BOARD MEETING DATE: August 13, 1999 AGENDA NO. 25

PROPOSAL: Report on Discussions with Industry Pertaining to Amended Rule 1113 - Architectural Coatings

SYNOPSIS: This report summarizes the activities of staff over the past 90 days pertaining to Amended Rule 1113 – Architectural Coatings. At the May 14, 1999 Board meeting, the Board directed staff to meet with members of the industry. Staff received comments pertaining to many issues already discussed during the rulemaking process, as well as some new issues. These comments and staff responses are summarized in the report. Staff also plans to continue the working group process for implementation of the averaging compliance option and the Technical Advisory Committee.

COMMITTEE: Stationary Source, July 23, 1999, Reviewed

RECOMMENDED ACTION:
1. Approve this report.
2. Approve workplan to further ensure successful implementation of amended Rule 1113.

Barry R. Wallerstein, D.Env.
Executive Officer

JPB:LTT:NB

Background

On May 14, 1999, the Board approved the amendments to Rule 1113 – Architectural Coatings, with a direction to staff to work with industry to address certain concerns raised at the public hearing, and to report back to the Board in 90 days. Since the adoption of the Rule 1113 amendments, three lawsuits were filed challenging the amendments, brought by Sherwin-Williams, the National Paint Coatings Association ("NPCA"), and the California Paint Alliance (incorporated as EL RAP).

Issues

Staff has held two public workshops with industry members since the May 14, 1999 public hearing to solicit a list of issues/concerns and implement the Board's directive. Staff further invited industry to send their issues in writing by July 30. Copies of the comment letters received are attached as Appendix A.

Many of the issues identified to staff relate to the validity of the Board's action in amending Rule 1113, are the subject of the ongoing litigation, and have already been fully addressed during the rulemaking. Staff does not believe that the Board directed a reconsideration of those issues. Other identified issues relate mainly to the future technology assessments, for which staff has developed an extensive workplan. A listing of all the issues raised in these recent discussions with industry representatives, along with summary responses, are included in Appendix B. A copy of the workplan is attached as Appendix C and is briefly described below.

Workplan

In response to concerns received, the staff will continue to implement a number of efforts summarized in the workplan in Appendix C. The workplan contains objectives, measurable outputs, memberships, and a schedule for reports to the Board. The workplan consists of continued meetings with the existing architectural coatings working group and a number of outreach and technology status evaluations until the implementation of the final limits. Appendix C contains the current working group list (i.e. Pages C-2 to C-6). Additionally, a special sub-group will be continued to assist in the implementation of the averaging compliance option and to address issues that arise related to niche market coatings. Specifically, this sub-group will provide input to staff on the development of a guidance document for the averaging compliance option. A list of this sub-group is also attached as Appendix C (Page C-8).

Lastly, the Technical Advisory Committee (TAC), which was formed during the development of the Phase II amendments, will continue to provide technical input for any future field testing . A copy of the testing protocol for the laboratory and field portion of the Phase II Assessment Study is included in Appendix D. This protocol was reviewed and approved by the TAC. The TAC will also provide input regarding the technology assessment for flat coatings. Staff will also, as a part of the amended rule, be providing technology assessments prior to implementation of the interim and final limits, as well as annual status reports pertaining to the state-of-the-technology, incorporating any information provided by the manufacturers. Staff plans to provide the first annual status report, including the first technology assessment report for flat coatings, in July 2000. A consensus reached with industry was to use the technology assessment for flat coatings as a pilot for identifying and refining the mechanism of incorporating manufacturer's input on the state-of-the-technology for future annual status reports to the Board.

Staff also plans to conduct another Architectural Coatings Technology Symposium in Spring 2000 to highlight the state-of-the-technology coatings currently available from coating manufacturers and raw material suppliers. Furthermore, the AQMD has recently contracted with AVES for $185,000 to develop and demonstrate zero- and low-VOC resin technology for clear wood finishes, water-proofing sealers, and stains, as a part of a Cost Share Project totaling $557,500. This information will assist staff in conducting future technology assessments for clear wood lacquers, as well as the implementation of Phase III amendments.

Resource Impacts

The Board has already allocated $200,000 for the technology assessments in the FY 1999-2000 Budget. Staff may request additional funding for future technology assessments, including studies for reactivity and availability assessment of VOC, as appropriate.

Attachments

Appendix A – Comment Letters
Appendix B – Issues and Responses
Appendix C – Workplan
Appendix D – NTS Study Testing Protocol

Appendix A – Comment Letters

1. Sierra Performance Coatings
2. National Paint & Coatings Association
3. Smiland & Kachigian
4. Painting & Decorating Contractors of America
5. Law Offices of Curtis L. Coleman

SIERRA PERFORMANCE COATINGS

May 12, 1999

Via Overnight Delivery

Mr. Jack Broadbent
Deputy Executive Officer
South Coast AQMD
21865 E. Copley Drive
Diamond Bar, CA 91765-4182

Re: Comments to SCAQMD Proposed Rule 1113

Dear Mr. Broadbent:

On behalf of itself, its customers and others affected by the release of solvents from paints and coatings, Sierra Performance Coatings, Inc., a California corporation that offers a full line of high performance, zero-VOC coatings, respectfully submits the following comments on the South Coast Air Quality Management District's proposed Rule 1113 for architectural and industrial maintenance coatings.

For the reasons that follow below, the South Coast Air Quality Management District's ("SCAQMD") proposed rule for industrial maintenance coatings: (i) sets VOC limits that, at 250 g/l, are too high; and (ii) makes the effective date, currently proposed for July 1, 2002, too late. However obscured by certain industry players, the basic reality of the paint and coatings industry is that the necessary raw materials to make high performance, ultra-low products are already in the market; and a number of paint companies, including Sierra Performance Coatings, are already in the market with ultra-low VOC coatings whose performance is superior to existing solvent-borne products. Accordingly, the SCAQMD should lower the VOC limits for industrial maintenance coatings to 100 g/l and should implement that standard as of January 1, 2001.

Sierra Performance Coatings, Inc.
330 Primrose Road, Suite 502 ■ Burlingame, California 94010 ■ Phone: 650-548-5188 ■ Fax: 650-548-5373

I. THE PROPOSED RULE DOES NOT EMPLOY THE BEST AVAILABLE CONTROLS.

The proposed rule fails to adopt the "best available controls" and therefore the SCAQMD, as the implementing agency, would violate its duty under the federal Clean Air Act if the proposed rule is implemented.

Section 183 (e) of the Clean Air Act requires the Environmental Protection Agency to regulate consumer and commercial products using "best available controls" ("BAC"). 42 U.S.C. § 7511b(e)(3)(A). The Clean Air Act defines BAC to require "the degree of emissions reduction the Administrator determines, on the basis of technological and economic feasibility, health, environmental, and energy impacts, is achievable through the application of the most effective equipment, measures, processes . . . including chemical re-formulation or product substitution." 42 U.S.C. § 7511b(e)(1)(A). According to the EPA, BAC is a "system of regulation that encourages product reformulation to meet VOC content limits" in light of the fact that "pollution prevention is the most effective means of achieving VOC emissions reductions." 42 U.S.C. § 7511b(e)(3)(A) (Preamble).

The SCAQMD's proposed rule does not meet this requirement for two basic reason – one methodological and the other practical. The methodological problem is that the SQACMD's Assessment Study of the performance of low-VOC products, on which the proposed rule appears to rely, was not comprehensive. Sierra's actual product line, for example, was not considered. Nor, apparently, were the ultra-low VOC products of many of its competitors. The SCAQMD must make a truly comprehensive, independent survey of existing paints and coatings and of the existing raw materials from which ultra-low VOC products can be made. Without that sort of comprehensive survey, the SCAQMD has instead relied on the anecdotal self-reporting of an industry that is largely hostile to its efforts. Sierra is willing to work with the SCAQMD – and environmental groups and independent analysts – to prepare a proper study of the technological feasibility of low VOC coatings.

The practical problems with the proposed rule is that there are in fact high performance paints and coatings in the market today that contain significantly lower VOC content than the limits proposed by the SCAQMD; and there are commercially available raw materials to produce industrial maintenance coatings at substantially lower levels than proposed:

1. Despite its flaws, the preliminary Phase II Assessment Study commissioned by the SCAQMD indicates that low-VOC products perform generally just as well as high-VOC products and, in fact, outperform them in terms of brushing and sag resistance, rust resistance, and mar resistance. The performance characteristics of low-VOC products show they are technologically feasible as currently designed.

2. High-performance, low-VOC paint products are commercially available. A wide range of companies – such as Sierra, Sherwin-Williams, Ameron and Carboline –sell high-performance, low-VOC epoxy, urethane, and acrylic products. (See the attached product profile sheets.) All are bread-and-butter products with under 250 g/l VOC content that perform just as well or better than solvent-borne products with higher VOC contents.

3. There have been tremendous advances in raw materials technology over the last five years, so that low-VOC resins and curing agents are now common. Shell, Air Products, Rohm & Haas, Vianova, Hoechst, Engineered Polymers Solutions and Specialty Polymers all make state-of-the-art, low-VOC waterborne acrylic, epoxy and polyurethane resins and curing agents that perform as well or better than solvent-borne systems for industrial maintenance coatings. (See the attached product profile sheets.) Shell's epoxy technology, for example, may be formulated into sealers, primers, and low to high sheen topcoats for various industrial maintenance and specialty architectural applications with very strong adhesion, humidity resistance, and corrosion resistance properties (see attached product data sheet). Indeed ,as long ago as 1994, the Shell Development Company published an article stating that state-of-the-art materials as of that time allow VOCs for metal formulations to be reduced from the 480 g/l for the traditional solvent-based systems to the range of 120-240 g/l.[1] The article concludes that "most significantly, the advances in waterborne epoxy technology have afforded significant voc reductions along with the necessary corrosion and humidity resistance for coatings that protect metallic substrates. Whereas the prior generations of waterborne epoxy systems have found widespread use primarily on masonry substrates, the latest developments have allowed for their expansion into new applications on metal."[2]

II. A RULE OF 100 G/L VOCs SHOULD BE ADOPTED.

The widespread commercial availability of high-performance, zero-VOC coatings and raw materials -- let alone low-VOC products under 100 g/l -- demonstrate that a 100 g/l limit is technologically and commercially feasible. And, with the necessary raw materials so widely commercially available, low-VOC paints and coatings can be produced and/or re-formulated easily and efficiently by any paint companies. Indeed, every raw material supplier provides starting formulae for making paint using their products, much the way a flour company provides recipes for cakes.

1. Preliminary results of the Phase II Assessment Study that compare the performance of zero-VOC, low-VOC, and high-VOC products show that zero-VOC products perform best overall. Zero-VOC products display superior properties as to leveling, wet and dry film, blistering and filiform corrosion resistance, taber abrasion, and

---

[1] "An Overview of Ambient-Cure, Waterborne Epoxy Resin Coating Technology," by Ernest C. Galgoci, Shell Development Company, 2147-94.

[2] Id. at page 1.

adhesion to substrates whereas high-VOC products rate highest only on film appearance and flexibility.

2. SCAQMD identified some 55 commercially available high-performance industrial maintenance coatings at 100 g/l VOC content or lower appropriate for virtually every conceivable use and application. 50 of the 55 high-performance industrial maintenance coatings identified are zero-VOC. Zero-VOC products are proven as technologically and commercially available.

Sierra Performance Coatings' product line is a case in point. Sierra has a full-line of 100% epoxy zero-VOC paints and coatings, including concrete floor enamels, industrial DTM metal enamels, and industrial metal primers. Sierra also sells a line of epoxy-acrylic wall and trim finishes and polyurethane DTM metal enamels. As the attached product profile sheets attest, Sierra's products perform at equal or superior levels of similar high-VOC products and, in particular, display superior dry times and adhesion. Sierra's products are widely commercially available with a significant presence in more than 50 paint stores throughout California. Customers include a national car manufacturer/dealer that painted concrete floor service bays with a non-slip coating; the U.S.S. Hornet, which painted all surfaces of the 300 yard aircraft carrier inside and out with zero-VOC products to encapsulate and protect against rust; a large OEM company which used a DTM on metal frames to achieve high salt spray and impact resistance; and a major fresh food packager that coated steel, masonry, and wall board in a highly sanitary, high-moisture, chilled packaging facility. In every one of these cases, solvent-borne products performed worse than Sierra's zero-VOC coatings.

3. As a final matter, Sierra strongly objects to the proposed averaging provision. This provision is a loophole that strangles the entire rule. It has no basis under the Clean Air Act and it has no practical hope of being workable. As of this date, there is no resolution as to how the averaging provisions will work; the details are apparently to be determined with experience over time. Importantly, no methodology has been established to determine which product is eligible for averaging. Is it product manufactured in the district? Is it product sold in the district? Is it product used in the district? These questions could not be answered at the April 28, 1999 working group session. Given this state of uncertainty, there is great potential for circumvention of the VOC standards, which could possibly render any limits pointless.

III. THE SCAQMD HAS NOT ADEQUATELY CONSIDERED THE PROPOSED RULE'S ECONOMIC IMPACT.

In calculating the costs and economic impacts of its proposed rule, the SCAQMD did not consider a number of important factors which would have otherwise reduced the estimated cost of $36.9 million annually, when averaged over the 2002-2015 period.

1. By its own acknowledgment, the SCAQMD did not factor in the gradual phase-in of the proposed amendments, the averaging, "sell-through," and small container exemption provisions which would reduce the cost impacts. Without data on the impacts of the averaging provision and the other aforementioned provisions, it is not possible to determine whether there will be any cost impacts at all associated with the proposed rule, much less what dollar value should be assigned to any such cost.

