

EXECUTIVE OFFICER HEARING

STATE OF CALIFORNIA

AIR RESOURCES BOARD

JOE SERNA, JR. BUILDING

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

SIERRA HEARING ROOM, SECOND FLOOR

1001 I STREET

SACRAMENTO, CALIFORNIA

MONDAY, NOVEMBER 3, 2009

9:00 A.M.

TIFFANY C. KRAFT, CSR, RPR  
CERTIFIED SHORTHAND REPORTER  
LICENSE NUMBER 12277



## APPEARANCES

## STAFF

Mr. Bart Croes, Acting Executive Officer

Mr. Bob Jenne, Assistant Chief Counsel

Mr. Dongmin Luo, Air Quality and Climate Science Section,  
RD

Ms. Claudia Nagy, Staff Counsel

Mr. Ralph Propper, Staff Air Pollution Specialist, Air  
Quality and Climate Science Section, Research Division

Ms. Carla Takemoto, Technical Evaluation Section,  
Stationary Source Division



1 PROCEEDINGS

2 ACTING EXECUTIVE OFFICER CROES: Good morning.  
3 Let's go ahead and get started. The November 3rd, 2009,  
4 public hearing of the Air Resources Board Executive  
5 Officer will come to order.

6 My name is Bart Croes. I'm the Chief of the  
7 Research Division. ARB's Executive Officer, James  
8 Goldstone, has delegated to me the authority to conduct  
9 this public hearing to consider the proposed amendments to  
10 the tables of maximum incremental reactivity, or MRI,  
11 values.

12 After today's hearing, I will recommend a final  
13 decision to the Executive Officer on the staff proposal  
14 based upon the testimony and the other material in the  
15 record.

16 In June 2000, the Board approved amendments to  
17 the regulations for reducing the ozone formed from aerosol  
18 coating products and proposed tables of maximum  
19 incremental reactivity values. The main component of the  
20 rulemaking was to establish reactivity limits for a 36  
21 categories based on the MIR scale. The amendments became  
22 legally effective on July 18th, 2001.

23 In Resolution 00-22, the Board approved the  
24 rulemaking action. The Board directed the Executive  
25 Officer to review the MIR values 18 months after the

1 effective date of amendments -- such as July 18th, 2001,  
2 was supposed to be the first review -- and every 18 months  
3 thereafter to determine if modifications to the MIR values  
4 are warranted. This is because the chemical information  
5 used to calculate the MIR values is evolving and improving  
6 as new information becomes available. Updates to the  
7 chemical information will ensure that our regulations are  
8 based on up-to-date atmospheric science.

9           Since the changes to the MIR values are technical  
10 in nature, the Board delegated to the Executive Officer  
11 the authority to adopt regulatory amendments to the tables  
12 of MIR values, and to conduct public hearings and take  
13 other appropriate actions to make such amendments. This  
14 delegation of authority allows the Executive Officer to  
15 conduct these activities on behalf of our Board as  
16 provided in Health and Safety Code Sections 39515 and  
17 39516.

18           Upon this delegation of authority, an Executive  
19 Officer hearing was held on December 3rd, 2003, which led  
20 to the adoption of amendments to tables of MIR values that  
21 became legally effective on June 7th, 2004. That  
22 rulemaking added about 100 new compounds with associated  
23 MIR values and updated MIR values for 14 compounds.

24           I thanked Dr. Carter from the University of  
25 California Riverside for his technical support of that



1 and their scientific basis.

2 --o0o--

3 STAFF AIR POLLUTION SPECIALIST PROPPER: VOCs can  
4 differ dramatically in the extent to which they contribute  
5 to ozone smog. Reactivity refers to the quantification of  
6 how different VOCs contribute to the formation of  
7 tropospheric ozone.

8 The MIR concept was developed about 20 years ago  
9 by Dr. Bill Carter, a research chemist at U.C. Riverside.  
10 Ratios of ozone precursors that are most sensitive to  
11 changes in VOC emissions are referred to as "maximum  
12 incremental reactivity" conditions.

13 The MIR scale has been used in several VOC  
14 control regulations, including aerosol coatings, at both  
15 the State and national levels.

