.

The MIR scale is basically a reduced-form model, or a model of a model, which attempts to characterize in a single number the relative contribution of individual compounds to the formation and accumulation of ozone in a complex atmospheric system. Thus, a particular chemical mechanism and set of assumed environmental conditions are implicit in the MIR scale. The purpose of comparing the MIR scale to reactivities calculated using an airshed model is to evaluate whether the MIR scale, as a reduced-form model, adequately represents the behavior of the more complex airshed model, which takes into account spatially and temporally varying meteorology and emissions. If comparisons show a disagreement between the MIR values and the airshed derived values, that may suggest that it may not be appropriate to try to capture the behavior of the system in the single scale. If comparisons do show an agreement, this would suggest that the MIR scale can reproduce the behavior of the complex system, at least for the set of conditions considered.

Several researchers have performed such comparisons, including Bergin, Derwent and Stockwell. Bergin *et al.*,[42] calculated reactivity values using a more detailed three-dimensional photochemical model and compared their results against the values calculated by the simpler model used to develop CARB's reactivity program for their alternative fuels program. Bergin found that results were well correlated between Carter's simpler model and their more detailed model. However, these researchers also found that toluene, ethylbenzene, two xylene species, and some aldehydes had lower reactivity values predicted by the more detailed model as compared to the simpler model. Bergin concluded that differences in the predicted reactivity values were possibly due to multi-day simulation periods and the inclusion of cloud cover by the more detailed model.

Derwent [43] also reports that single-day or multi-day conditions appear to be important in establishing quantitative reactivity scales for the less reactive organic compounds. Stockwell,[44] who completed the peer review of Carter's reactivity mechanism, states that single-day scenarios are used to calculate incremental reactivities by definition, but even relatively unreactive organic compounds may have a non-negligible effect on ozone concentrations if multiple-day scenarios are considered. When he calculated incremental reactivities for multiple-days for polluted European conditions, he found that ethane's MIR value increased over 6 times from a MIR value of 0.19 on the first day to 1.17 on the 6th day. He also found that Dimethyoxymethane's MIR

[38] *See* 40 CFR 60, appendix A Reference Method 24.

[39] State Implementation Plan submittal letter from Michael Kenny (CARB) to Wayne Nastri (U.S. EPA, Region IX), March 13, 2002.

[40] State Implementation Plan Submittal letter from Michael Kenny (CARB) to Wayne Nastri (US EPA Region IX), March 13, 2002.

[41] The NARSTO, An Assessment of Tropospheric Ozone Pollution—A North American Perspective, page 3–19, July 2000.

[42] M.S. Bergin, A.G. Russell, J.B. Milford, ''Quantification of Individual VOC Reactivities Using a Chemically Detailed, Three-Dimensional Photochemical Model,'' Environ. Sci. Technol., 29, 3029–3037, (1995).

[43] R.G. Derwent, M.E. Jenkin, S.M. Saunders, M.J. Pilling, ''Characterization of the Reactivities of Volatile Organic Compounds Using a Master Chemical Mechanism,'' J. Air and Waste Manage. Assoc., 51, 699–707, (2001).

[44] W.R. Stockwell, H. Geiger, K.H. Becker, ''Estimation of Incremental Reactivities for Multiple Day Scenarios: An Application to Ethane and Dimethyoxymethane,'' Atmospheric Environment, 35, 929–939, (2001).

value increased as the length of the simulation period increased.

While we are uncertain whether results based on European conditions might generally apply to conditions found in California or the United States, these studies raise two questions. First, is the increase in MIR values during a multi-day stagnation event mainly a concern for slower reacting compounds or a more widespread issue, and second, should any changes be made to MIR scale values to account for the apparent increases in reactivity values in multi-day stagnation scenarios. Additional research may be needed in this area to understand more fully the impacts of multi-day scenarios on relative reactivity values and the prevalence of transport and multi-day stagnation conditions on a regional scale within California's ozone nonattainment areas and ozone nonattainment areas in other parts of the country. While we have some concerns about the greater level of effort required to develop, implement, and enforce reactivity-based programs, we believe that California has the resources and technical expertise needed to develop and maintain a complex program such as this one.