2. Reformulation cost estimates of 20% per gallon are "worst case," by the SCAQMD's own admission,[3] and exaggerated to boot. The estimate wrongly assumes that the additional costs of compliance will be repeated each year instead of incurred on a one-time basis. Also, the model assumes that current price differentials between zero-VOC and low-VOC paint on which the cost estimate is based will persist until 2015 at the same percentage discrepancy. However, as zero-VOC and low-VOC products grow in demand, the raw materials will become commodity items and thus decrease in price. Even more to the point, the estimate takes reformulation costs as a given when that is not the case since there are existing resin technologies now in the market which can be used to make paints and coatings compliant with the proposed rule.

3. The SCAQMD has not included in its compliance calculations other economic benefits associated with low-VOC technologies. Health insurance costs for workers who produce and use paints and coatings, for example, would decrease significantly. And low-VOC products dry more quickly and have no smell -- which means that hospitals, factories, and other institutional consumers can use their facilities sooner than they could with higher VOC paints and coatings.

4. By encouraging the development and use of new environmental technologies, the proposed rule will promote the export of new technologies -- and thereby create American jobs. After all, a shift of market share from those supplying high-VOC products to those supplying low-VOC products does not hurt the economy. Stagnant growth does. New technologies, on the other hand, stimulate growth.

IV. THE FAILURE TO ADOPT THE BEST AVAILABLE CONTROLS WILL CAUSE SERIOUS ADVERSE HEALTH EFFECTS.

In 1995, the SCAQMD monitored ozone concentrations all across the Basin.[4] The results showed that in all locations in the Basin the ozone levels exceeded the health advisory levels. In particular, San Bernardino was 200 percent of the federal standard and

---

[3] SQAMD Addendum to Staff Report, Draft Socioeconomic Impact Assessment, Proposed Amendments to Rule 113, April 1999, at page 3.

[4] South Coast Air Quality Management District, 1997 Air Quality Management Plan, Chapter 2, Air Quality and Health Effects.

260 percent of the state standard.[5] Los Angeles and Riverside were 160% of the federal standard.[6]

VOCs are the main component in forming ground level ozone.[7] Exposure to ground level ozone can damage lung tissue and cause serious respiratory illness.[8]

According to the SCAQMD report on health effects of ozone, "individuals exercising outdoors, children and people with preexisting lung disease such as asthma and chronic pulmonary lung disease are considered to be the most susceptible sub-groups for ozone effects. Short-term exposures (lasting for a few hours) to ozone at levels typically observed in Southern California can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes. In recent years, a correlation between elevated ambient ozone levels and increases in daily hospital admission rates, as well as mortality, has also been reported.

Ozone exposure under exercising conditions is known to increase the severity of the above mentioned observed responses. Similarly, animal studies suggest that exposures to a combination of pollutants which include ozone is more toxic than exposure to ozone alone. Although lung volume and resistance changes observed after a single exposure diminish with repeated exposures, biochemical and cellular changes appear to persist, which can lead to subsequent lung structural changes."[9]

Adverse health effects are even more pronounced for workers in the paint industry who are exposed to high-VOC solvents, even at low levels, according to several studies.

One 1997 report reviewed a range of occupational studies of paint workers and recommended a reduction of solvent limit values due to a correlation between solvent exposures and neuropsychiatric disorders, mental symptoms, and impaired neurobehavioral performance.[10] A 1995 study found that paint manufacturers exposed to solvents showed diminished memory, reaction time, manual dexterity, and olfaction.[11] Additionally, two other studies have concluded that exposure to solvents in the painting

---

[5] Id.
[6] Id.
[7] EPA Fact Sheet, Final Air Regulation for Architectural Coatings, August 14, 1998.
[8] Id.
[9] South Coast Air Quality Management District, 1997 Air Quality Management Plan, Chapter 2, Air Quality and Health Effects.
[10] Mikkelsen, S., "Epidemiological Update on Solvent Neurotoxicity," 1997 Environmental Research, Vol. 73, Nos. 1/2, pages 101-112.
[11] Bolla, K.; Schwartz, B.S.; Stewart, W; Rigani, J.; Agnew, J.; Ford, D.P., "Comparison of Neuorbehavioral Function in Workers Exposed to a Mixture of Organic and Inorganic Lead and in Workers Exposed to Solvents," 1995-02 American Journal of Industrial Medicine, Vol. 27, No. 2, pages 231-246.

industry is associated with adverse effects on the central nervous system such as forgetfulness, lassitude, disorientation, and dysphoria.[12]

CONCLUSION

The proposed rule fails to adopt the "best available controls" and is, therefore, inconsistent with SCAQMD's duty under the Clean Air Act. Current feasible technology supports VOC limits much more stringent than those proposed by the SCAQMD. Lower limits are essential both to help non-attainment areas reach their clean air goals and to protect the public's health. The public should not be required to continue to be exposed to harmful emissions from paint formulations when cleaner alternatives are currently available. The SCAQMD -- responsible for clean air in the Basin -- must under the Clean Air Act take a lead role in requiring cleaner and safer paints and coatings. The SCAQMD should lower the VOC limits for industrial maintenance coatings to 100 g/l and should implement the rule earlier as of January 1, 2001.

Finally, Sierra hereby adopts the views of others opposing the proposed VOC limits because those limits are too high.

Respectfully Submitted,

Patrick K. Shannon
General Counsel

cc: Naveen Berry, Air Quality Specialist

[12] Baker, E., et al., "Neurobehavioral Effects of Solvents in Construction Painters," 1988 Journal of Occupational Medicine, Vol. 30, No. 2, pages 116-123. See also Olson, A, "Effects of Organic Solvents on Behavioral Performance of Workers in the Paint Industry," 1982 Neurobehavioral Toxicology and Teratology, Vol. 4, No. 6, pages 703-708.

Sierra Performance Coatings, Inc.
Comments to SCAQMD Proposed Rule 1113

ATTACHMENTS

1. Sherwin-Williams water based epoxy finish
2. Sherwin-Williams water based epoxy primer
3. Sherwin-Williams water based urethane
4. Sherwin-Williams DTM acrylic coating
5. Sherwin-Williams DTM acrylic primer
6. Ameron Amerlock 400 high-solids epoxy
7. Ameron PSX 700 low-VOC epoxy
8. Carboline cross-linked epoxy 890
9. Carboline cross-linked epoxy 893
10. Carboline acrylic aliphatic polyurethane
11. Carboline modified aluminum epoxy mastic
12. Carboline water-borne acrylic
13. Sierra Performance Coatings product line
14. Shell Epi-Rez low-VOC waterborne resin and curing agent
15. Air Products and Chemicals zero-VOC polyurethane resin
16. Air Products and Chemicals zero-VOC waterborne epoxy resin
17. Specialty Polymers zero-VOC acrylic emulsion
18. Epidemiological Update on Solvent Neurotoxicity
19. Comparison of Neurobehavioral Function in Workers Exposed to Solvents
20. Neurobehavioral Effects of Solvents in Construction Painters
21. Effects of Organic Solvents on Behavioral Performance of Workers in the Paint Industry

June 18, 1999

National Paint & Coatings Association

Jack P. Broadbent
Deputy Executive Officer
Planning and Rule Development
SCAQMD
21865 E. Copley Drive
Diamond Bar, California 91765-4182

Dear Jack:

In preparing for the June 23 meeting with the SCAQMD staff to "resolve outstanding issues" involving the May 14 revisions to Rule 1113, we thought it would be useful to identify some of the issues that we believe should be discussed at the meeting.

Of primary importance is a full presentation of information concerning the results of the National Technical Systems study. It is our understanding that a summary of the results of this study was to be presented to the Technical Advisory Committee several weeks ago. We would greatly appreciate it if this were made available at the June 23 meeting. Obviously the results of the study are essential to meeting the direction of the Board that the staff continue discussions with industry on "technical assessments of coatings technology."

Another issue of primary importance on which the Board directed staff to work with industry is the "field studies of new low -polluting paints". Here again we understand there is information currently available to the SCAQMD staff from the National Technical Systems study concerning application and performance characteristics which should be made available to industry for evaluation and discussion.

Industry's evaluation of this information and its discussion with the staff concerning it should be part of the 90 day report that goes to the Board in August. If there are any anticipated difficulties in providing access to this information within that time frame, we would like to discuss this at the June 23 meeting to determine if we can provide any assistance in helping to make it available. If your procedures require us to formally seek access to the information, such as through a "public records disclosure" request, perhaps you could inform us of this.

coatings care

1500 Rhode Island Avenue, NW • Washington, DC 20005-5597 • Phone: 202/462-6272 • Fax: 202/462-8549
E-mail: members@paint.org (NPCA members); or npca@paint.org (general public) • Web site: www.paint.org

Another important topic is the discussion of coatings categories that were adopted by the Board. In particular, we would like to discuss the recognition of additional coating applications in the "specialty primer" coatings category and the "tank lining" coatings category.

Finally the Board directed staff to engage in an on-going dialogue with industry concerning the following topics and to provide annual reports to the Board concerning these discussions:

- Field studies of new low-polluting paints;
- Technical assessments of coatings technology;
- Out reach to painting contractors; and
- Establishing special working groups on niche markets and the averaging provisions of the rule.

It would be useful to discuss the structure and initial meeting schedule for this dialogue at the June 23 meeting.

Thanks for arranging to meet with us.

Jim Sell
Senior Counsel

LAW OFFICES OF
SMILAND & KHACHIGIAN

WILLIAM M. SMILAND
KENNETH L. KHACHIGIAN
THEODORE A. CHESTER, JR.
CHRISTOPHER G. FOSTER
ALBERT M. COHEN
IVAN J. TETHER

OF COUNSEL
CHARLES H. CHASE

SEVENTH FLOOR
601 WEST FIFTH STREET
LOS ANGELES, CALIFORNIA 90071
TEL: (213) 891-1010
FAX: (213) 891-1414

SUITE 203
209 AVENIDA DEL MAR
SAN CLEMENTE, CALIFORNIA 92672
TEL: (949) 498-3879
FAX: (949) 498-6197

JOSEPH W. SWANWICK
1858-1932
CHARLES E. DONNELLY
1890-1973

EMERITUS
ERNEST M. CLARK, JR.

June 23, 1999

HAND-DELIVERED

Barry R. Wallerstein, D.Env.
South Coast Air Quality
Management District
21865 E. Copley Drive
Diamond Bar, CA 91765

Re: Rule 1113 Amendments

Dear Dr. Wallerstein:

As you know, we represent various paint manufacturers, retail paint dealers, painting contractors, and trade associations, including the Environmental Regulatory and Legislative Advocacy Program of the California Paint and Coatings Industry Alliance in connection with Rule 1113, which was most recently amended on May 14, 1999.

At that hearing, board member Lee moved the staff recommendation with the proviso that staff finish conversations with our clients and "address" their "concerns" and "requests." Transcript at 113, 123. The motion was seconded by board member Mikels.

Board member Glover, with the consent of the movant and without objection by the seconder, amended that motion to provide that staff would work with our clients and then "bring a status report ... to be included in our board packet in 90 days." Transcript at 116, 124.

There was no staff or board opposition to the proviso, as amended. Indeed, board member Coad expressed hope that the 90-day process would find solutions to concerns. Transcript at 120.

The above proviso is summarized in the staff's draft minutes of the meeting, but does not appear in the formal findings and

resolutions. The vote in favor of the staff recommendation, including the proviso, was 8 to 1.

Attached hereto are 19 sheets, each describing one of our clients' concerns, as well as their request for actions that the staff should recommend in its status report and that the board should take at its August 13, 1999 meeting.

Our clients and we look forward to discussing these concerns and action requests at our meeting on June 23, 1999 and the staff's and board's timely implementation thereof.

Very truly yours,

William M. Smiland

William M. Smiland

cc: SCAQMD board members (via facsimile)
Jack P. Broadbent (via facsimile)
William B. Wong, Esq. (via facsimile)
Clients
Cerrell Associates Inc. (via facsimile)
Mr. Kenneth L. Khachigian (via facsimile)

S:\data\2526(ELRAP)\2526-04\Cor\Wallerstein.wpd

CPA CONCERN 1: EPA RULE

EPA passed a national paint rule on September 11, 1998, the most significant event in the 22-year history of paint regulation. Incredibly, neither the staff nor the board seriously analyzed or debated the policy or the legal implications thereof. First, the staff recommended, and the board found, that the Rule 1113 amendments were "consistent" with EPA's rule, even though the latter limits are roughly eight times higher than the former. Second, local regulation is now preempted under the Supremacy Clause of the U.S. Constitution, both because of that inconsistency, and because of the federal government's insistence upon national uniformity. Third, federal-state-local triplication is unnecessary and, indeed, utterly wasteful of public resources and can no longer be justified as a policy matter.

CPA REQUEST 1: EPA RULE

In light of EPA's recent entry into the field, the district should bow out of paint regulation.

CPA CONCERN 2: LACK OF 30-DAY NOTICE

The staff report, FSEA, and FSIA were significantly changed several days before the hearing. The staff never reported to the board the studying, listing, and rulemaking requirements of Clean Air Act Section 183(e). And the board adopted changes to the staff's proposed text which had also not been the subject of the 30-day notice.

CPA REQUEST 2: LACK OF 30-DAY NOTICE

The matter should be re-noticed for 30-days on the basis of full reports, federal disclosures, and the text of the amendments.