16 --o0o--

17 STAFF AIR POLLUTION SPECIALIST PROPPER: Dr.  
18 Carter is an expert in atmospheric chemistry. In 2003,  
19 the Institute of Scientific Information recognized him as  
20 one of the world's most "Highly Cited Researchers." In  
21 2005, he received the Haagen-Smit Clean Air Award for air  
22 pollution research.

23 Over the years, Dr. Carter has used a smog  
24 chamber to conduct over a thousand experiments on VOCs and  
25 ozone formation. The results, along with other literature





1 Executive Officer hearing was held in December 2003 to  
2 update the MIR values. As a result, the ARB added about a  
3 hundred new compounds with their MIR values into Section  
4 94700 and updated the MIR values for 14 existing  
5 compounds.

6 Staff recommended these changes after receiving  
7 updated analyses from Dr. Carter.

8 No change was made to Section 94700 at that time,  
9 because the impact of the updated and new MIR values on  
10 the bin MIR values was not significant.

11 --o0o--

12 STAFF AIR POLLUTION SPECIALIST PROPPER: So why  
13 do we propose to amend the Tables of MIR values again?

14 Our Board requires us to review the Tables  
15 periodically to ensure continuous use of the best science  
16 in our regulations.

17 To meet this requirement, the ARB sponsored  
18 research by Dr. Carter to update the chemical mechanism  
19 for ozone formation. As I mentioned, the resulting  
20 SAPRC-07 mechanism contains significant improvements over  
21 the previous version.

22 Based on SAPRC-07, the MIR values for many VOCs  
23 have changed substantially. In addition, hundreds of new  
24 compounds now have derived MIR values.

25 Dr. Carter also developed an alternative method

1 to estimate MIR values for hydrocarbon solvent bins. This  
2 was based on new information on hydrocarbon solvent  
3 composition and the availability of MIR values for many  
4 new compounds derived from use of the SAPRC-07 mechanism.

5 --o0o--

6 STAFF AIR POLLUTION SPECIALIST PROPPER: Along  
7 with the development of the new SAPRC-07 chemical  
8 mechanism, Dr. Carter provided a list of hundreds of new  
9 compounds with their respective MIRs that are not  
10 currently contained in Section 94700.

11 According to his review of the existing compounds  
12 in regulation, their MIR values declined by an average of  
13 14 percent. He also found that for 70 percent of the  
14 compounds, MIR values changed by more than ten percent,  
15 and that for 67 compounds, the MIR values changed by more  
16 than 30 percent.

17 Although the MIR values for some of the aromatic  
18 solvent bins did not change significantly, the MIR values  
19 for some non-aromatic bins declined by as much as 40  
20 percent. Because of these significant changes, we decided  
21 to develop a proposal to amend the Tables of MIR values  
22 for both sections.

23 --o0o--

24 STAFF AIR POLLUTION SPECIALIST PROPPER: The  
25 ARB's Research Division staff worked closely with staff

1 from the Stationary Source Division during the proposal  
2 development process, which I will discuss next.

3 --o0o--

4 STAFF AIR POLLUTION SPECIALIST PROPPER: As with  
5 the scientific portion of any proposed rule, the ARB is  
6 required to conduct an external scientific peer review.  
7 To assess this mandate for reactivity, the Board created  
8 the Reactivity Scientific Advisory Committee, or RSAC, in  
9 1996. The Board appointed six distinguished scientists to  
10 the RSAC, which has been chaired by Professor John  
11 Seinfeld from Caltech.

12 --o0o--

13 STAFF AIR POLLUTION SPECIALIST PROPPER: After  
14 Dr. Carter gave us his final report for SAPRC-07 and the  
15 resulting MIR values, we arranged for peer review by four  
16 internationally-respected experts in the field. In  
17 January, they found that the SAPRC-07 mechanism represents  
18 a significant improvement in prediction of ozone levels  
19 from VOC precursors. We distributed Dr. Carter's report  
20 and the results of the peer reviews to the RSAC members.  
21 When the RSAC met in March, they concluded that the  
22 updated MIR values were arrived at in an appropriate  
23 scientific manner.