E. How Will the Effectiveness of This Reactivity-Based Program Be Evaluated?

1. We plan to evaluate the effectiveness of the aerosol coatings rule in 3 years. Areas we may review include changes in the composition and quantity of VOC emissions, which would require establishing a baseline of current emissions.

2. We are also interested in evaluating changes in ambient air quality that result from the use of the relative reactivity approach in this rule. We recognize that currently available computer models have limitations in their ability to evaluate the actual ambient effects of reducing emissions of specific VOC species from a particular product category. Also, while it is possible to show an air quality benefit of substituting individual VOCs with lower reactivity for more reactive ones using a three-dimensional photochemical model, it is not clear that current photochemical modeling systems are adequate to predict the impacts of the wide variety of simultaneous substitutions that may occur under an MIR-weighted regulatory program. The EPA, with CARB's assistance, plans to investigate possible modeling enhancements to evaluate the effects of the aerosol coatings rule, and hopes to identify modeling ''experiments'' to further test the MIR's predictive performance.

While a VOC reactivity-based regulation may result in a more efficient regulation in terms of more flexible reformulation options for manufacturers and an additional control strategy to reduce tropospheric ozone, we are also interested in how costs under a reactivity-based regulation might change for monitoring and recordkeeping. Under a reactivity-based program, emission inventory efforts may increase for industry periodically to provide fully speciated product information and for regulatory agencies to input this information into emission inventory data bases. We are interested in the public's comment on how the industry's and regulatory agency's costs and staff requirements might change with respect to emission inventories.

3. As stated earlier, CARB intends to keep up to date on VOC reactivity research through a review of the MIR values every 18 months and a review of the reactivity limits before January 1, 2007.

F. How Has CARB Addressed Concerns About Air Toxics and Ozone-Depleting Substances?

The CARB's aerosol coatings regulation prohibits the use of three toxic air contaminants: Methylene chloride, perchloroethylene and trichloroethylene. While the regulation does not ban the use of other compounds listed as ''hazardous air pollutants'' that are commonly used in aerosol coatings such as xylene and toluene, CARB believes that emissions of these other toxic compounds are likely to be reduced through the overall emission limits imposed on the individual product categories. Regulated entities will have an incentive to use less of compounds like toluene and xylene because of their higher reactivity, and this will outweigh the interest in choosing VOCs based solely upon their cost.

The CARB's regulation also prohibits the sale, supply, application, or manufacture for use in California, of any aerosol coating product which contains a stratospheric ozone-depleting substance. Existing product formulations which contain an ozone-depleting substance that complies with the reactivity limits and was sold in California during 1997 or product formulations containing an ozone-depleting substance that was sold in California during 1997 that is reformulated to meet the reactivity limits, as long as the content of the ozone-depleting substances in the reformulated product does not increase, are exempted from this provision.

G. What Changes in Enforcement Strategies Will Likely Occur Due to This Relative Reactivity-Based Regulation?

1. How will testing for compliance change under CARB's aerosol coatings regulation? As discussed earlier, under a traditional mass-based regulation, analysis of a coating to determine compliance is performed using EPA Reference Method 24.[45] This method involves heating the sample in an oven and determining the weight difference of the sample before and after heating. Additional analysis is needed to account for the propellant and, if present in the sample, compounds which are excluded from EPA's definition of VOCs. Under a mass-based rule, the laboratory does not need to know which individual hydrocarbons are present in order to perform Method 24, other than to identify if a limited number of excluded compounds are present in the coating. Manufacturers are generally willing to reveal the proportions of exempt substances because that helps to demonstrate compliance with the mass-based VOC limits.

Determining compliance under a reactivity-based regulation is more complex, but still within the capabilities of CARB's laboratory. Specifically, the regulator must perform expensive and complex GC/MS analysis to identify and quantify each VOC present in the product in order to calculate the product weighted MIR. To facilitate this compliance determination, CARB's aerosol coatings rule allows CARB to request manufacturers to provide a listing of the VOCs and their concentrations in each product so the laboratory knows which VOCs to analyze for and their target concentrations. While laboratories could perform the analysis without such a listing, it would be substantially more difficult, time-consuming, and expensive. This increased difficulty in assuring compliance is among the reasons that EPA is concerned that CARB allocate sufficient resources to monitor and enforce the reactivity-based limits.