CPA CONCERN 3: NTS RESULTS

The staff advised the board that the NTS lab study had been "in the industry's hands for quite some time now." The board found that the NTS lab results have been "completed." In fact, the lab results are replete with obvious errors and must be redone. On the eve of the hearing the staff prepared a seven-page "summary" of those would-be results, and the definitions therein are inconsistent with, and thus irrelevant to, the rule. In its opening statement the staff told the board NTS found that zero-OC and low-OC coatings "perform well for some [unspecified] characteristics." It is doubtful that any objective observer, including NTS, would share the staff's interpretation of the lab results. The board found that the NTS lab results showed some availability of low-to zero-OC coatings that "perform comparably" to high-OC coatings. In fact, because the lab study was fatally flawed and the field study never started, the only significant data are those supplied by the market. The basic fact is that most people will not buy most such products for most purposes.

CPA REQUEST 3: NTS RESULTS

The staff should recommend, and the Board should direct, on August 13, 1999 that the amendments should be repealed and NTS (1) should redo the lab study, and (2) should start and complete the field study, before regulation is renewed.

CPA CONCERN 4: COMPETITOR MISREPRESENTATIONS

A few manufacturers have been careless in the statements made in support of the amendments. For instance, a representative of one small manufacturer said that suppliers had been "intimidated" by competitors not to support the rule and: "It doesn't matter if it's zero VOC or 500 grams VOC." Another said, "There are coatings that meet the rules...," and "It's within the grasp of companies to reformulate." In fact, low-or no-OC products work badly for most purposes. That is why these few manufacturers sell so little. Furthermore, a lobbyist for one regional manufacturer projected a list of our alternatives (reactivity-based standards, performance-based standards, low-volatility exemptions, seasonal regulation, and simplified averaging), stating as to each that "it's in the rule." In fact, none of these alternatives to content-based limits was adopted.

CPA REQUEST 4: COMPETITOR MISREPRESENTATIONS

The staff should appear before the board on August 13, 1999 and correct such misrepresentations.

CPA CONCERN 5: COMPETITOR CLAIMS IN STAFF REPORT

The essence of the staff report is a series of "claims" made by a few suppliers and manufacturers about the suitability of their low-or zero-OC coatings, which were in effect blessed by staff. These claims emanate primarily from a few manufacturers which enjoy little penetration in today's market, but are vocal advocates before the district and in public media for bans of their competitor's products which do. For example, consider the claims made by Coatings Resources Corp., Hart Polymers, Inc., and NonToxiCA relating to non-flats, industrial maintenance coatings, and floor coatings and the staff's implicit endorsement thereof. CPA is not aware that these products have achieved any significant acceptance in the competitive market. A claim made by an aspiring promoter of new product markets is not a proper basis for regulation.

CPA REQUEST 5: COMPETITOR CLAIMS IN STAFF REPORT

The staff report should delete all such claims, or analyze their findings and retain any which can be verified. It should describe the uses for which those products are sold. The board should act on the basis of a staff report, so revised.

CPA CONCERN 6: INTEREST GROUP BARGAINS

Every observer of the rule-making process perceived that much of the staff proposal, which the board adopted, was the result not of analysis of the merits but explicit or implicit "deals" between the staff and favored market actors or segments. In certain cases these apparent deals resulted in silence when there otherwise would have been opposition, or even "flip-flops" yielding overt support. For instance, government agencies which had expressed clear opposition on the merits came forward to support the rule as soon as the limits on the narrow categories they cared about were raised. One manufacturer which expressed support for the rule was given the first three and last spots in the speaking order. The staff should not engage in, and the board should not condone, administrative rulemaking based on backroom bargaining rather than the factual, legal, and policy merits.

CPA REQUEST 6: INTEREST GROUP BARGAINS

The board should forbid the staff to make recommendations based on private "deals" with favored market actors or segments, rather than on the merits.

CPA CONCERN 7: STAFF MISREPRESENTATIONS

The staff misled the board in its oral presentation on May 14, 1999, as follows: (a) The opening statement represented that architectural coatings represents "one of the largest single stationary sources" of organic compound emissions. In fact, the compounds in paints constitute only about 1% of all emissions; (b) Staff represented that architectural coatings are "equivalent" to 1.8 million vehicles on the road. In fact, organic compound emissions from vehicles are at least 14 and as many as 56 times higher than those in paints, and vehicles also emit massive quantities of NO_x, the main ozone precursor; and (c) Staff repeatedly represented that zero-or near-zero-OC paints are "available" and "in use," and disagreed with the premise that they do not "perform as well." In fact, efforts in the early 1990's to market such products flopped and, even after massive promotion, they represent an extremely small slice of the paint market, perhaps 1%.

CPA REQUEST 7: STAFF MISREPRESENTATIONS

The staff should appear before the board on August 13, 1999 and admit, and correct, these misrepresentations.

CPA CONCERN 8: NO BOARD DELIBERATION

Only two of the eight board members who voted for the amendments asked any questions of staff or the witnesses, and those two asked only a few. There was no real deliberation by the board. Only two of the eight offered comments explaining their vote. One made various points (need for do-it-yourself painting, need for high quality paints at low prices, closing or exit of small business and jobs lost as a result, value of painting of graffiti and houses of poor and disabled) in support of her plan "to vote no," but then inexplicably voted "yes." Another first cited support of the ARB and EPA staffs, and then said this: "I was looking out the window of my office in dowtown Riverside and was reminded why there is a need for the kind of rule making that we do in Southern California. I couldn't see very far, and you had the dark pale grey of smog for the summer arriving. So I will support the measure." In fact, organic compounds in paints, and any ozone they might help to form, are invisible.

CPA REQUEST 8: NO BOARD DELIBERATION

The board should consider adopting procedures promoting open deliberation and debate. The public is outraged that valuable paints are being outlawed. They are entitled to know from public officials directly why that is happening. This is essential for accountability.

CPA CONCERN 9: LOW VOLATILITY OF GLYCOLS

The main organic compounds in water-borne coatings are glycols. The best scientific evidence is that glycols are low-volatility compounds. Congress directed EPA to focus on "volatile" compounds in products, and EPA does not even collect information on low-volatility compounds. ARB exempts products containing such compounds. The board adopted a resolution directing staff to produce an "analysis ... assessing the availability... of individual [ ] OC species, under varying NO_x conditions ..." Nonetheless, eight board members voted to outlaw virtually all existing water-borne paints. This was wholly irresponsible. First, the district has been regulating paints for 22 years and water-borne paints for three. There is no excuse for not having learned the volatility of glycols by now. Second, there is no excuse for banning these products when the best evidence suggests that they are not problematic.

CPA REQUEST 9: LOW VOLATILITY OF GLYCOLS

The board should first ascertain whether the compounds in water-borne paints are volatile or available and, if so, to what extent, and regulate, if at all, based on those findings.

CPA CONCERN 10: LOW REACTIVITY OF MINERAL SPIRITS

The major organic compounds in solvent-borne coatings are mineral spirits. The best scientific evidence is that they are low in reactivity. In Section 183(e) Congress directed EPA to consider products which emit "highly reactive" compounds in setting regulatory criteria and to list products for regulation on a "reactivity-adjusted" basis. ARB has implemented reactivity -based control strategies, and is evaluating that approach for products. The district has also previously acted with reference to reactivity. The board resolved that the staff prepare an "analysis... assessing the ... reactivity of individual [ ] OC species, under varying NO_x conditions... " Yet the staff report concluded that it was not "prudent" to answer the question before banning all solvent-borne paints in 2002. The district has been regulating these products for 22 years, and it is unconscionable that it has not answered the question by now. In any event, the answer should be found before the ban, not after it.

CPA REQUEST 10: LOW REACTIVITY OF MINERAL SPIRITS

The rule should be repealed unless and until it is verified that mineral spirits are reactive enough to warrant a ban.

CPA CONCERN 11: NO AUTHORITY

The Legislature has given the district no explicit authority over product formulas. The district has general statutory authority to control "sources" of "air pollution." Paints are not direct sources of ozone, and the district has not established that the compounds in water-borne paints are volatile enough, or that those in solvent-borne paints are reactive enough, to be ozone precursors.

CPA REQUEST 11: NO AUTHORITY

The rule should be repealed unless and until the district obtains authority from the Legislature to outlaw paints by limiting their organic compound contents.

CPA CONCERN 12: ENVIRONMENTAL IMPACTS

The district did not assess key environmental impacts and alternatives. For example, it ignored the adverse aesthetic, health, and safety impacts of a badly-painted environment or an unpainted environment. It also ignored the counter-productive ozone impacts of the latter. It rejected as "infeasible" manifestly feasible alternatives (volatility, reactivity, performance, regional, seasonal) and ignored other viable alternatives, such as the EPA limits, and disclosure requirements.

CPA REQUEST 12: ENVIRONMENTAL IMPACTS

The FSEA should be de-certified and the amendments repealed until the FSEA is duly supplemented to fill the fatal gaps.

CPA CONCERN 13: ECONOMIC IMPACTS

The district outlawed paint products and the paint industry as we know it. Yet it treated the massive economics impacts it is sure to cause as mere nuisances. In particular, the FSIA omits essential analyses of certain impacts, including (1) formulas taken, (2) costs of inability to reformulate, and (3) retail costs. The FSIA also contains grossly inadequate discussions of (4) successful reformulation costs, (5) contractor costs, (6) impacts on small business and competition, (7) costs to consumers, (8) job losses, and (9) cost-effectiveness.

CPA REQUEST 13: ECONOMIC IMPACTS

The staff should supplement the FSIA and, unless and until it does so, the rule amendments should be repealed.

CPA CONCERN 14: FEDERAL MANDATES

The staff report, FSEA, and FSIA are replete with references to the 1994 AQMP (operative) and even more to the 1997 AQMP (inoperative) and to the Hupp order. The staff's opening statement characterized its proposal as "an important SIP commitment." One of the two board members who stated his reasons for voting for the bans emphasized the fact that EPA "strongly encouraged adoption." The board formally found that the rule "implements" federal law and is "necessary" to achieve federal standards. In fact, as a matter of state law, no board member was bound to vote for the staff's proposal. Had a federal mandate to vote "yes" existed, it would have been unconstitutional.

CPC REQUEST 14: FEDERAL MANDATES

Repeal the amendments and re-adopt them only if the administrative record has been purged of false representations that federal law mandated "yes" votes.

CPA CONCERN 15: TAKING FORMULAS

The 7,000 paint formulas outlawed by the amendments have a fair market value of about $182,000,000. Overnight those formulas become useless and, therefore, valueless. Therefore, the amendments constitute unconstitutional takings of property for public use without payment of just compensation.

CPC REQUEST 15: TAKING FORMULAS

The district should establish a procedure for (a) identifying the formulas taken, (b) establishing the fair market value of each, and (c) paying just compensation.

CPA CONCERN 16: DUE PROCESS

The district cannot constitutionally deprive a person of his properties or impair his contracts unless the regulation will achieve an important public purpose. Unless the compounds in paint are both volatile and reactive, which is highly dubious, eliminating them will achieve no meaningful ozone reduction.

CPA REQUEST 16: DUE PROCESS

The board should repeal the amendments until the district has verified its dubious assumption that organic compounds in paints are both sufficiently volatile and sufficiently reactive to materially contribute to ozone nonattainment.

CPA CONCERN 17: EQUAL PROTECTION

The district has banned the compounds in paints when the same ones in other products are not regulated. It accepts and acts upon the representations and requests of favored manufacturers and rejects those of unfavored manufacturers. It gives users in favored classes exemptions, but not those in unfavored classes.

CPA CONCERN 17: EQUAL PROTECTION

The district should repeal the amendments unless and until it treats like compounds, manufacturers, and users alike.

CPA CONCERN 18: DAMAGES

Manufacturers are suffering massive reformulation costs, whether successful or unsuccessful. Dealers and contractors will also suffer substantial losses as a result of the ban of most paints they sell and use. If consumers continue to use paints, they will pay much more per can, buy more cans, and spend more on labor costs for jobs that do not look good or protect well. If they switch to non-paint substrate protection, their losses could be even higher.

CPA REQUEST 18: DAMAGES

The district should set up a procedure to assess and pay the damages it causes.

CPA CONCERN 19: 1996 AMENDMENTS

The concerns expressed in 1-18 also apply to the paint bans adopted in 1996.

CPA REQUEST 19: 1996 AMENDMENTS

The requests specified in 1-18 are also made as to the 1996 paint amendments.

PDCA
PAINTING AND DECORATING CONTRACTORS OF AMERICA
Voice of the Professional Painting and Decorating Contractor

STEPHEN B. MURPHY
PDCA EXECUTIVE COMMITTEE

RESPOND TO:
Murphy Industrial Coatings
2704 Gundry Avenue
Signal Hill, CA 90806
Tel: 562/427-7720
Fax: 562/426-6751
e-mail: steve.murphy@ ibm.net

July 12, 1999

South Coast Air Quality Management District
21865 E. Copley Dr.
Diamond Bar, CA 91765

CERTIFIED, RETURN RECEIPT

Attention: Jack Broadbent

Reference: Amended Rule 1113

Subject: Remaining Issues
Working Group June 23rd Meeting

PDCA has the following major concerns and questions about several late additions by SCAQMD Staff to the May 14th Board approved Amended Rule 1113 as presented at the June 23, 1999 SCAQMD Working Group Meeting that remain as open issues:

1. (b) Definitions, (14) Essential Public Service Coatings –

   QUESTION: Does this category include new construction?

   STATEMENT: There needs to be another category similar to this that includes chemical, petroleum, and food processing facilities that have the same or greater need for this level of coating category due to many of the strong chemicals and chemical fumes that they utilize or process.