24 --o0o--

25 STAFF AIR POLLUTION SPECIALIST PROPPER: To

1 facilitate stakeholder input on the proposed amendments,  
2 we held two Reactivity Research Advisory Committee, or  
3 RRAC, meetings.

4 In 2007, Dr. Carter summarized the SAPRC-07  
5 mechanism, and we discussed amending the Tables of MIR  
6 values based on SAPRC-07.

7 Earlier this year, Dr. Carter spoke about the  
8 RSAC review of SAPRC-07 and updated MIRs and his  
9 alternative method to derive MIR values for hydrocarbon  
10 solvent bins. We added that ARB would hold a public  
11 hearing later in the year to consider amendments to the  
12 Tables of MIR values.

13 At a public workshop in August, we presented our  
14 proposal for updating the MIR values for VOCs and our plan  
15 to use Dr. Carter's method to derive MIR values for  
16 solvent bins.

17 Based on stakeholder input, several new compounds  
18 were added to the proposed Tables, and the new tabular  
19 format was improved.

20 --o0o--

21 STAFF AIR POLLUTION SPECIALIST PROPPER: Now I  
22 will describe the proposed amendments.

23 --o0o--

24 STAFF AIR POLLUTION SPECIALIST PROPPER: We  
25 propose to add 383 new compounds with their associated MIR







1           STAFF AIR POLLUTION SPECIALIST PROPPER: Now I  
2 will give our summary and recommendations.

3                               --o0o--

4           STAFF AIR POLLUTION SPECIALIST PROPPER: We  
5 recommend adoption of this proposal to amend the Tables of  
6 MIR values that are contained in Sections 94700 and 94701.  
7 We make this recommendation based on Dr. Carter's work,  
8 the peer review, the RSAC approval, and the comments from  
9 RRAC members and workshop participants.

10           We conclude that adopting this proposal will help  
11 ensure that ARB's reactivity regulations are based on  
12 sound, up-to-date science, while providing more  
13 flexibility to aerosol coating manufacturers and other  
14 potential stakeholders.

15                               --o0o--

16           STAFF AIR POLLUTION SPECIALIST PROPPER: This  
17 concludes my presentation. Please let me know if you have  
18 any questions.

19           ACTING EXECUTIVE OFFICER CROES: Thank you,  
20 Ralph.

21           Apparently, we have no witnesses signed up to  
22 talk on this item.

23           We do have a letter of support letter from  
24 Michael Bailey that will be part of the rulemaking record.

25           So I have no ex parte communications on this

1 item.

2           And we'll now close the record on this agenda  
3 item. However, the record will be reopened when the  
4 15-day notice of public availability is issued.

5           Written or oral comments received after this  
6 hearing date, but before the 15-day notice is issued, will  
7 not be accepted as part of the official record on this  
8 agenda item.

9           When the record is reopened for a 15-day comment  
10 period, the public may submit written comments on the  
11 proposed changes which will be considered and responded to  
12 in the final statement of reasons for the regulations.

13           As mentioned previously, I will consider the  
14 entire record of this proceeding and recommend a final  
15 decision on the regulations to the Executive Officer.

16           I'd like to close by thanking Ralph and Dr. Luo  
17 as well as Dr. Carter who worked so hard on this item, as  
18 well as our peer reviewers, RSAC, RRAC members, and other  
19 stakeholders who strengthened the proposal.

20           The November 3rd, 2009, public hearing is now  
21 adjourned.

22           (Thereupon the California Air Resources Board  
23 Public Hearing adjourned at 9:18 a.m.)

24

25



## 1 CERTIFICATE OF REPORTER

2 I, TIFFANY C. KRAFT, a Certified Shorthand  
3 Reporter of the State of California, and Registered  
4 Professional Reporter, do hereby certify:

5 That I am a disinterested person herein; that the  
6 foregoing hearing was reported in shorthand by me,  
7 Tiffany C. Kraft, a Certified Shorthand Reporter of the  
8 State of California, and thereafter transcribed into  
9 typewriting.

10 I further certify that I am not of counsel or  
11 attorney for any of the parties to said hearing nor in any  
12 way interested in the outcome of said hearing.

13 IN WITNESS WHEREOF, I have hereunto set my hand  
14 this 12th day of November, 2009.

15

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