2. How does a reactivity regulation affect the availability of emissions data? In the past, determining compliance with emission limits under a mass-based VOC rule such as CARB's aerosol coatings rule did not raise concerns about confidential business information (CBI) because one could determine compliance with the product's VOC limit without ever having to know all of the individual VOC ingredients present

[45] See 40 CFR 60, appendix A, Reference Method 24.

in the product. However, under a reactivity-based rule, one would need to know the specific VOCs in a product and their proportions (*i.e.,* the product formulation) in order to determine compliance with its reactivity-based VOC limit. Because this information is an integral part of determining compliance with the product's reactivity-based limit, the list of VOCs would be considered ''emissions data,'' which must generally be available to the public.[46] However, industry may view the release of such detailed VOC information to the general public or to their business competitors as a major concern because of the potential for release of trade secrets and propriety CBI.

To help resolve these competing issues, we note that aerosol coatings are composed of a VOC portion and a portion made up of various non-reactive compounds such as resins and solids which, based on CARB's aerosol coatings regulation, do not contribute to ozone formation and are assigned an MIR value of zero. Consistent with section 114(c) of the CAA, and our regulations concerning the release of emissions data at 40 CFR § 2.301, we believe the public's right to emissions data is satisfied by assuring access to the portion of the data which comprises the VOCs alone. Information on the non-reactive compounds, *i.e.,* those that do not contribute to ozone formation, would not need to be released, thereby preserving potential trade secrets.

The CARB and the aerosol coatings industry held discussions and reached an agreement that CARB VOC testing results and company-supplied formulation data required to be submitted by Section 94526 of CARB's aerosol coatings regulation would be made available to the public, upon request, to allow others to verify compliance with the reactivity-based aerosol coating regulation. It was further agreed that non-reactive compounds in each product formulation would be ''lumped'' or aggregated to protect confidentiality.[47]

Both CARB and EPA will retain their authority to access all ingredient information, including non-VOC ingredients or information otherwise claimed to be CBI, in order to determine compliance with the regulation.

The availability to the public of VOC ingredient information constituting emissions data only applies to information gathered to confirm compliance with CARB's aerosol coatings rule. Confidential information such as survey data submitted by companies under Section 94524 of CARB's aerosol coatings regulation to CARB and EPA in support of any future rule development efforts, will continue to be handled in accordance with applicable CBI regulations.

We believe that this compromise between the competing objectives of disclosure of emissions data and protection of CBI provides a basis for approving CARB's innovative reactivity-based regulation into the SIP. We also believe that the compromise is consistent with the purpose of CAA § 114(c) and EPA's regulations defining emissions data.

IV. Summary of CARB's Aerosol Coatings Regulation

A. What Does CARB's Regulation Require?

The CARB has previously controlled VOC emissions from aerosol coatings in California by limiting the mass of VOCs in the product, with limits expressed as maximum allowable percent by mass of VOC. CARB's new approach relies on the fact that individual VOCs may form different amounts of ozone, or form ozone more quickly, once they are emitted into the air. The CARB is implementing a regulation that would limit ozone formation by taking into account the relative reactivity of different VOC ingredients.

The CARB's aerosol coatings regulation contains sections on applicability, definitions, limits and requirements, exemptions, administrative requirements, variances, test methods, Federal enforceability and references tables of MIR values for different compounds including hydrocarbon solvents.

1. What Does CARB's Aerosol Coatings Regulation Cover?

This section contains a very brief summary of key portions of CARB's regulation. The reader should refer to the actual regulation [48] for additional details.

The regulation applies to aerosol coatings, aerosol clear coatings and aerosol stains. It applies to any person who sells, supplies, offers for sale, applies or manufactures for use in California any aerosol coating subject to the limits in the regulation. The regulation prohibits the commercial application of non-complying aerosol coating products.