2. (B) Definitions, (8) Chemical Storage Tank Coatings –

   QUESTION: What are oxygenated solvents and oxygenated solvent mixtures?

   QUESTION: What are acid based products?

   QUESTION: Why are strong caustic products not included?

   STATEMENT: This definition does not include the exterior mechanical appurtenances and containment areas that require the same coating due to potential leaks and spills that are generally specified into these areas.

3. NTS Study –

STATEMENT: The following steps need to be completed by the SCAQMD Task Joint Task Advisory Committee before any conclusions can be drawn from the laboratory testing results:

a.) Discussion of the errors in the initial raw data.

b.) Discussion of errors in the summary tables submitted after Board approval on May 14th.

c.) Discussion of information and recommendations from raw data.

PDCA is very concerned and disappointed that Staff did not involve the SCAQMD Working Group in the discussion of the above two late added items. PDCA is also very disappointed that Staff reported to the Board that the NTS Study had been completed knowing that the raw data reports contained errors and that the Joint Industry Task Advisory Committee had not discussed and resolved those errors before proceeding with observations and recommendations which have not been completed yet.

PDCA

Stephen B. Murphy
President

SBM:nb

c: PDCA California Council
PDCA Golden State Council
SSPC
NPCA
EL RAP

PRACTICE LIMITED TO ENVIRONMENTAL LAW

LAW OFFICES OF
CURTIS L. COLEMAN
HOWARD HUGHES CENTER
6601 CENTER DRIVE WEST, SUITE 500
LOS ANGELES, CALIFORNIA 90045

TELEPHONE (310) 348-8126
FACSIMILE (310) [redacted]
PAGER (310) 940-0011

July 27, 1999

VIA FACSIMILE TO (909) 396-3252

Mr. Jack Broadbent
Deputy Executive Officer
South Coast Air Quality
Management District
21865 E. Copley Drive
Diamond Bar, CA 91765

Re: Technical Issues Concerning Rule 1113

Dear Jack:

In accordance with our statements at the July 23, 1999 Rule 1113 Working Group meeting, this letter represents the views of The Sherwin-Williams Company concerning the "technical issues" that need to be addressed in the SCAQMD staff's report to the Governing Board.

The Sherwin-Williams Company identified a number of problem areas with the rule that was eventually adopted. In our view, the staff either ignored significant problems or cited studies in support of its proposal that did not deal with the specific coatings we are concerned with. Specifically, the following coating categories have, in our view, been improperly handled by the adopted rule:

- interior semi-transparent wood stains
- floor coatings (porches, decks)
- specialty primer definition that includes wood stain-blocking primers as well as primers for chalky substrates
- wood sealers
- petroleum and chemical storage (immersion service)
- coatings for power, municipal wastewater, water, bridges and other roadways, transmission or distribution systems, for non-"essential public service" uses

- lack of substantiation for premise that 50 g/l exterior coatings can be developed

Specific issues concerning these categories are described below.

Interior semi-transparent wood stains

The Sherwin-Williams Company has maintained that interior semi-transparent wood stains should be treated separately. The staff referred to a Consumer Reports article regarding the efficacy of water-based stains. That article reviewed exterior stains, not interior stains. We continue to believe that, due to performance characteristics and finish requirements, it is improper to lump interior semi-transparent stains with other stains (e.g., exterior opaque and semi-transparent stains and interior opaque stains).

Opaque floor coatings

SCAQMD staff has not made appropriate accommodation for single component coatings suitable for application to wooden porches and decks. The coatings cited by staff as available for meeting the limits in the rule are not, in our view, suitable for these applications. Additionally, the VOC limit for floor coatings is 100 grams/liter while a normal non-flat coating is allowed 150 grams/liter. Floor coatings must withstand more severe conditions that a normal non-flat. Thus, it does not make sense for floor coatings to be restricted to a lower VOC limit than non-flats.

Stain blocking primers

At the hearing on Rule 1113, Madelyn Harding raised the issue of a primer suitable for blocking wood stains from marring surface coatings. She was advised by staff that the newly included definition of "specialty primer" put in at the request of the NPCA might address her concerns. In fact, it did not, and staff should have known that it did not. Ms. Harding did not press the issue based upon staff's representations at the time. Other speakers also raised this issue and it needs to be addressed in the specialty primer definition. A definition of stain-blocking primer is: "a

coating applied to a surface, prior to the application of a topcoat, designed to improve the performance of the bond and block water-borne stains caused by water, tannin, efflorescence, etc."

Interior Wood Sealers

The adopted limit of 200 grams per liter will result in only water-borne sealers being used. This is of concern for interior wood finishing due to lapping problems and grain raising that will require increased finishing time, increased costs, and poorer quality finish.

Industrial Maintenance Tank and Pipe Lining Coatings for immersion service

The coating of petroleum and chemical storage tanks and pipelines where the coating is immersed in the stored liquid creates significant performance problems that cannot be met by coatings formulated to the VOC limit in the current rule. The potential for disaster caused by corrosion followed by leaks and discharges to the environment must be mitigated by allowing coatings with superior performance characteristics to be used.

Essential Public Service Coating definition

The essential public service coating definition is poorly worded, ambiguous, and borders on being unintelligible. It needs to be re-written. Additionally, there is no basis for allowing public agencies providing "essential public services" additional time to find compliant coatings that work while requiring private companies and public agencies that have the same performance and safety requirements to use lower-VOC coatings earlier. Whether it is a public bridge or private bridge, publicly owned or privately owned electrical system, or public owned or privately owned water treatment works, the health and safety issues are exactly the same.

Exterior Coatings at the 50 gram/liter level

Virtually all of the coatings that meet the 50 gram/liter limit are sold for interior uses. The lack of any durability studies on exterior 50 gram/liter coatings make that limit grossly premature. If staff has additional information on exterior coatings meeting the 50 gram/liter limit, it should make that information public.

These issues need to be addressed during this 90 day period specified by the SCAQMD Board resolution adopting the amendments to Rule 1113. We look forward to working on these issues with the SCAQMD staff.

Very truly yours,

Curtis L. Coleman

CLC
cc: Madelyn Harding

Appendix B – Issues and Responses

ISSUES & RESPONSES

Sierra Performance Coatings Letter	
VOC limits are too high and compliance dates are too far into the future. The amendments fail to adopt the 'best available controls".	Disagree. The amended rule was based on a thorough technology assessment, as well as overall cost-effectiveness. The adopted limits represent best available and cost-effective technology for each of the categories. The implementation dates represent a feasible timeframe for manufacturers to reformulate their existing coating lines, as well as for raw materials supplier/resin manufacturers to refine the coatings technology. The amendments represent the Best Available Controls within the context of a cost-effective regulation.
The NTS Study shows that the low-VOC products generally perform as well as high-VOC products, and out perform them in some characteristics. This shows that they are technologically feasible as currently designed.	Agree. The NTS study results supported staff's technology assessment. However, the extended compliance dates represent a feasible timeframe for manufacturers to reformulate their existing coating lines, as well as for raw materials supplier/resin manufacturers to refine the coatings technology
High performance, low-VOC products are commercially available.	Agree. Staff's own technology assessment is consistent with your findings.
Raw material suppliers have made tremendous advances in technology.	Agree. Staff's own technology assessment is consistent with your findings.
A limit of 100 g/l VOC should be adopted across the board.	Disagree. An across the board 100 g/l limit is not feasible for all categories at this time. The amendments focus on the most appropriate and feasible limits for each category due to the differing uses, performance needs, and available information.
Averaging Provisions are not necessary. It creates a loophole.	Disagree. Staff believes that the averaging compliance option is a flexibility option needed for compliance with the amendments in a more cost-effective manner, as well as retention of certain coatings for some very specific uses, where reformulation may not be cost-effective for a particular manufacturer.

The District has overestimated the proposed rule's economic impact. Overall costs are overestimated. Cost of reformulating (20%) will be repeated each year, instead of incurred on a one-time basis. It also assumes that the price increase will persist until 2015 at the same percentage discrepancy. Health Insurance costs and quicker re-occupancy costs associated with faster dry times and no odors for hotels, factories, and other institutional consumers were not considered.	The District recognizes the cost savings from each one of the items mentioned by the commentator. However, adequate data was not available to quantify the cost savings from these. As a result, the cost-effectiveness figures may be conservative.
Not implementing the Best Available Controls will cause serious adverse health effects.	Disagree. The amended rule was based on a thorough technology assessment, as well as overall cost-effectiveness. The adopted limits represent best available and cost-effective technology for each of the categories. The implementation dates represent a feasible timeframe for manufacturers to reformulate their existing coating lines, as well as for raw materials supplier/resin manufacturers to refine the coatings technology. The amendments represent the Best Available Controls within the context of a cost-effective regulation. The emission reductions are in line with reductions included in the AQMP, which considers the overall health benefits associated with ozone reductions.
National Paint & Coatings Association Letter	
Full presentation of NTS Study should be made.	Agree. A full presentation of the NTS study was conducted at the June 23, 1999 meeting, and summarized data was distributed.
Field Studies of new low-polluting paint should be made available to industry for evaluation.	The TAC is currently working on a protocol to conduct the field application study to compare the performance of zero- and low-VOC coatings with high-VOC coatings, and results will be incorporated into future technology assessments. As the protocol is further developed and finalized, staff will present the final protocol to the working group.
Information to industry should be provided in a timely manner.	Staff has presented information regarding the NTS study, as requested by the commentator.
Discussion of Specialty Primers and Chemical Tank Coatings.	These categories were briefly discussed at the June 23, 1999 meeting. Staff also requested that any requests for interpretations regarding these categories be submitted in writing.

Staff should engage in an on-going dialogue as directed by the Board concerning various issues pertaining to the implementation of the Rule 1113 amendments.	Staff is committed to such dialogue. A detailed workplan is included in this report for future meetings and discussions.
Smiland & Kachigian Letter	
Issues	**Response**
National Rule preempts regulating sale and manufacturing of architectural coatings.	This issue is a subject of the current litigation and will be addressed in the context of that litigation. This issue was also unsuccessfully raised in the prior litigation filed in response to the November 8, 1996 amendments, and discussed during the rulemaking process.
Staff Report, FSEA, and FSIA were significantly changed several days prior to public hearing. 30 day notice requirements were violated No mention of Clean Air Act section 183 (e.)	This issue is a subject of the current litigation and will be addressed in the context of that litigation. Staff disagrees with these contentions. All notice requirements pursuant to California Health & Safety Code Section 40440.5 were met. Any changes made were within the scope of the rulemaking.
NTS Study fatally flawed. Repeal amended rule. Redo lab study and start and complete the field study.	This issue is a subject of the current litigation and will be addressed in the context of that litigation. The amended rule is based on staff's own technology assessment, which has been well supported by the laboratory portion of the NTS study. Staff disagrees with these contentions, and points out that industry heavily participated in the development of this study. The field portion of the NTS study will be conducted over the next three years, and results will be incorporated into future technology assessments presented to the Governing Board.
Competitor and Lobbyist Misrepresentations. Correct misrepresentations before Board.	This issue is a subject of the current litigation and will be addressed in the context of that litigation. There is no basis to conclude that misrepresentations were made. In any event, conflicting viewpoints were amply presented to this Board.
Competitor Claims in Staff Reports are not accurate.	This issue is a subject of the current litigation and will be addressed in the context of that litigation. Staff disagrees with these contentions. The Staff Report discusses a wide variety of technologies for the coating categories included in the amendment, and does not purport to endorse any of them. The technologies discussed in the staff report are available from a variety of resin manufacturers, as well as national, regional, and local coating manufacturers. Industry has not provided any credible test data, as requested during the rulemaking process, to dispute the validity of these technologies.

Interest Group Bargains. Explicit or implicit deals were made between staff and favored market actors or segments. Rulemaking should be based on factual, legal and policy merits.	This issue is a subject of the current litigation and will be addressed in the context of that litigation. Staff disagrees with these contentions. As always, staff is available to meet with members of the industry until the public hearing to address their concerns. There were no private deals made between staff and any members of the industry. Changes to the proposed rule were made at industry's request based on technical information provided to staff.
Staff misrepresentations were made pertaining to emissions, comparison of emissions, availability, and use of zero-VOC paints. Additionally, even after massive promotion, zero-VOC paints represent an extremely small slice of the paint market, perhaps 1%.	This issue is a subject of the current litigation and will be addressed in the context of that litigation. Staff disagrees with these contentions and stands by its presentation. Information presented was based upon VOC emissions which in turn was based upon the latest currently available data. Staff fairly represented the availability and performance characteristics of low-VOC paints.
No Board Deliberation – Only two Board Members asked questions, and only two offered comments.	There is no basis to assume that the extent of an individual board member's deliberation may be measured by the number of questions or comments he or she may publicly raise. The extent of deliberation is typically dependant on several issues, including the Board's familiarity with the issues.
Low Volatility of Glycol Products – CARB exempts products containing such compounds.	This issue is a subject of the current litigation and will be addressed in the context of that litigation. This issue was also unsuccessfully raised in the prior litigation, and discussed during the rulemaking process. The commentator has yet to demonstrate that water-borne coatings do not result in air pollution. Indeed, the commentator's current position is inconsistent with his earlier position that the use of water-borne coatings may cause significant increases in air pollution. Both USEPA and CARB, who have also considered this issue, do not recognize a low volatility exception for architectural coatings. Nonetheless, staff will continue to work with CARB staff in reviewing any new scientific evidence on this point.

