V.

Process for Development of the Proposed Amendments to the Aerosol Coating Products Regulation, Proposed Tables of Maximum Incremental Reactivity (MIR) Values, and Proposed Amendments to Air Resources Board Method 310

A. Introduction

We began the process of investigating using photochemical reactivity as an ozone control approach five years ago. This effort began with the formation of the Reactivity Subgroup within the Consumer Products Working Group (CPWG) on April 11, 1995. Since that time the subgroup has met nine times to discuss the science and use of reactivity concepts for consumer products and aerosol coatings. Staff has conducted eight public workshops on regulatory proposals. In addition to these formal meetings staff has held several individual meetings, and teleconferences with the aerosol coating industry, and discussed the regulatory concepts twice with the air districts. Staff also presented reactivity regulatory concepts for aerosol coatings at the United States Environmental Protection Agency (U.S. EPA) sponsored Photochemical Reactivity Workshop held in Durham, North Carolina, on May 12-14, 1998. We also received valuable input from the Reactivity Scientific Advisory Committee and presented concepts for developing a reactivity-based control strategy to them. Another group, the Reactivity Research Advisory Committee was also formed to provide valuable input on important compounds to study further to obtain reliable reactivity estimates. In the fall of 1999, we also formed the Aerosol Coatings Working Group. This group has been useful for rapid exchange of information and ideas. Appendix H contains copies of the meeting notices.

B. Role of the Reactivity Subgroup

In the February 14, 1995, State Implementation Plan for Ozone (SIP) we committed to investigate the feasibility of incorporating a reactivity control strategy into the existing consumer products program. Our efforts began with formation of a reactivity subgroup at the CPWG meeting on April 11, 1995. The group consists of representatives from the consumer products industry, U.S. EPA, Air Resources Board (ARB) and local air districts.

At the initial meetings of the Reactivity Subgroup we established the goals of the group, and focused on education. To improve our understanding, technical forums were provided by leading researchers Dr. William P.L. Carter of the University California at Riverside, Dr. Armistead Russell of the Georgia Institute of Technology, and Dr. Jana Milford of the University of Colorado at Boulder. At the October 29, 1996, meeting draft concepts were presented for regulatory control strategies. Working with the subgroup we also conducted a reactivity pilot project. Four manufacturers participated and the results were discussed with the subgroup. Based on the results we determined that reactivity-based strategies have the potential to achieve significant reductions in ozone while providing compliance flexibility. We intend to continue meeting with the Reactivity Subgroup to explore additional reactivity based control strategies. The meetings of the Reactivity Subgroup are detailed in Table V-1.

TABLE V-1
CHRONOLOGY OF REACTIVITY SUBGROUP MEETINGS

Date	Meeting/Workshop	Location
April 11-12, 1995	1st Consumer Products Working Group (CPWG) Meeting - Formation of Reactivity Subgroup	Sacramento, CA
July 11, 1995	1st Reactivity Subgroup Meeting	Sacramento, CA
October 17, 1995	2nd Reactivity Subgroup Meeting	Sacramento, CA
January 18, 1996	3rd Reactivity Subgroup Meeting	Sacramento, CA
June 19, 1996	4th Reactivity Subgroup Meeting	Sacramento, CA
October 29, 1996	5th Reactivity Subgroup Meeting	Sacramento, CA
February 4, 1997	6th Reactivity Subgroup Meeting	Sacramento, CA
May 20, 1997	7th Reactivity Subgroup Meeting	Sacramento, CA
January 15, 1998	8th Reactivity Subgroup Meeting	Sacramento, CA
February 11, 1998	9th Reactivity Subgroup Meeting	Sacramento, CA

C. Reactivity Research Advisory Committee (RRAC)

In March 1996, the ARB established a scientific group, the Reactivity Research Advisory Committee (RRAC). This committee is comprised of consumer product manufacturers, raw material suppliers, and other interested stakeholders. The purpose of the RRAC has been to identify important volatile organic compounds (VOCs) used in consumer products that warrant further reactivity characterization. The goal has been to ensure that reactivity regulations developed for consumer products are based on sound VOC reactivity data. This group has met seven times and has provided valuable input on commercially important VOCs to study further to

reliably assess their reactivity. Based on their suggestion, additional research was funded by ARB and completed. Meetings of the RRAC are not shown in these tables.