The regulation does not apply to aerosol lubricants, mold releases, automotive underbody coatings, electrical coatings, cleaners, belt dressings, anti-static sprays, layout fluids and removers, adhesives, maskants, rust converters, dyes, inks, and leather preservatives or cleaners. The regulation also does not apply to aerosol coating products manufactured in California for shipment and use outside of California.

Aerosol coating products manufactured beginning June 1, 2002, for general coating categories as defined in the regulation and January 1, 2003, for specialty coatings need to comply with the reactivity-based VOC limits specified in the regulation. Aerosol products manufactured before the effective dates must comply with the existing mass-based VOC limits. However, products labeled with the applicable reactivity-based VOC limit, must meet that limit. The regulation contains a sell-through provision whereby products manufactured prior to the effective date can be sold, supplied, offered for sale, or applied up to 3 years after the effective date.

The regulation prohibits the use of the toxic air contaminates methylene chloride, trichloroethylene, and perchloroethylene. It also prohibits the use of stratospheric ozone-depleting substances in aerosol coating products except in limited situations allowed by the regulation.

The regulation contains labeling and reporting requirements, and provisions for a regulated entity to request a variance from the VOC reactivity limits if the entity cannot comply due to extraordinary reasons beyond reasonable control. The test method section specifies that CARB Method 310 is to be used to determine compliance with the regulation. Alternative test methods may be used which are shown to identify and quantify accurately each ingredient, after approval in writing by the CARB Executive Officer. However, as stated in the aerosol coatings regulation,[49] for purposes of Federal enforceability, EPA is not bound by approval determinations made by the CARB Executive Officer for variances or test methods. While EPA believes CARB would not approve major test method modifications that might compromise the integrity of a test result, or grant a variance request that would adversely

[46] Emissions data is defined in 40 CFR 2.301(a)(2)(i).

[47] The CARB letter from Michael Kenny to Jack Broadbent, U.S. EPA, Region IX, dated May 16, 2002.

[48] *http://www.arb.ca.gov/consprod/regs/aeropnt.pdf http://www.arb.ca.gov/consprod/regs/Aeropnt.doc* or California Code of Regulations, Title 17, Division 3, Chapter 1, Subchapter 8.5, Article 3.

[49] California Code of Regulations, Title 17, Division 3, Chapter 1, Subchapter 8.5, Article 3, § 94528.

impact an approved attainment demonstration, EPA can pursue separate action to ensure that test results are enforceable, accurate, and reproducible, and that a variance does not adversely impact attainment.

Variances and major modifications to test methods must be submitted to EPA and must be approved into the SIP before they can be Federally enforceable. For the purposes of Federal enforceability, facilities operating under a variance or modified test method approved by the CARB Executive Officer must continue to comply with the original regulation until the variance or major test method modification is also approved by EPA into the SIP. The EPA does not normally approve Executive Officer discretion in regulations submitted for SIP approval as this would allow potentially significant modifications to a regulation or test method without subsequent review and approval by EPA.

We are proposing to approve this Executive Officer provision in this rule because this is a new and innovative program and, as such, may require a temporary variance or an unanticipated modification to the test method in the short term, and the regulation states that EPA is not bound by the decisions of the Executive Officer. The EPA intends to monitor CARB's implementation of these rule provisions and we will review test method modifications and variance requests on a case-by-base basis.

V. Future Actions

A. What Action Will Be Taken To Determine if This Reactivity-Based Regulation Is Effective?

The EPA will continue to work with CARB to evaluate how VOC emissions from this source category change in response to the regulation and how these emission changes will affect ambient air quality. We will also continue to work with CARB to evaluate the appropriateness of MIR values for VOC reactivity ranking under the environmental conditions of interest in California. The EPA's proposed approval of CARB's aerosol coatings regulation is predicated, in part, on CARB's commitment to ensuring that the regulation in fact achieves the intended environmental goals. The CARB's SIP submittal letter[50] states that CARB officials ''[i]ntend to follow the implementation of this regulation closely to ensure the air quality benefits predicted are fully achieved. If they are not, CARB is obligated to identify and secure additional regulatory measures to meet our SIP commitments.'' ''[M]oreover, if in fact the aerosol coating regulation is not as effective as predicted, we are fully prepared to reevaluate the source category to determine how best to achieve the most stringent limits that are technologically and commercially feasible.''