Mineral Spirits are the largest volume solvent used in solvent-based coatings, and they are low in reactivity. Therefore, staff should evaluate the reactivity of mineral spirits before banning them. The rule should be repealed.	This issue is a subject of the current litigation and will be addressed in the context of that litigation. This issue was also previously raised unsuccessfully in both the 1996 and the 1990 litigation, as well as discussed during the rulemaking process. Staff again disagrees with these contentions. Indeed, Dr. Carter, one of the experts on reactivity, has recently found that under a revised model, mineral spirits should still be considered reactive. Staff has been closely following the latest developments in the science of reactivity. In the summer meeting of the Reactivity Research Working Group, Dr. Carter, as well as other experts in the field, presented a series of studies that need to be conducted in an attempt to reduce the uncertainties associated with modeling, ozone chamber studies, and fate/availability assessments. The CARB has not yet implemented the alternative reactivity approach in their Aerosol Coatings Rule due to uncertainties associated with reactivity scales, especially under varying NOx conditions. These results are undergoing a peer review process in an attempt to validate the results to date. Staff, as well as the Board, have committed to continue studying reactivity and availability in the amended rule and the Resolutions.
The District has no explicit authority over product formulas. Paints are not direct sources of ozone, and the District has not established that the compounds in waterborne paints are volatile enough, or those in solvent-based paints are reactive enough. The rule should be repealed.	This issue is a subject of the current litigation and will be addressed in the context of that litigation. This issue was also unsuccessfully raised in the prior litigation. Staff again disagrees with these contentions, as discussed above.
The District did not assess the key environmental impacts and alternatives. The FSEA should be de-certified and the amendments repealed.	This issue is a subject of the current litigation and will be addressed in the context of that litigation. This issue has been discussed during the rulemaking process and addressed in the staff report. Staff disagrees with these contentions and believes the FSEA fully complied with all applicable requirements of CEQA. Staff examined the alternatives to the proposed rule, and determined that they were infeasible. For example, the science does not support regulations based on volatility or reactivity. A seasonal control strategy was discussed during the rulemaking process, but deemed infeasible by numerous manufacturers and retailers. A regional approach is clearly infeasible due to the differing needs of differing air quality conditions found in the various regions in the state.

Economic Impacts were not adequately analyzed. The rule amendments should be repealed until the FSIA is supplemented.	This issue is a subject of the current litigation and will be addressed in the context of that litigation. This issue was discussed during the rulemaking process and addressed in the staff report. Staff disagrees with these contentions and believes the FSIA adequately analyzed to the extent data was available the socio-economic impacts of the rule amendments.
Federal mandates. Staff materials and presentation represented that the Board was federally mandated to adopt the rule amendments. This is a false representation. The amendments should be repealed.	No such representations were made.
The 7,000 paint formulas outlawed have a fair market value of $182,000,000. These formulas will become useless, and therefore, valueless. This is considered an unconstitutional taking of property without just compensation.	This issue is a subject of the current litigation and will be addressed in the context of that litigation. This issue was also unsuccessfully raised in the prior litigation. Furthermore, this issue was discussed during the rulemaking process and addressed in the staff report. For the same reasons stated earlier, Staff disagrees with these contentions.
There is no public purpose behind Rule 1113, since paint VOC's are neither volatile nor reactive enough to result in ozone.	This issue is a subject of the current litigation and will be addressed in the context of that litigation. This issue was also unsuccessfully raised in the prior litigation. Furthermore, this issue was discussed during the rulemaking process and addressed in the staff report. Rule 1113 does serve a public purpose by reducing VOC's. Modeling studies performed in support of the 1991, 1994, and 1997 AQMPs indicate that the Basin is VOC limited and thus ozone formation is a function primarily of available VOC not NOx as advocated by some commentators. In addition, it is generally accepted that the dramatic improvement in ozone air quality in the Basin is primarily the result of decreased VOC emissions.
Equal Protection. The District has banned the compounds in paints when the same ones in other products are not regulated. It unconstitutionally gives favored classes exemptions, but not unfavored classes. The District should repeal the amendments until it treats like compounds, manufacturers, and users alike.	This issue is a subject of the current litigation and will be addressed in the context of that litigation. This issue was also unsuccessfully raised in the prior litigation. Staff disagrees with these contentions. There is no unconstitutional differential treatment.

Damages. Manufacturers are suffering massive reformulation costs, whether successful or unsuccessful. The costs of paints will increase, labor costs will increase, and eventually consumers will switch to non-paint substrates.	The FSIA recognized the significant costs that may result from the amendments to Rule 1113. These costs were properly considered by the Board when it adopted those amendments. In the FSIA, the District did a comprehensive evaluation of all socio-economic impacts, and determined the overall cost-effectiveness of the amendments. The amended rule does not outlaw product lines, but requires reformulation of these product lines. However, the manufacturers of these product lines will be able to continue to market and sell those paint formulas outside of the four county area currently under the AQMD's purview absent similar action by other air districts. In addition, the amendments include an averaging compliance option, which will allow manufacturers to reformulate certain product lines, and maintain other product lines at their current VOC levels.
The 1996 amendments are also impacted by the above issues.	These issues were previously addressed in the litigation over those amendments.
Painting and Decorating Contractors of America (PDCA) Letter	
Clarification of definitions for Essential Public Service Coatings and Chemical Storage Tank Coatings.	These clarification will be sent to PDCA under separate cover.
The NTS study needs to be evaluated to address the following: • Discussion of errors in the initial raw data; • Discussion of errors in the summary tables; • Discussion of information and recommendations from raw data.	The Staff has coordinated two tele-conferences and one meeting with TAC to receive specific information pertaining to errors or omissions in the raw data and the summarized data. Specific comments have been received, and NTS provided clarifications at a July 27, 1999 meeting. For example, NTS discussed the test methods used for dry time analysis, as well as explained the reasons for the initial, negative values included in the raw data for some samples. The TAC has identified other specific areas that need to be reviewed in the summary results, and NTS staff will revise items identified.

Law Offices of Curtis Coleman Letter	
Interior semi-transparent wood stains should be treated separately from other stain categories.	This issue is a subject of the current litigation and will be addressed in the context of that litigation. Furthermore, this issue was discussed during the rulemaking process and addressed in the staff report. The AQMD believes that the VOC limit of 250 g/l for stains, including interior, semi-transparent stains, is feasible. This limit is based on the availability of numerous, compliant interior stains. The commentator is also encouraged to assess the averaging compliance option to assist with compliance, while retaining certain product lines.
Opaque Floor Coatings, especially single component, used for wood porches and decks are not available. Furthermore, the rule requires a lower limit for floor coatings than for non-flat coatings. This does not make sense.	This issue is a subject of the current litigation and will be addressed in the context of that litigation. Furthermore, this issue was discussed during the rulemaking process and addressed in the staff report. The AQMD believes that the VOC limit of 100 g/l is appropriate for the floor coatings category, and has identified coatings in single-component as well as two-component formulations. Both single- and two-component are available for a variety of uses, including wood porches and decks. In addition to the two single-component coatings discussed in the staff report, other compliant single component floor coatings are manufactured by Polycoat Products and Tufflex.
Stain-blocking primers, especially to block tannins in wood, are not available, and should be included in the specialty primers category.	This issue was discussed during the rulemaking process and addressed in the staff report. The staff's technology assessment has identified a variety of primers available for stain blocking. Nonetheless, staff proposed a specialty primers category with a higher interim limit at the public hearing to address concerns about specific substrates, such as fire-, smoke-, and water-damaged or excessively chalky surfaces. Furthermore, the averaging compliance option will allow a manufacturer to continue marketing non-compliant primers.

Industrial Maintenance Tank and Pipe Lining Coatings for immersion service cannot meet the new limits.	This issue is a subject of the current litigation and will be addressed in the context of that litigation. Furthermore, this issue was discussed during the rulemaking process and addressed in the staff report. The staff's technology assessment has identified a variety of industrial maintenance coatings recommended for use in immersion service. Nonetheless, staff proposed a chemical storage tank coating category with a higher interim limit at the public hearing to address concerns about specific solvents, including oxygenated solvents.
Essential Public Service definition needs to be clarified. Additionally, this category should be expanded to private facilities, since they have similar exposure conditions.	This issue is a subject of the current litigation and will be addressed in the context of that litigation. Additionally, this issue was discussed during the rulemaking process and addressed in the staff report. The Essential Public Service Coating category was included to provide limited higher interim limits as a contingency for public agencies to accommodate their greater delays in updating their specifications and bidding procedures for the use of paints. Notably, these agencies typically use coatings that are below the proposed compliance limits for July 2002, the Essential Public Service Coating category, based on annual coating usage information submitted by essential public service agencies, is expected to be a relatively small usage category and will be monitored annually. Furthermore, these essential public service agencies have already initiated discussions to start a technology assessment to comply with the final VOC limits, which are the same as the final limits for private facilities. Higher limits for private facilities were also created, where appropriate. For example, a chemical storage tank coating category was created in response to the need for storage of oxygenated solvents. Any specific clarification of the definition should be requested in writing and will be forward to the working group for discussion.
Exterior coatings at the 50 g/l level are not available. The lack of durability studies on exterior 50 g/l coatings make that limit grossly premature	This issue is a subject of the current litigation and will be addressed in the context of that litigation. The staff report has numerous discussions on the variety of coatings available in each category, including the final limits of 50 g/l for nonflat and floor coatings. Some of the zero-VOC nonflat exterior coatings are included in the Phase II Assessment Study, and have shown comparable performance to their higher-VOC counterparts. The field studies, including accelerated exterior exposure studies and real time exposure studies, will also provide additional data. Additionally, raw material suppliers have exterior exposure studies for these coatings.

Other Issues Presented at Meetings	
Anti-Graffiti Systems not available.	This issue was discussed during the rulemaking process and addressed in the staff report. Compliant permanent, anti-graffiti coatings are available, as indicated by some of the testimony at the public hearing, as well as information collected by staff as a part of their technology assessment.
Specialty primers for concrete and stain blocking not available.	This issue was discussed during the rulemaking process and addressed in the staff report. The staff's technology assessment has identified a variety of primers available for concrete and masonry. Nonetheless, staff proposed a specialty primers category with a higher interim limit at the public hearing to address concerns about specific substrates, such as fire-, smoke-, and water-damaged or excessively chalky surfaces.
Differentiate between interior and exterior wood sealers.	This issue was discussed during the rulemaking process and addressed in the staff report. The staff's technology assessment has identified compliant waterproofing wood sealers for interior and exterior uses.

Appendix C– Workplan

RULE 1113 – ARCHITECTURAL COATINGS

WORKPLAN

COMMITTEE: **Working Group**

OBJECTIVE: To provide a forum for discussion of technological advancements in coatings material, market trends, and product performance as it relates to Rule 1113 – Architectural Coatings.

DESCRIPTION: The Working Group is comprised of coating manufacturers, raw material suppliers, coating contractors, consultants, other governmental agencies, as well as the public. The meetings are coordinated by AQMD staff, and usually held at headquarters. The future meetings will be scheduled on a quarterly basis.

MEASURABLE OUTPUT(S):

- Meet quarterly to provide industry with progress of technology assessments, litigation, and other rule-implementation related items
- Receive information from industry pertaining to the state-of-the-technology for coatings and market trends
- Receive annual status reports for technology assessments
- Technology Assessment Reports, July 2000, July 2001, January 2004, July 2005, July 2007
- Devise outreach and contractor training programs
- Develop and implement Phase III amendments
- Phase III Rule amendments
- Meet until implementation of final limits
- Review reports from Averaging/Niche market subgroup and the TAC

BOARD REPORT(S):

- Stationary Source Committee – March, June, October, December
- Annual Status Report - July

CURRENT WORKING GROUP MEMBERS

Sal	Fname	Lname	Coname	Phone
Mr.	Bert	Adams	Glaze N Seal	949-250-9104
Ms.	Heidi	Alderman	Air Products & Chemicals	610-481-8316
Ms.	Jodi	Allen	Union Carbide	310-214-5322
Mr.	Don	Ames	State of CA Air Resources Board	916-323-4227
Mr.	Bernie	Appleman	SSPC	412-281-2331 x234
Mr.	Allen	Armstrong	Hill Brothers Chemical Co.	714-998-8800
Mr.	Yin	Aye	Smiland Paint Co.	323-222-7616
Mr.	Marty	Balow	Frazee Paint Co.	619-552-3261
Mr.	Jasen	Banta	Matt Construction	562-903-2277
Mr.	Barry	Barman	KTA-TATOR, Inc.	818-713-9172
Mr.	Paul	Beemer	Henry Co	323-583-5000
Mr.	Chuck	Benesch	D'Angelos	805-483-4398
Mr.	Howard	Berman	Kessler & Associates, Inc.	202-547-6808
Mr.	Jim	Bossardt	Blast/Coat Systems, Inc.	909-981-8137
Mr.	Tim	Bosveld	Dunn Edwards	213-771-3330
Mr.	Larry	Breeding	Walt Disney Company	818.840.1948
Mr.	Mike	Butler	Behr Process Corporation	714-545-7101
Mr.	Mike	Callahan	Jacobs	310-847-3922
Mr.	David	Clifford	AKZO NOBEL	248-637-5294
Mr.	Curtis	Coleman	Law Offices of Curtis L. Coleman	310-348-8186
Mr.	Gerrold	Coleman	Paramount Pictures	213-956-8214
Mr.	Tim	Conkin	LADWP	213-367-0443
Ms.	Margaret	Coon	Ameron Protective Coatings	714-529-1951 x336
Mr.	Stan	Cowen	Ventura County APCD	805-645-1408
Mr.	Pete	Cutrona	Ellis Paint Co.	323-262-8114
Mr.	James	Dabbs	Spectra-Tone Paint Corp.	909-478-3485
Mr.	Mike	De La Vega	Life Paint Company	310-944-6391
Mr.	Geoffrey	Dearth	Air Products & Chem. Inc.	626-964-3451
Ms.	Stacey	Dobrosky	Union Carbide	310-214-5338

