

# I.

## Introduction

### A. Overview

This Initial Statement of Reasons (ISOR), describes the Air Resources Board (ARB) staff's proposal and justification for amending the Aerosol Coatings Regulation contained in sections 94520-94528 of Title 17 in the California Code of Regulations (CCR). In these amendments ARB staff is proposing a new way to regulate volatile organic compound (VOC) emissions from aerosol coatings. Using the science of VOC photochemical reactivity (reactivity), ARB staff is proposing amendments that would replace the January 1, 2002, VOC limits with reactivity-based limits that achieve an equivalent air quality result. To implement the reactivity-based amendments we are also proposing a new Subchapter 8.6 that would include maximum incremental reactivity (MIR) values, and are proposing amendments to ARB Method 310, "Determination of Volatile Organic Compounds in Consumer Products."

At present the Aerosol Coatings Regulation contains limits that specify the maximum amount, on a percent-by-weight basis, of VOCs that can be contained in an aerosol coating product. These mass-based VOC standards do not take into consideration the differences in a VOC's potential to form ozone once emitted. However, not all VOCs react in the atmosphere to form equivalent amounts of ozone. Some VOCs make very little ozone while others are likely to form an order of magnitude more. "Reactivity" is the concept that allows us to consider these differences in each VOC's potential to form ozone. Based on this science, staff is proposing amendments that, rather than limiting the total amount of VOCs, would limit the total amount of ozone that could be formed from the VOCs contained in aerosol coatings. The MIR values in the newly proposed Subchapter would be used to assign reactivity values to VOCs. The proposed amendments to Method 310 are necessary to aid in enforcing the reactivity portions of the Aerosol Coatings Regulation. Our proposal and information on the science and use of photochemical reactivity is explained in Chapters II and IV of this Technical Support Document.

### B. Legislative History

ARB authority to regulate aerosol coatings and other consumer products is contained in Health and Safety Code section 41712. Section 41712 was originally enacted by the Legislature as part of the California Clean Air Act of 1988. In enacting section 41712, the Legislature gave

the ARB new authority to control emissions from consumer products, an area that had previously been subject to very few air pollution control regulations.

Section 41712 has been amended a number of times since it was originally enacted in 1988. The current language of section 41712 requires the ARB to adopt regulations to achieve the maximum feasible reduction in VOCs emitted by consumer products. In addition, all consumer products regulations adopted by the ARB must be: (1) based on adequate data; (2) technologically and commercially feasible; (3) necessary to attain state and federal ambient air quality standards; and (4) not result in the elimination of a product form.

As originally enacted, section 41712 gave ARB the authority to regulate VOC emissions from “consumer products.” But the term “consumer products” was defined to specifically exclude “paint.” Because aerosol coatings are considered to be “paint,” the ARB initially did not have any authority to regulate aerosol coatings. The authority to regulate aerosol coatings was vested in the local air pollution control and air quality management districts.

All this changed in 1992 and 1993. In 1992, the Legislature enacted Assembly Bill 2783 (AB 2783, Sher; Stats. 1992, Chapter 945). AB 2783 gave ARB the authority to regulate aerosol paints. It did this by amending the definition of “consumer products” in section 41712 to include “aerosol paints” as a consumer product to be regulated by the ARB.

In 1993, the Legislature further amended Health and Safety Code section 41712 by enacting AB 1890 (AB 1890, Sher; Stats. 1993, Chapter 1028). Among other things, the AB 1890 amendments required ARB to achieve a 60 percent emission reduction from the use of aerosol paints by December 31, 1999. However, ARB was required to conduct a public hearing on or before December 31, 1998, on the technological or commercial feasibility of achieving full compliance with the final limits by December 31, 1999. The law also allowed ARB to grant an extension of time not to exceed five years if it was determined that the 60 percent reduction was not technologically or commercially feasible by December 31, 1999.

The AB 1890 amendments also clarified the intent of the Legislature with respect to the regulation of aerosol paints by requiring, with one exception, that limits on the emissions of reactive organic compounds from aerosol paints be set solely by the state board to ensure uniform standards are applicable on a statewide basis. The only exception to this requirement is any regulation that has been adopted by a district pursuant to an order of a federal court. The only district regulation that meets this criterion is the Rule 49 of the Bay Area Air Quality Management District, which was adopted in June 1990 in response to a federal court order.