B. How Will Future Uses of Relative Reactivity Be Evaluated?

The CARB views the aerosol coatings rule as a means to determine the feasibility of additional reactivity-based measures for other source categories.[51] The EPA is working as a participant in the RRWG to explore whether reactivity-based approaches are appropriate and useful for other source categories and in other parts of the country. Members of the RRWG have a variety of research projects underway to provide needed information about the utility and effectiveness of relative reactivity-based VOC controls. The EPA is committed to the process begun under the RRWG of assuring that future applications of the relative reactivity approaches are based on a sound scientific foundation and are practical, enforceable, and effective.

VI. Statutory and Executive Order Reviews

A. Executive Order 12866: Regulatory Planning and Review

Under Executive Order 12866, (58 FR 51735, October 4, 1993) the Agency must determine whether the regulatory action is ''significant'' and therefore subject to the Office of Management and Budget (OMB) review and the requirements of the Executive Order. The Order defines ''significant regulatory action'' as one that is likely to result in a rule that may:

(1) Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;

(2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

(3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or

(4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

For the change in definition of VOCs, EPA has determined that this proposed rule is not a ''significant regulatory action'' under the terms of Executive Order 12866 and is therefore not subject to OMB review. For the proposed approval of CARB's rule into the SIP, OMB has exempted this regulatory action from Executive Order 12866 review.

B. Paperwork Reduction Act

For the change in the definition of VOCs, this proposed rule does not contain any information collection requirements subject to OMB review under the Paperwork Reduction Act, 44 U.S.C. 3501 *et seq.*

For the proposed approval of CARB's regulation into the SIP, this proposed action does not contain any information collection requirements that would require any person to provide information to EPA, however CARB's regulation contains requirements for the aerosol coating industry to provide information to CARB.

C. Regulatory Flexibility Act (RFA)

The RFA generally requires an agency to prepare a regulatory flexibility analysis of any rule subject to notice and comment rulemaking requirements under the Administrative Procedure Act or any other statute unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. Small entities include small businesses, small organizations, and small governmental jurisdictions.

After considering the economic impacts of today's proposed rule on small entities, I certify that this action will not have a significant economic impact on a substantial number of small entities.

This proposed rule will not impose any requirements on small entities. Today's change to the definition of VOC does not directly regulate any entities. The RFA analysis does not consider impacts on entities which the action in question does not regulate. *See Motor & Equipment Manufacturers Ass'n* v. *Nichols,* 142 F. 3d 449, 467 (D.C. Cir. 1998); *United Distribution Cos.* v. *FERC,* 88 F. 3d 1105, 1170 (D.C. Cir. 1996), cert. denied, 520 U.S. 1224 (1997).

For the proposed approval of CARB's regulation into the SIP, this proposed rule will not have a significant impact on a substantial number of small entities because SIP approvals under section 110 and subchapter I, part D of the CAA

[50] SIP submittal letter from Michael Kenny (CARB) to Wayne Nastri (U.S. EPA, Region IX), March 13, 2002.

[51] California Air Resources Board, ''Initial Statement of Reasons for the Proposed Amendments to the Regulation for Reducing Volatile Organic Compound Emissions from Aerosol Coating Products,'' Chapter II, page 18, May 5, 2000.

do not create any new requirements but simply act on requirements that the State is already imposing. Therefore, because the Federal SIP approval does not create any new requirements, I certify that this action will not have a significant economic impact on a substantial number of small entities.

Moreover, due to the nature of the Federal-State relationship under the CAA, preparation of flexibility analysis would constitute Federal inquiry into the economic reasonableness of State action. The CAA forbids EPA to base its actions concerning SIPs on such grounds. *Union Electric Co.* v. *U.S. EPA,* 427 U.S. 246, 255–66 (1976); 42 U.S.C. 7410(a)(2).