Mr.	Lee	Doyle	S.G. Pinney & Associates Inc.	949-770-3010
Mr.	Richard	Drisko	SSPC	
Mr.	Phil	Drooks	Metropolitan Water District of So. California	909-392-5214
Mr.	M.	Dyer	Devoe Castings	213-888-8888 x8344
Mr.	Mehrdad	Emami	McWhorter Tech.	310-884-5517
Mr.	Wes	Emerson	Rust-Oleum	909-468-9136
Ms.	Daniela	Fernandez	County Government Center	
Mr.	Bob	Floriani	ICI-Dulux	323-888-8888
Ms.	Yvonne	Fong	U.S. EPA	415-744-1199
Mr.	Chris	Foster	Smiland & Khachigian	213-891-1010
Mr.	Randy	Francisco	McWhorter Technologies, Inc.	847-551-3159
Mr.	John	Frantz	DWR	916-653-1328
Mr.	Harley	Fung	Benjamin Moore & Co.	213-722-3484
Ms.	P	Ghuman	LACSD	562-699-7411 x2138
Mr.	Robert	Gross	PPG Industries, Inc.	412-274-3455
Mr.	Lloyd	Haanstra	DEFT	949-476-6733
Mr.	Jay	Haines	Texture Coatings of America, Inc.	213-233-3111
Ms.	Madelyn	Harding	The Sherwin-Williams Co.	216-566-2630
Mr.	Hal	Hargrave	Tri-County PDCA	909-593-9539
Mr.	Richard	Hart	Hart Polymers	949-955-3813
Mr.	Brian	Heath	The Valspar Corp.	612-375-7963
Mr.	Robert	Henderson	Coatings Resource Corp.	714-894-5252
Mr.	Tony	Hobbs	Tnemec Corporation	310-643-5191
Mr.	Scott	Holland	Cal Western Paints	562-693-0872
Mr.	Eddy	Huang	AVES	626-447-5216
Mr.	Alex	Iaroli	E. P. S.	323-889-2520
Mr.	George	Illes	LFR, Levine Fricke	949-955-1390
Ms.	Gail	Ito	Chevron	310-615-5475
Mr.	Mike	Jacola	Califronia Air Resources Board	916-327-1515
Mr.	Barry	Jenkin	Benjamin Moore	973-252-2650
Ms.	LaShawn	Johnson	Carboline Coatings	314-644-1000 x2410

Ms.	Carol Yip	Kaufman	Metropolitan Water District of Southern California	909-392-2504
Mr.	Ned	Kisner	Triangle Coatings	510-895-8000
Ms.	Dinah	Land	Bona Kemi	303-371-1411
Ms.	Terri	Lasso	Sherwin-Williams	214-553-3931
Mr.	Jay	Lease	PROCOS	323-981-9195
Mr.	Martin	Ledwitz	SCE	626-302-9538
Mr.	Gene	Lee	Rohm and Haas Company	909-899-7955
Mr.	David	Leehy	Vista Paints	714-680-3800 x277
Mr.	Stanton	Lewis	City of Los Angeles	310-648-5380
Mr.	Pat	Lofgren	ICI Paints	440-826-5519*
Mr.	John	Long	Smiland Paint Co.	213-222-7000
Ms.	Geraldine	Lucas	Disneyland Resort	714-781-0304
Mr.	Dave	Lunzer	Union Carbide	310-214-5321
Mr.	Pat	Lutz	Dunn Edwards	323-771-3334
Mr.	Todd	Maiden	Seyfarth, Shaw	415-544-1014
Mr.	Tom	Marsden	Disneyland Resort	714-781-4504
Mr.	Mike	Mason	Southern California Edison	714-368-9145
Mr.	John L.	Massingill, Jr.	Eastern Michigan University	734-487-2203
Ms.	Judith	McCourt	Union Carbide	310-214-5300
Mr.	John	Means	Universal Studios	818-777-2351
Mr.	Clayton	Miller	CIAQC	909-612-5707
Mr.	Gil	Mislang	Dunn Edwards	800-733-3866 x2305
Mr.	Norm	Mowrer	Ameron	714-529-1951
Mr.	Jerry	Mulnix	Cal-Western Paints, Inc.	310-693-0872
Mr.	Stephen	Murphy	Murphy Industrial Coatings	310-427-7720

Mr.	Dinkar	Naik	Pacific Polymers	714-898-0025
Mr.	Bob	Nelson	National Paint & Coating Association	202-462-6272
Mr.	Wayne	Nelson	Spectra-Tone Paint	909-478-3485
Mr.	Bob	Newton	NSTS	
Mr.	Marcy	Nichol	TruServ Mfg	847-639-5383

Mr.	R.	Novielli	Rohm & Haas	714-556-8658
Mr.	Jim	Nyarady	CARB	916-322-8273
Mr.	Bert	Osen	U.S. Celluluse	562-222-2200
Mr.	Parker	Pace	BEHR Process	714-545-7101
Mr.	Ijay	Palansky	Dunn Edwards	202-669-6602
Mr.	Randy	Pasek	California Air Resources Board	916-324-8496
Mr.	Fenando	Pedroza	Frazee Paint	619-276-9500
Mr.	Herb	Pigram	Rohm & Haas Co.	714-974-7611
Mr.	Hamid	Pourshirazi	Vista Paint	714-680-3800 ext. 277
Mr.	Greg	Quinn	Los Angeles PDCA	213-258-8136
Mr.	Joe	Ramirez	Ever Guard Coatings	562-531-0131
Mr.	Bob	Reeves	Benjamin Moore Paints	213-722-3484
Ms.	Ellen	Reinhardt	The Better Paint Tray LLC	800-946-9391
Mr.	Benjamin	Remley	DuPont Engineered Services	281-359-8749 714-593-3803
Mr.	William	Riechers	Genesis Coatings, Inc.	800-533-4273
Mr.	Ray	Robinson	ELRAP	909-335-2223
Mr.	Mark	Robson	Golden State PDCA	760-949-4848
Mr.	Andy	Rogerson	Caltrans	916-227-7289
Mr.	Steve	Sanchez	US Can Company	323-267-5931
Mr.	Oscar	Sandoval	Frazee Paint	619-276-9500
Mr.	Anil	Sayta	Zynolyte/I.C.I Paints	310-513-0700
Mr.	Jim	Sell	NPCA	202-462-6272
Mr.	Rodney	Sells	Resin Technology Co.	909-947-7224
Mr.	Patrick	Shannon	Sierra Performance Coatings	650-548-5188
Ms.	Erin	Sheehy	Environmental Compliance Solutions	626-844-6655
Mr.	Dean	Simeroth	Air Resources Board	916-322-6020
Mr.	Mark	Simon	MWD	909-392-2909
Mr.	Al	Singh	Surface Protection Inc.	323-269-9231
Mr.	Jim	Sliff	Rust-Oleum	310-937-3429
Mr.	Bill	Smiland	Smiland & Kachigian (CPA)	213-891-1010
Mr.	Craig	Smith	C-F	562-596-7448
Mr.	Harry	Sporidis	Kessler & Associates/Dunn-Edwards	202-547-6808

Ms.	Christine	Stanley	Ameron Protective Coatings Systems	714-529-1951
Mr.	Bob	Steel	Park Water District / SICC	562-923-0711
Mr.	Joe	Stoddard	Mobile Pipe Wrappers & Coaters Inc.	750-246-4707
Mr.	Gene	Suconey	Disneyland Resort	
Ms.	Sharilen	Talati		213-586-3996
Ms.	Sheri	Thompson	Sherwin Williams	562-404-0582
Mr.	Rob	Truitt	Dayton Superior Corp	562-946-5504
Mr.	Jay	Umphrey	EPS Inc.	800-642-7077
Ms.	Barbara	VanCina	Carboline	949-654-9905
Mr.	John	Wallace	MWD	909-392-5173
Mr.	John	Waltman	Cal Western Paints	562-693-0872
Mr.	Robert	Wendoll	Dunn-Edwards Paints	213-771-3330
Mr.	Peter	Whittingham	County of Los Angeles	213-974-5555
Mr.	Max	Wills	Cal Poly State University	805-756-2746
Mr.	Tek	Woo	Union Carbide	310-214-5366
Mr.	Kevin	Worrall	TeraCota	323-233-3111
Mr.	Steven	Yagade	Walt Disney Imagineering	818-544-6567
Mr.	Mark	Zielinski	ICI	800-339-6910

RULE 1113 – ARCHITECTURAL COATINGS

WORKPLAN

COMMITTEE: **AVERAGING/NICHE MARKETS SUB-GROUP**

OBJECTIVE: To successfully implement the averaging compliance option program, as well as monitor and address issues related to niche markets

DESCRIPTION: The Averaging/Niche Market Subgroup consists of working group members that initially participated in the development of the averaging compliance option program, as well as additional interested parties. The committee will meet on a quarterly basis to develop a guidance document and monitoring program to further ensure the successful implementation of the averaging compliance option. The guidance document will include prototype plans for national, regional, and small manufacturers, as well as address manufacturers that only carry coatings for niche markets.

MEASURABLE OUTPUT(S):

- Meet on quarterly basis – Proposed Dates: September 8, 1999, December 8, 1999, March 9, 2000, and June 6, 2000
- Provide input to staff regarding guidance document for implementing averaging compliance option.
- Work with staff to develop prototype averaging plans for national, regional, and small manufacturer.
- Discuss issues related to small manufacturers and niche markets, within the context of averaging
- Monitor implementation of averaging provisions

BOARD REPORT(S):

- Stationary Source Committee – March, June, October, December
- Annual Status Report - July

CURRENT AVERAGING/NICHE MARKET SUB-GROUP MEMBERS

Mr.	Don	Ames	California Air Resources Board	916-323-4227
Mr.	Paul	Beemer	Henry Co.	323-583-5000
Ms.	Yvonne	Fong	USEPA, Region IX	415-744-1199
Ms.	Madelyn	Harding	The Sherwin Williams Co.	216-566-2630
Mr.	Barry	Jenkin	Benjamin Moore Co.	973-252-2650
Mr.	David	Leehy	Vista Paints	714-447-9540
Mr.	John	Long	Smiland Paint Co.	213-222-7000
Mr.	Bob	Nelson	National Paint & Coatings Association	202-462-6272
Mr.	Jim	Nyarady	CARB	916-322-8273
Mr.	Jerry	Mulnix	Cal-Western Paints	562-693-0872
Mr.	Jim	Sell	National Paint & Coatings Association	202-462-6272
Mr.	Harry	Sporidis	Kessler & Associates/ Dunn Edwards	202-547-6808
Mr.	Christine	Stanley	Ameron Protective Coatings Systems	714-529-1951
Mr.	Robert	Wendoll	Dunn Edwards Paints	323-771-3330
Mr.	Kevin	Worrall	Textured Coatings of America	323-233-3111

RULE 1113 – ARCHITECTURAL COATINGS

WORKPLAN

COMMITTEE: **TECHNICAL ADVISORY COMMITTEE (TAC)**

OBJECTIVE: To provide technical oversight of the Phase II Assessment Study and future technology assessments, including selection of coatings, relevant testing, and the report formats. Additionally, the TAC will evaluate data to identify links between performance characteristics and emission potential of architectural coatings.

DESCRIPTION: In February 1998, the AQMD formed a Technical Advisory Committee (TAC) to help oversee a study to obtain performance data for zero-, low-, and high-VOC coatings in certain categories. The TAC was charged with providing input on the design of the study, as well as the selection of the contractor to perform the study. National Technical Systems (NTS) was selected to perform the study. The TAC is comprised of Mr. Robert Wendoll, previously of ELRAP, and now representing Dunn Edwards, Mr. Steve Murphy, representing PDCA, Harley Fung, representing Benjamin Moore Paints, Mr. Jim Nyarady, CARB, Ms. Yin Aye, representing Smiland Paints, Mr. David Leehy, now representing ELRAP, and Mr. Naveen Berry, representing the AQMD. Madelyn Harding, representing the Sherwin Williams Co., was added to the TAC on July 23, 1999. The TAC will continue to search for a replacement for Dr. Johnny Gordon, who represented academia. The TAC membership may change or expanded for future technology assessments.

MEASURABLE OUTPUTS:

- Review and develop the Request for Proposals
- Review all proposals and assist in the selection of contractors
- Assist in the selection of coatings included in studies
- Review and comment on the Testing Protocols

- Receive data for test results and discuss with contractors and staff
- Continue providing technical oversight for the development of the protocol for the field application study of zero-, low-, and high-VOC coatings. Tasks include selection of coatings, substrates, location(s), and specific contractors.
- Evaluate test panels from laboratory studies as a part of a peer review process.
- Provide technical guidance for real-time field exposure studies, such as selection of controls, location(s), etc. Quarterly evaluations of panels for the first year, and biannual evaluations for the second and third years, should be considered.
- Assist in the development of future technology assessment evaluations
- Provide input to Staff on development of annual status reports to the Board

BOARD REPORT(S):

- Stationary Source Committee – March, June, October, December
- Annual Status Report - July

Appendix D – NTS Testing Procotol

Progress Report #1

Testing Protocol Support Document, and Laboratory Quality Assurance/Quality Control Program

For

PHASE II ASSESSMENT STUDY OF ARCHITECTURAL COATINGS

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 E. Copley Drive, Diamond Bar, CA 91765
Contract No. 98126

September 2, 1998

NTS Master Job Order
8450-1096

National Technical Systems
PO Box 857
North Highlands, CA 95660
Phone (916) 779-3100
FAX (916) 779-3105

The following describes the specific tests specific tests identified in part II in reference to the part II paragraph numbering scheme. The following also contains a summary of our laboratory quality assurance and quality control programs to ensure the integrity of the testing and to ensure accuracy and precision of the test results of this study.