Senate Bill 987 (SB 987, Sher; Stats. 1997, Chapter 568) is the most recent amendment to section 41712 affecting aerosol paints. Senate Bill 987 specifies that acetone be included among the VOCs in the 1989 baseline year measurement used for the calculation of the 60 percent emission reductions from the use of aerosol coating products. This amendment was necessary because in 1989 acetone was still considered a regulated VOC. Since that time acetone qualified for an exemption from consideration as a VOC due to its comparatively low (compared to ethane) photochemical reactivity.

To fulfill the requirements of state law, on November 19, 1998, the ARB conducted a public hearing on the feasibility of achieving the required 60 percent reduction in emissions from aerosol coatings. Staff determined, and the Board concurred, that the limits that would achieve the 60 percent reduction were neither technologically nor commercially feasible (ARB, 1998a). Because of this, at the hearing the Board adopted revised VOC limits to ensure that consumer-acceptable products would continue to be available in the marketplace. The Board also extended the compliance deadline to January 1, 2002, to achieve the newly adopted VOC limits. However, at the hearing, the Board also recognized that some of the limits would be technically challenging and directed staff to return to them with a voluntary regulatory compliance option based on reactivity.

## **C. Background**

### **1. Consumer Product Regulations Adopted to Date**

To date, the ARB has taken several actions to fulfill the legislative mandate set forth in Health and Safety Code section 41712. Three regulations have been adopted that limit the VOC content of 47 consumer product categories and 35 categories of aerosol paints. In addition, two voluntary regulations have been adopted to provide compliance flexibility to companies.

On November 8, 1989, the ARB adopted a regulation for reducing VOC emissions from antiperspirants and deodorants (the “antiperspirant and deodorant regulation;” sections 94500-94506.5, Title 17, CCR) (ARB, 1989a; 1989b).

The ARB then adopted a more comprehensive regulation for reducing VOC emissions from 46 additional categories of consumer products, which was adopted by the ARB in four phases (the “consumer products regulation;” sections 94507-95417, Title 17, CCR) (ARB, 1990; 1990a; 1990b; 1991; 1991a; 1991b; 1997b, 1999a). Phase I was adopted on October 11, 1990, Phase II was adopted on January 9, 1992, and Phase III was approved on July 24, 1997. The Phase III amendments, referred to as the Mid-term Measures, became legally effective on August 16, 1998. To complete our Mid-term Measures commitment additional amendments were approved by the Board at its October 28, 1999, hearing. These regulations reduce VOC emissions primarily through specification of maximum allowable VOC content limits (by weight percent) for individual product categories (ARB, 1999a).

On September 22, 1994, the ARB adopted the first voluntary regulation, the “Alternative Control Plan Regulation for Consumer Products” (the “ACP”) (ARB, 1994; 1994a). The ACP is a market-based regulation that employs the concept of an aggregate emissions cap or “bubble” This program supplements existing regulations by providing consumer products and aerosol coatings manufacturers additional flexibility when formulating consumer products. This regulation is contained in Title 17, CCR sections 94540-94555.

The ARB adopted a third regulation on March 23, 1995, the “Regulation to Reduce Volatile Organic Compound Emissions from Aerosol Coating Products and Amendments to the Alternative Control Plan for Consumer Products” (ARB, 1995; 1995a). This regulation limits the VOC content of 35 categories of aerosol coatings. At the same time, the ACP was amended to make it possible for aerosol coatings to average their emissions to provide a compliance option. The aerosol coatings regulation is contained in Title 17, CCR, sections 94520-94528.

On November 13, 1997, the ARB approved the second voluntary regulation, the Hairspray Credit Program (ARB, 1997c), which allows hairspray manufacturers and marketers to generate emission reduction credits if they comply early with the second-tier VOC standard for hairspray. The Hairspray Credit Program regulation became legally effective on August 24, 1998, and is contained in Title 17, CCR, sections 94560-94574.

On November 19, 1998, the Board adopted amendments to the aerosol coatings regulation, the consumer products regulation, and the antiperspirant and deodorant regulation (ARB, 1998a). The amendments modified the December 31, 1999, VOC limits in the aerosol coatings regulation, and the effective dates for these VOC limits. Minor changes were also made to the definitions and administrative requirements in the aerosol coatings regulation. Finally, methyl acetate was added to the list of compounds exempt from the VOC definitions in these three regulations. The amendments became legally effective on June 24, 1999.