D. Reactivity Scientific Advisory Committee (RSAC)

In March 1996, the ARB established a scientific advisory group, the Reactivity Scientific Advisory Committee (RSAC). The committee is made up of independent, respected scientists who make recommendations to the ARB on the science related to hydrocarbon reactivity. At the first meeting, the RSAC approved the use of the maximum incremental reactivity (MIR) scale, developed by Dr. Carter, as appropriate for use in developing reactivity-based control strategies for California. At the February 24, 1997, meeting ARB staff presented regulatory concepts based on the MIR scale. The RSAC supported the use of reactivity concepts in regulatory control strategies.

On August 26, 1998, we presented a draft voluntary reactivity regulation to the RSAC for their concurrence. While they supported the regulatory concept they suggested that the basis for the MIR scale undergo peer review prior to use in the proposed regulation. We agreed and contracted with Dr. William Stockwell to conduct the review. We presented the final report on the review of the mechanism from which the MIR scale is derived to the RSAC on October 8, 1999. They overwhelmingly approved of the review and Dr. Carter's documentation supporting the MIR scale. The RSAC meeting dates are summarized in Table V-2. We plan to hold another RSAC meeting on this proposal before mid-June 2000.

TABLE V-2
CHRONOLOGY OF RSAC MEETINGS

February 3, 1997	1st Meeting Reactivity Scientific Advisory Committee (RSAC)	Pasadena, CA
February 24, 1998	2nd Meeting RSAC	Sacramento, CA
August 26, 1998	3rd Meeting RSAC- Teleconference	Riverside, CA
October 8, 1999	4 th Meeting RSAC	Riverside, CA

E. Public Workshops, Aerosol Coatings Workgroups and Other Meetings

Staff also conducted eight public workshops on reactivity-related proposals. The first workshop on November 19, 1997, focused on general regulatory concepts.

During the second workshop in May of 1998, we discussed a voluntary reactivity regulation for aerosol coatings. We continued to develop this compliance option and held additional five workshops as we refined the voluntary regulation, with the last workshop on the voluntary proposal held on January 26, 2000.

In February 2000, during development of the voluntary reactivity regulation proposal, staff and several representatives of the aerosol coating industry came to the conclusion that it was preferable to pursue replacing the VOC content limits with mandatory reactivity-based VOC limits. In reaching this conclusion, the industry representatives indicated that reactivity-based VOC limits may provide more flexibility, while efficiently reducing the ozone formed from aerosol coatings. We presented the first mandatory proposal to the Aerosol Coatings Workgroup in late February 2000. As we developed this proposal we met or held telephone conferences with the Aerosol Coatings Working Group five times. We held a public workshop on the mandatory reactivity limits for aerosol coatings on April 11, 2000.

At each public workshop and Aerosol Coatings Workgroup Meeting, the MIR values were discussed.

The proposed amendments to ARB Method 310 were discussed with the Aerosol Coatings Workgroup, and were presented at the April 11, 2000, public workshop. These meetings are detailed in Table V-3 below.

TABLE V-3
CHRONOLOGY OF OTHER REACTIVITY MEETINGS

November 19, 1997	1st Reactivity Public Workshop	Sacramento, CA
February 10, 1998	1st Meeting with National Paint and Coatings Association	San Francisco, CA
March 30, 1998	1st Meeting with Air Districts	Sacramento, CA
May 5, 1998	2 nd Reactivity Public Workshop	Sacramento, CA
May 19, 1998	3rd Reactivity Public Workshop	Sacramento, CA
May 21, 1998	2nd Meeting with Air Districts	Sacramento, CA
June 23, 1998	1st Meeting with Aerosol Coatings Industry	Sacramento, CA
July 9, 1998	2nd Meeting with Aerosol Coatings Industry	Sacramento, CA
July 23, 1998	4th Reactivity Public Workshop	Sacramento, CA
August 19, 1998	5th Reactivity Public Workshop	Sacramento, CA
February 22, 1999	2nd Meeting with National Paint and Coatings Association	San Francisco, CA
March 18, 1999	6th Reactivity Public Workshop	El Monte, CA
September 27, 1999	1st Meeting with Aerosol Coatings Workgroup	Washington, D.C.
January 26, 2000	7th Reactivity Public Workshop	Sacramento, CA
February 29, 2000	2nd Meeting with Aerosol Coatings Workgroup	Sacramento, CA
March 15, 2000	3rd Meeting with Aerosol Coatings Workgroup	Sacramento, CA
April 4, 2000	4th Meeting with Aerosol Coatings Workgroup (Conference Call)	Sacramento, CA
April 6, 2000	1st Conference Call with Chemical Manufacturers Association	Sacramento, CA
April 11, 2000	5th Meeting with Aerosol Coatings Workgroup	Sacramento, CA
April 11, 2000	8th Reactivity Public Workshop	Sacramento, CA