CATEGORY	COATING
1.	Industrial Maintenance Coatings
2.	Non-Flats
3.	Primers, Sealers, and Undercoaters
4.	Quick-Dry Enamels
5.	Quick Dry Primers and Sealers
6.	Waterproofing Sealers

1.3 Storage and Aging: ASTM D2243-95 Freeze-Thaw Resistance of Water-borne Coatings

COATING CATEGORY: 1-6 (water borne)

SUMMARY OF TEST METHOD: The water-borne coating is put into two pint-size (500 ml) resin lined cans. One can is stored at room temperature, while the other can is subjected to cycles of freezing and thawing. Five cycles @: –18 ◦C (17 hrs.) followed by + 25 C ◦ (7 hrs.) After cycling, the coating is examined for changes in viscosity and visual film properties. Evaluate the applied film (dry) appearance, before and after free-thaw cycles. Evaluated changes in container condition (scale 0-10) and Brookfield viscosity.

QUALITY ASSURANCE: All test specimens will be prepared and tested by an operator properly skilled in the methods to be used. Records will be kept of all test conditions, i.e., Brookfield viscometer model and spindle, viscosity at the spindle/speed utilized, temperature, relative humidity, viscosity standards used, test conditions, etc. Viscosity standards will be used to calibrate the instrument. Calibrated thermometers and viscometers will be used. (See Appearance 3.2)

2.1 Brushing Properties: FTMS Method 4321.2 Brushing Properties

COATING CATEGORY: 1, 2, 4

FIELD TEST OF SELECTED COATINGS BY PAINTING CONTRACTOR:

SUMMARY OF TEST METHOD: Apply coating by brush (2 ½ " wide), brush back and forth then 90 degree cross strokes. Note brushing and spreading, especially around the

joint area. Rate dry coating for appearance and inspected for freedom of lap marks. Use the Leneta brushout standards on a scale of 1 to 10.

QUALITY ASSURANCE: This test is quite subjective; however, someone experienced in the art can produce quite consistent results, particularly in the determination of the "drag" properties. To be performed by an experienced painting contractor in a field application on selected coatings.

2.2 Dry Time: ASTM D5895-95 Times of Drying or Curing During Film Formation of Organic Coatings Using Mechanical Recorders

COATING CATEGORY: 1-5

SUMMARY OF TEST METHOD: The coating is applied to glass strips approximately 12 inches in length by 1 inch in width. The drying time recorder is immediately placed on the wet film and the stylus lowered onto the wet coating. The stylus moves across the glass strip at a selected constant speed. Determine drying time at 90◦ F and 30 % Relative Humidity (RH) and at 50◦ F and 80% RH.

QUALITY ASSURANCE: All test specimens will be prepared and tested by an operator properly skilled in the methods to be used. Testing will be done in duplicate when drying times are outside of specification requirements.

2.3 Flow Characteristics:

COATING CATEGORY: 1-5

SUMMARY OF TEST METHOD: Rather than making Brookfield viscosity measurements with an arbitrary spindle and at an arbitrary RPM, we will make leveling and sag resistance measurements directly. (see Leveling 2.4 and Sag Resistance 2.7)

2.4 Leveling: NYPC Leveling Test (blade)

COATING CATEGORY: 1-5

SUMMARY OF TEST METHOD: A drawdown using a notched blade on a horizontal surface is made over black test chart. The coating is let dry and the gaps between blade notches is rated on a scale of 1 to 5

QUALITY ASSURANCE: All test specimens will be prepared and tested by an operator properly skilled in the methods to be used. Leneta charts will be used to measure the leveling.

2.5 Pot Life: ASTM D 2196-86 (Reapproved 1991) Rheological Properties of Non-Newtonian Materials by Rotation (Brookfield) Viscometer

COATING CATEGORY: 1

SUMMARY OF TEST METHOD: Test Method A consists of determining the apparent viscosity of coatings by measuring the torque on a spindle rotating at a constant speed in the material under test at 25◦ C. At manufacturer's stated pot life, make drawdown panels and check for appearance.

QUALITY ASSURANCE: All test specimens will be prepared and tested by an operator properly skilled in the methods to be used. Testing will be performed in duplicate if viscosity measurements are outside of specification requirements. Records will be kept of all test conditions, i.e., Brookfield viscometer model and spindle, viscosity at the spindle/speed utilized, temperature, viscosity standards used, test conditions, etc. Viscosity standards will be used to calibrate the instrument. Drawdown panels will be evaluated for Appearance (See Appearance 3.2)

2.6 Roller Coating Properties: FTMS Method 4335 Roller Coating Properties

COATING CATEGORY: 2,3,4,5

FIELD TESTS OF SELECTED COATINGS BY PAINTING CONTRACTOR:

SUMMARY OF TEST METHOD: Apply test coating with a roller and allow the panels to dry in a vertical position for the time and under the conditions required in the product specification. After drying observe for film defects, dimples and lack of hiding

QUALITY ASSURANCE: This test is quite subjective; however, someone experience in the art can produce quite consistent results. To be performed by an experienced painting contractor in a field application on selected coatings. Evaluate for appearance (see Appearance 3.2). Records will be kept of all test conditions, i.e., temperature, humidity, roller used, test conditions, etc.

2.7 Sag Resistance: FTMS Method 4494.1 Sag Test

COATING CATEGORY: 2, 3, 4, 5

SUMMARY OF TEST METHOD: A drawdown using a notched blade on a horizontal surface is made over black and white test chart. The chart is then placed in a vertical plane, letting the coated areas sag over the uncoated areas. The coating is let dry and the

strip that has not been completely "sagged" over is determined, and the blade clearance of the strip immediately below, is the sag rating given the coating.

QUALITY ASSURANCE: All test specimens will be prepared and tested by an operator properly skilled in the methods to be used. Leneta Anti-sag applicators will be used on the Leneta Form 7B chart. Records will be kept of all test conditions, i.e., temperature, relative humidity, test conditions, etc.

2.9 Spraying Properties: FTMS Method 4331.1 Spraying Properties

COATING CATEGORY: 1, 2, 3, 4, 5

FIELD TESTS OF SELECTED COATINGS BY PAINTING CONTRACTOR:

SUMMARY OF TEST METHOD: Spray against a flat brown paper surface. Record use of spray gun pressure and distance from paper. Record use of any thinners/reducers to achieve ability to properly spray. Note all method 4331 spraying characteristics, e.g., running, sagging, fogging, etc. Dried film shall be free of the following defects: dusting, floating, mottling, bubbling, wrinkling, streaking, pinholing, cratering, orange peel, blushing, blooming, silking, etc.

QUALITY ASSURANCE: The method is very subjective and should be performed by an individual skilled in the art of using a spray gun. To be performed by an experienced painting contractor in a field application on selected coatings.

2.10 Spreading (wet) Rate: ASTM D5007-89 (Reapproved 1993) Wet-to-Dry Hiding Change

COATING CATEGORY: 1-5

SUMMARY OF TEST METHOD: The spreading rate of a paint applied uniformly on a standard black and white hiding power chart to give a standard degree of contrast just short of complete hiding. These are exploratory drawdowns to establish a proper applicator gap distance to achieve recommended wet and dry film thickness on specimens and panels. By use of the ASTM D5007 method on spreading chart paper, on flat glass or on aluminum panels (panel M10) both spreading rates (ASTM 5007) and wet and dry film thickness can be determined.

QUALITY ASSURANCE: All test specimens will be prepared and tested by an operator properly skilled in the methods to be used. Testing will be performed in IAW ASTM and the mean spreading index value to 0.1 units will be calculated. Individual values that deviate from the mean by more than 1.5 spreading units will be discarded and the test re-

peated. Records will be kept of all test conditions, i.e., temperature, drying time, etc. Wet and dry film thickness gauges will be calibrated against known standards.

3.1 Adhesion to Substrate: ASTM D3359-95a Measuring Adhesion by Tape Test, ASTM D4541-95 Pull-Off Strength of Coatings Using Portable Adhesion Testers, Whatman Filter Paper Test

A. Adhesion of topcoats over new surfaces ASTM D3359 (Wet Tape) - Architectural:

COATING CATEGORY: 2, 3, 4,-5

SUMMARY OF TEST METHOD: ASTM D3359 Wet Tape) An X-cut is made in the film to the substrate, pressure-sensitive tape is applied over the cut and then removed, and adhesion is assessed qualitatively on the 0 to 5 scale. Adhesion determinations using ASTM D3359 (Tape) will be on the dry coating and on the 24-hr. water-wetted coating. For coatings with dry thickness over 1.5 mils, we will deviate from the ASTM D3359 test method and use wider grids, up to 5 mm for the thicker coated surfaces.

QUALITY ASSURANCE: All test specimens will be prepared and tested by an operator properly skilled in the methods to be used. If necessary, tests may be repeated in two other locations on each test panel. Report the number of tests, their mean and range, where the failure occurred, that is, between first coat and substrate, between first and second coat, the specific tape used and its manufacturer. The adhesion will be rated in accordance with the scale listed in the ASTM.

B. Adhesion of topcoats over new surfaces(PATTI) – IMC:

COATING CATEGORY: 1

SUMMARY OF TEST METHOD: ASTM D 4541 A4 Self-Alignment Adhesion Tester Type IV (PATTI). The general pull-off test is performed by securing a loading fixture (dolly, stud) normal (perpendicular) to the surface of the coating with an adhesive. After the adhesive is cured, a testing apparatus is attached to the loading fixture and aligned to apply tension normal to the test surface. The force applied to the loading fixture is then gradually increased and monitored until either a plug of material is detached, or a specified value is reached.

QUALITY ASSURANCE: All test specimens will be prepared and tested by an operator properly skilled in the methods to be used. Report the temperature and relative humidity, description of the apparatus used, record test results. If necessary, testing will be performed in duplicate.

C. Adhesion of topcoats over weathered surfaces (Whatman Filter Paper)– Architectural:

COATING CATEGORY: 2 (exterior), 4 (exterior)

SUMMARY OF TEST METHOD: If panels with old, weathered, chalking surfaces are available, then the standard ASTM methods described above apply to any new coatings applied over this surface.

If such panels are not available a test provided by John Gordon applies. This is a quick check on topcoats to determine if they have sufficient polymer penetrating ability to be able to penetrate into the weathered surface and adhere. The test is to place a drop of the paint on filter paper and let it dry 24 hours. Upon turning it over the circle of penetration of the polymer can be noted on the underside and measured.

QUALITY ASSURANCE: All test specimens will be prepared and tested by an operator properly skilled in the methods to be used. Record filter paper used, temperature and relative humidity, drying time, degree of penetration, etc.

3.2 Appearance:

The following methods and practices will be used as appropriate to describe appearance, both before and after any of the coating tests. Some, or all, of the methods and practices will be used as appropriate to describe appearance, both before and after any of the coating tests:

ASTM D523 Specular gloss (T)
ASTM D610 Degree of rusting (T)
ASTM D660 Degree of checking (P)
ASTM D661 Degree of cracking (T)
ASTM D662 Degree of erosion (T)
ASTM D714 Degree of blistering (T)
ASTM D772 Degree of flaking (scaling) (T)
ASTM D1654 Evaluation of specimens subject to corrosion (P)
ASTM D1848 Reporting film failures (C)
ASTM D4214 Degree of chalking (T) {Non-instrument Method}
ASTM E284 Standard terminology of appearance (A)
ASTM E313 Yellowness index (P)

COATING CATEGORY: 1-6

SUMMARY OF TEST METHOD: Reference individual ASTM standards.

QUALITY ASSURANCE: All test will be performed in accordance with ASTM standards and evaluated using ASTM visual standards where available. Records will be kept of all test conditions, i.e., temperature and relative humidity, instrument used, calibrations standards, used, etc.

3.3 Household Chemical Resistance: ASTM D308-87 (Reapproved 1993) Effect of Household Chemicals on Clear and Pigmented Organic Finishes

COATING CATEGORY: 2 (interior), 4 (interior)

SUMMARY OF TEST METHOD: The test surface is subjected directly to the effect of substance, such as citrus fruit, oils, greases, beverages, etc. Maintain surface contact of the common household cleaner, e.g., 409. to coating surface for 30 minutes at 75 F and 50% relative humidity. Wipe off surface clean with damp water wetted sponge and examine

immediately for any objectionable alteration in the surface, such as discoloration, change in gloss, blistering, softening, swelling, loss of adhesion, or special phenomena.

QUALITY ASSURANCE: All test specimens will be prepared and tested by an operator properly skilled in the methods to be used. Records will be kept of all test conditions, i.e., household cleaner used, temperature and relative humidity, duration, etc. Coating will be evaluated for Appearance (See Appearance 3.2).

3.4 Industrial Chemical Resistance Tnemec Test Method 59, August 1993, Chemical Resistance Screening Test

COATING CATEGORY: 1

SUMMARY OF TEST METHOD: Modified test method based on Tnemec Test Method 59. Cured panels are contacted with the following reagents: 5% sulfuric acid, 5% household bleach, and methyl ethyl ketone (MEK) at ambient temperatures contained on their surface with inverted glass funnels. The panels are checked at 1, 2, 3, 4, and 7 day intervals and the degree of softening of the coating will be reported.