D. Unfunded Mandates Reform Act

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), Public Law 104–4, establishes requirements for Federal agencies to assess the effects of their regulatory actions on State, local, and tribal governments and the private sector. Under section 202 of UMRA, EPA generally must prepare a written statement, including a cost-benefit analysis, for proposed and final rules with ''Federal mandates'' that may result in expenditures by State, local, and tribal governments, in the aggregate, or the private sector, of $100 million or more in any 1 year. Before promulgating an EPA rule for which a written statement is needed, section 205 of UMRA generally requires EPA to identify and consider a reasonable number of regulatory alternatives and adopt the least costly, most cost-effective or least burdensome alternative that achieves the objectives of the rule. The provisions of section 205 do not apply when they are inconsistent with applicable law. Moreover, section 205 allows EPA to adopt an alternative other than the least costly, most cost-effective or least burdensome alternative if the Administrator publishes with the final rule an explanation why that alternative was not adopted. Before EPA establishes any regulatory requirements that may significantly or uniquely affect small governments, including tribal governments, it must have developed under section 203 of UMRA a small government agency plan. The plan must provide for notifying potentially affected small governments, enabling officials of affected small governments to have meaningful and timely input in the development of EPA regulatory proposals with significant Federal intergovernmental mandates, and informing, educating, and advising small governments on compliance with the regulatory requirements.

For the proposed change in the definition of VOCs, today's rulemaking contains no Federal mandates (under the regulatory provisions of title II of the UMRA) for State, local, or tribal governments or the private sector.

For the proposed approval of CARB's regulation into the SIP, EPA has determined that the proposed approval action does not include a Federal mandate that may result in estimated costs of $100 million or more to either State, local, or tribal governments in the aggregate, or to the private sector. This Federal action proposes to approve pre-existing requirements under State or local law, and imposes no new requirements. Accordingly, no additional costs to State, local, or tribal governments, or to the private sector, result from this action.

Thus, today's rule is not subject to the requirements of sections 202 and 205 of UMRA.

In addition, EPA has determined that this rule contains no regulatory requirements that might significantly or uniquely affect small governments in accordance with section 203 of UMRA.

E. Executive Order 13132: Federalism

Executive Order 13132, entitled ''Federalism'' (64 FR 43255, August 10, 1999), requires EPA to develop an accountable process to ensure ''meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications.'' ''Policies that have federalism implications'' is defined in the Executive Order to include regulations that have ''substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.''

This proposed rule does not have federalism implications. It will not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132. Today's proposed rule does not impose any new mandates on State or local governments. The change to the definition of VOCs merely assists CARB in implementing its aerosol coatings reactivity regulation. The proposed approval of this regulation into the SIP acts on a State regulation implementing a Federal standard, and does not alter the relationship or the distribution of power and responsibilities established in the CAA. Thus, Executive Order 13132 does not apply to this rule.

In the spirit of Executive Order 13132, and consistent with EPA policy to promote communications between EPA and State and local governments, EPA specifically solicits comment on this proposed rule from State and local officials.

F. Executive Order 13175: Consultation and Coordination With Indian Tribal Governments

Executive Order 13175, entitled ''Consultation and Coordination with Indian Tribal Governments'' (65 FR 67249, November 9, 2000), requires EPA to develop an accountable process to ensure ''meaningful and timely input by tribal officials in the development of regulatory policies that have tribal implications.'' This proposed rule does not have tribal implications, as specified in Executive Order 13175. The proposed change to the definition of VOCs merely assists CARB in implementing its aerosol coatings reactivity regulation and does not impose any direct compliance costs. The proposed approval of CARB's regulation into the SIP acts on a State regulation and does not alter the relationship between the Federal government and Indian Tribes, as specified in Executive Order 13175. Thus, Executive Order 13175 does not apply to this rule. The EPA specifically solicits additional comment on this proposed rule from tribal officials.

G. Executive Order 13045: Protection of Children From Environmental Health and Safety Risks

Executive Order 13045: ''Protection of Children from Environmental Health and Safety Risks'' (62 FR 19885, April 23, 1997) applies to any rule that: (1) Is determined to be ''economically significant'' as defined under Executive Order 12866, and (2) concerns an environmental health or safety risk that EPA has reason to believe may have a disproportionate effect on children. If the regulatory action meets both criteria, the Agency must evaluate the environmental health or safety effects of the planned rule on children, and explain why the planned regulation is preferable to other potentially effective and reasonably feasible alternatives considered by the Agency.