As mentioned above, on October 28, 1999, the Board approved the Midterm Measures II amendments that affected 17 consumer product categories. These included two new categories and 15 previously regulated categories for which more stringent limits were approved. Also some product categories were expanded to include some additional types of products. These amendments were proposed to partially fulfill a lawsuit settlement for failure to implement specific measures contained in the 1994 State Implementation Plan for Ozone (ARB 1994b).

## 2. The State Implementation Plan

On November 15, 1994, the ARB adopted the State Implementation Plan (SIP) for ozone (ARB, 1994b). The SIP serves as California’s overall long-term plan for attainment of the federal ambient air quality standard for ozone. Together with significant reductions from stationary industrial facilities, mobile sources (e.g. cars, trains, boats), and other area sources (e.g. architectural and industrial maintenance coatings), the emission reduction commitments in the consumer products element of the SIP are an essential part of California’s effort to attain both the National and State ambient air quality standards for ozone. The VOC reductions from consumer products are also needed to help several local air pollution control districts meet rate-of-progress requirements in the federal Clean Air Act (CAA).

Our current commitment in the SIP is to reduce consumer product emissions by 85 percent by the year 2010 (including the adopted regulations). This reduction is necessary for the South Coast Air Basin, among others, to attain the federal ozone standard and meet the rate-of-progress requirements under the CAA. To meet the emission reductions committed to in the SIP, we developed a multi-faceted program comprised of “near-term,” “mid-term,” and “long-term” control measures. The aerosol coating limits adopted on November 19, 1998, are an important component of the near-term measures goal to reduce VOC emissions from consumer products by 30 percent.

Listed below is a breakdown of how our SIP commitment for an 85 percent reduction in emissions from consumer products will be achieved:

- 30 percent from near-term measures;
- 25 percent from mid-term measures;
- 30 percent from long-term measures.

Additionally, in the SIP, we committed to consider photochemical reactivity principles for the control of VOCs from consumer products. As part of the Consumer Products Working Group, on April 11, 1995, we also formed the “Reactivity Subgroup” to help in the investigation and development of reactivity-based consumer product regulations. Since its inception, the Reactivity Subgroup has met nine times to discuss concepts and principles for reactivity-based control strategies.

It is important to mention here that ARB has begun to evaluate the current 85 percent emission reduction commitment for consumer products. This evaluation is part of the ARB’s plan to revise and update the SIP in early 2001. From these evaluations we have determined that additional reductions from consumer products are achievable, but at a lower level of effectiveness than called for in the current SIP. However, we plan to continue to aggressively pursue every feasible emission reduction from consumer products, including aerosol coatings. These emission reduction measures may include additional reactivity-based control strategies.

### 3. Comparable Federal Regulations

The U.S. EPA Administrator signed the final approval for the enactment of the National Volatile Organic Compound Emissions Standards for Consumer Products on August 14, 1998. The U.S. EPA published the final rule in the September 11, 1998 Federal Register, Volume 63, No. 176, pages 48819-48847 (U.S. EPA, 1998). The standard effective date for all the categories in the U.S. EPA rule was December 10, 1998.

The U.S. EPA’s rule is similar to that of the ARB’s consumer product regulations, although some differences do exist. Of particular importance for this rulemaking is that there is no current U.S. EPA proposal to reduce VOC emissions from aerosol coating products. There also are no federal reactivity-based regulations for consumer products or aerosol coatings. We do note that according to current schedule, the U.S. EPA is scheduled promulgate a regulation to reduce aerosol coating emissions in 2001.

#### 4. Use of Photochemical Reactivity as a VOC Control Strategy

As mentioned at the beginning of this Chapter, the photochemical reactivity of a VOC is a measure of its potential to form ozone once it is emitted into the atmosphere. By using reactivity-based scales, such as the MIR scale, we can compare the reactivity of one VOC to the reactivity of another, and use these differences to develop control approaches that target reductions from VOCs that have higher ozone formation potentials. In this report, staff is proposing to regulate aerosol coating products by limiting the reactivity of the emissions, rather than the total mass of emissions. Specifically, we are proposing to replace the VOC standards adopted by the Board on November 19, 1998, with reactivity limits that will achieve an equivalent air quality benefit.

#### **REFERENCES**

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