While this proposed rule is not subject to the Executive Order because it is not economically significant as defined in Executive Order 12866, we have reason to believe that ozone has a disproportionate effect on active children who play outdoors. (See 62 FR 38856 and 38859 July 18, 1997). However, we do not expect today's proposed approval of CARB's regulation into the SIP to result in an adverse

impact, as it is intended to be an ozone neutral action. The CARB has indicated that they have designed their new reactivity-based limits to achieve the same ozone reductions as the mass-based limits they supplant. Also, we do not expect today's proposed change to the definition of VOC to result in any adverse impact, because it increases the number of compounds subject to regulation as VOCs for the purpose of California's aerosol coatings reactivity-based regulation.

H. Executive Order 13211: Actions That Significantly Affect Energy Supply, Distribution, or Use

This rule is not subject to Executive Order 13211, ''Actions That Significantly Affect Energy Supply, Distribution, or Use'' (66 FR 28355, May 22, 2001) because it is not a significant regulatory action under Executive Order 12866.

I. National Technology Transfer Advancement Act

Section 12(d) of the National Technology Transfer Advancement Act of 1995 (''NTTAA''), Public Law No. 104–113, § 12(d) (15 U.S.C. 272 note) directs EPA to use voluntary consensus standards in its regulatory activities unless to do so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (*e.g.*, materials specifications, test methods, sampling procedures, and business practices) that are developed or adopted by voluntary consensus standards bodies. The NTTAA directs EPA to provide Congress, through OMB, explanations when the Agency decides not to use available and applicable voluntary consensus standards.

For the change in definition of VOCs, this proposed rulemaking does not involve technical standards. Therefore, EPA is not considering the use of any voluntary consensus standards. For the proposed approval of CARB's regulation into the SIP, the State regulation references standard test methods and makes modifications to American Society for Testing and Materials (ASTM) D3074–94, D3063–94 and D2879–97 to support the regulatory objectives.

The EPA welcomes comments on this aspect of the proposed rulemaking and, specifically, invites the public to identify potentially-applicable voluntary consensus standards and to explain why such standards should be used in this regulation.

List of Subjects

40 CFR Part 51

Environmental protection, Administrative practice and procedure, Air pollution control, Carbon monoxide, Intergovernmental relations, Lead, Nitrogen dioxide, Ozone, Particulate matter, Reporting and recordkeeping requirements, Sulfur oxides, Volatile organic compound.

40 CFR Part 52

Environmental protection, Air pollution control, Intergovernmental relations, Ozone, Reporting and recordkeeping requirements, Volatile organic compound.

Authority: 42 U.S.C. 7401 *et seq.*

Dated: December 29, 2004.

Michael O. Leavitt,

Administrator.

PART 51—REQUIREMENTS FOR PREPARATION, ADOPTION, AND SUBMITTAL OF IMPLEMENTATION PLANS.

1. The authority citation for part 51 continues to read as follows:

Authority: 42 U.S.C. 7401, 7411, 7412, 7413, 7414, 7470–7479, 7501–7508, 7601, and 7602.

2. Section 51.100 is proposed to be amended by adding paragraph (s)(6) as follows:

§ 51.100 Definitions.

* * * * *

(s) * * *

(6) For the purposes of determining compliance with California's aerosol coatings reactivity-based regulation, (as described in the California Code of Regulations, Title 17, Division 3, Chapter 1, Subchapter 8.5, Article 3), any organic compound in the volatile portion of an aerosol coating is counted towards that product's reactivity-based limit. Therefore, the compounds identified in this section [*i.e.*, §51.100 (s)] as negligibly reactive and excluded from EPA's definition of VOCs are to be counted towards a product's reactivity limit for the purposes of determining compliance with California's aerosol coatings reactivity-based regulation.

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[FR Doc. 05–346 Filed 1–6–05; 8:45 am]

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