QUALITY ASSURANCE: All test specimens will be prepared and tested by an operator properly skilled in the methods to be used. Records will be kept of all test conditions, i.e., industrial chemicals used, temperature, duration, softening or lifting of the coating, etc. The results shall be reported on a 0 to 4 scale established by Tnemec.

3.5 Corrosion Resistance: ASTM G85-94 Modified Salt Spray (Fog) Testing, Dilute Electrolyte Cyclic Fog Dry Test (Prohesion)

COATING CATEGORY: 1

SUMMARY OF TEST METHOD: The test consists of cycles of 1 hour dry-off and 1 hour fog. The electrolyte is a solution of sodium chloride and ammonium sulfate, and is much more dilute than traditional salt fog. The fog is performed at room temperature, while the dry-off is at elevated temperature. The test will continue essentially uninterrupted for 2,000 hours.

QUALITY ASSURANCE: All test specimens will be prepared and tested by an operator properly skilled in the methods to be used. Testing will be performed in triplicate. Records will be kept of all test conditions, i.e., pH of the salt solution, all readings of temperature, method of cleaning specimens before and after testing, exposure period, interruptions in exposure, cause, and length of time, etc. The extent of corrosion and paint deterioration will be rated against ASTM visual standards.

3.6 Dirt Resistance: ASTM D3719-95 Quantifying Dirt Collection on Coated Exterior Panels

COATING CATEGORY: 1, 2 (exterior), 4 (exterior)

FIELD TESTS OF SELECTED COATINGS:

SUMMARY OF TEST METHOD: This is an instrumental procedure for quantifying dirt on a panel. Lightness readings using a color difference meter are made before and after exposure, and the difference is considered to be due to dirt collection. The size of the panel is not important, just sufficient to be able to make color difference measurements using an instrument that measures L* (ASTM D2244). The initial (clean) and exposed (dirty) panels are measured and an L* ratio *100 reported. Panels are exposed at a 45-degree angle to the horizontal at NTS-LAX for a 6 month duration.

QUALITY ASSURANCE: All test specimens will be prepared and tested by an operator properly skilled in the methods to be used. Testing will be performed in duplicate. Records will be kept of all test conditions, i.e., calendar time, location, angle of exposure, exposure time, any noticeable color change which, for reasons other than dirt accumulation, i.e., fungal growth, may have occurred.

3.7 Dirt Removal Ability: ASTM D3450-94 Washability Properties of Interior Architectural Coatings

COATING CATEGORY: 2 (interior), 4 (exterior)

SUMMARY OF TEST METHOD: The test material is applied to a black plastic panel and allowed to dry for 7 days. The reflectance of the film is measured (R1), and then a soilant consisting of carbon black dispersed in mineral oil is applied on the film. The panel is placed on a glass plate in a washability machine and the film is washed with either an abrasive or non abrasive scrub medium for 100 cycles. The panel is rinsed and dried and reflectance in the stained area is read (R2). The ratio of the reflectance, R2/R1 is a measure of the degree to which the soilant has been removed. This uses the BYK Gardner abrasion tester (washability tester model AG8100), with a weight loaded sponge moving back and forth (37 cycles per minute) for 100 cycles in 25 cycle increments of sponge scrubbing, using an agreed on cleaning medium. Washability is determined by the ratio of the reflectance of the soiled area, before applying the soil and after scrubbing, using an instrument per ASTM E1347. For high gloss and semi-gloss coatings, the non-abrasive medium will be used. For satin and eggshell coatings, the abrasive medium will be used.

QUALITY ASSURANCE: All test specimens will be prepared and tested by an operator properly skilled in the methods to be used. Testing will be performed in duplicate.

Records will be kept of all test conditions, i.e., calibration of reflectance meter, scrub cycles, abrasive or nonabrasive scrub medium, etc. We will choose commercially available coatings and use them to establish reference standards. These standards will be occasionally inserted in the testing process as reference points.

3.8 Environmental (Atmosphere) Resistance: ASTM D2247-94 Testing Water Resistance of Coatings in 100% Relative Humidity

COATING CATEGORY: 1, 2 (exterior), 4 (exterior)

SUMMARY OF TEST METHOD: Coated specimens are placed in an enclosed chamber containing a heated, saturated mixture of air and water vapor. The proposed test will be for 14 days (336 hours) at 100 F. At 100% relative humidity, a very small temperature difference between the specimen and the surrounding vapor causes the formation of condensation on the specimens. Water permeates the coating at rates that are dependent upon the characteristics of the coating. We will use an alternate chamber that maintains the proper condensing environment. Metal coated panels will be used for industrial maintenance coatings and Wood panels will be used for architectural coatings and sealers.

QUALITY ASSURANCE: All test specimens will be prepared and tested by an operator properly skilled in the methods to be used. Testing will be performed in duplicate. Records will be kept of all test conditions, i.e., temperature, relative humidity, etc. Any effects such as color change, blistering, loss of adhesion, softening, or embrittlement are observed and reported. We will make appearance observations after the test (including color and gloss). We will also make pencil hardness measurements (ASTM D3363) and perform the tape test for adhesion (ASTM D3359). After a 24-hour drying period, we will repeat the measurements to obtain some estimate of permanent and temporary effects of exposure.

3.9 Film Flexibility: ASTM D522 Mandrel Bend Test of Attached Organic Coatings, Method A, Conical Mandrel

COATING CATEGORY: 1, 2, 4

SUMMARY OF TEST METHOD: The coating materials under test are applied at uniform thickness to panels of sheet metal. After drying or curing the coated panels are bent over a mandrel and the resistance to cracking of the coating is determined. Coatings attached to substrates are elongated when the substrates are bent during the manufacture of articles or when the articles are abused in service. This test method has been useful in rating attached coatings for their ability to resist cracking when elongated. We will use thin steel panels.

QUALITY ASSURANCE: All test specimens will be prepared and tested by an operator properly skilled in the methods to be used. Testing will be performed in duplicate. Records will be kept of all test conditions, i.e., coating thickness, test conditions, etc. The thinner gauge panels allow for more repeatable results over the smaller mandrels for flexible coatings. The copper sulfate test in ASTM D2794 will be used when there is no clear cut cracking. The test will be at standard laboratory conditions.

3.10 Dry Film Thickness ASTM D1005-95 Measurement of Dry-Film Thickness of Organic Coatings using Micrometers:

COATING CATEGORY: 1-6

SUMMARY OF TEST METHOD: This is a dry film thickness, depending upon the substrate and the coating:
ASTM D1005 Measurement (T)
ASTM D1186 Measurement over ferrous substrate (T)
ASTM D1400 Nonconductive coatings over a non ferrous metal base (T)
ASTM D4138 Protective coatings by destructive methods (T)
ASTM D5235 Microscopic measurements on wood substrates (T)

Film thickness over metal substrates can be very quickly and accurately done. Over wood, the ASTM method is a destructive measurement (destroys the specimen) that takes a lot of man-hours to do. We plan to compare the ASTM D5235 method with the results of the dry film thickness data from spreading rate evaluations (see 2.10 above) and with Tooke paint inspection gage values. We will use the Tooke gage on the wood coated specimens and determine an equivalent D5235 thickness from the comparison data. The damaged area will be carefully recoated. This method is also applicable to coatings over masonry and concrete.

QUALITY ASSURANCE: All test specimens will be prepared and tested by an operator properly skilled in the methods to be used. Two measurements, each the mean of four replicates, obtained by the same operator will be considered suspect if they differ by more than 0.7 mil at the 1 mil thickness level and by more than 1.2 mils at the 4 to 8 mil thickness level. Records will be kept of all test conditions, i.e., coating thickness, test conditions, etc.

3.12 Hardness: ASTM D3363-92a Film Hardness by Pencil Test

COATING CATEGORY: 1-5

SUMMARY OF TEST METHOD: A coated panel is placed on a firm horizontal surface. The pencil is held firmly against the film at a 45◦ angle (point away from the operator) and pushed away from the operator in a 1.4 inch stroke. The process is started with the hardest pencil and continued down the scale of hardness to either of two end points: one, the pencil that will not cut into or gouge the film (pencil hardness), or two, the pencil that will not scratch the film (scratch hardness).

QUALITY ASSURANCE: All test specimens will be prepared and tested by an operator properly skilled in the methods to be used. Testing will be performed in duplicate. A set of calibrated drawing leads or equivalent calibrated wood pencil will be used. Records will be kept of all test conditions, i.e., coating thickness, test conditions, the make and grade of lead or pencil used, any deviation from standard conditions, including roughness in the finish, etc.

3.14 Hiding of Substrate Surface: ASTM D5007 Wet-to-dry hiding change

See 2.10 Above

3.15 Mildew and Fungus Resistance: ASTM D3273-94 Resistance to Growth of Mold on the Surface of Interior coatings in an Environmental Chamber

COATING CATEGORY: 2 (interior) and 4 (interior)

TESTS PERFORMED BY A CERTIFIED LABORATORY:

SUMMARY OF TEST METHOD: Test coatings are placed in a small environmental chamber and the conditions of operation to evaluate reproducibly in a 4 week period the relative resistance of paint films to mildew growth in a severe interior environment. Among the different tests for mildew, the difference is in the use of Aspergillus oryzare or one of the penicillium strains. We will sterilize G1 specimens and dip seal them in one of the sealers. After drying we will coat the specimen with the designated coating system in accordance with the ASTM method for two coats. After drying we will seal the specimens in plastic bags and ship to the test facility for exposure.

QUALITY ASSURANCE: All test specimens will be prepared and tested by persons who have had basic microbiological training or an operator properly skilled in the methods to be used. Records will be kept of all test conditions, i.e., temperature and relative humidity, culture used, control coatings, duration, etc. The panels will be rated for mold growth each week for 4 weeks on a 0 to 10 rating scale using photographic standards [Test Method D 3274 Evaluating Degree of Surface Disfigurement of Paint Films by Microbial (Fungal or Algal) Growth or Soil and Dirt Accumulation]

3.16 Penetration of Water through Coating: Toothill Pressure Block Test, ASTM D5401-93 Evaluating Clear Water Repellent Coatings on Wood

For cement or masonry sealers we will use the Toothill Pressure Block Test. For waterproof sealers and wood, ASTM D5401 will be used.

A. Penetration of Water through Masonry:

COATING CATEGORY: 6

SUMMARY OF TEST METHOD:
Toothill Pressure Block Test as specified in Paint Testing Manual, 13th Edition, 1972. The substrate used will be a hollow concrete block, approximately 8" x 8" x 8". The cavity is closed with steel plates attached to the top and bottom and sealed with gaskets and a suitable patching cement to prevent leaks. Two coats of waterproofing sealer are applied to the four sides of the block. The cavity is kept filled with water for seven days, the seals are checked for leaks, and the WPS for any irregularities. If all things are satisfactory the assembly is completed and the plates are secured. A pressure of 4 psi is applied for ½ hour, and the assembly is left alone for 24 hours. The procedure is repeated, and the specimen is inspected for film irregularities, such as loss of adhesion or softening or water penetration.

QUALITY ASSURANCE: Testing will be performed in duplicate. Records will be kept of all test conditions, i.e., temperature, pressure, application rate of WPS, amount of water collected, etc. An untreated block will be tested to demonstrate the penetration of water through the porous concrete and to serve as a standard.

B. Penetration of Water through Wood:

COATING CATEGORY: 6

SUMMARY OF TEST METHOD (ASTM D5401-93): Five Ponderosa pine specimens are treated with the clear water repellent under test and allowed to dry for seven days. Five untreated specimens serve as controls. The treated and untreated specimens are each weighed and then allowed to float in water for 30 minutes. The specimens are removed, the excess water is wiped off, and each are reweighed. The effectiveness of the water repellent coating is then calculated.

QUALITY ASSURANCE: All test specimens will be prepared and tested by an operator properly skilled in the methods to be used. Records will be kept of all test conditions, i.e.,

temperature, relative humidity, analytical balance used, etc. Untreated specimens will serve as controls.

3.18 Sanding Properties: FTMS Method 6321 Sanding Characteristics:

COATING CATEGORY: 3, 5

SUMMARY OF TEST METHOD: Wood panels will be coated with the undercoating to be evaluated according to manufacturer's recommendations or instructions as to the sequence of coatings and thicknesses to be achieved. The sanding tests will be made using the Gardner type AG8100 scrubbing machine described above, following method 6321 instructions.

QUALITY ASSURANCE: All test specimens will be prepared and tested by an operator properly skilled in the methods to be used. Records will be kept of all test conditions, i.e., temperature, relative humidity, dry film thickness, etc. Standard coatings will serve as controls.

3.19 Stain Transfer Blocking:

COATING CATEGORY: 3, 5

SUMMARY OF TEST METHOD: Essentially it will measure the ability of a wood primer/sealer/undercoater to block the bleeding through of the stain on a stained wood panel into the topcoat. Commercial oil type stains (dark red) will be used to stain the test panels. Color measurements of the coated panel (after an aging period) will be made, and compared to the coating on metal/new wood panels.

QUALITY ASSURANCE: All test specimens will be prepared and tested by an operator properly skilled in the methods to be used. Records will be kept of all test conditions, i.e., temperature, relative humidity, dry film thickness, etc. Standard coatings will serve as controls.

3.20 Staining Resistance: ASTM D1546-96 Evaluation of Clear Wood Sealers

COATING CATEGORY: 3, 5

SUMMARY OF TEST METHOD: This determines the ability of sealers to resist being stained by an externally applied stain. Place several drops of blue black ink at a few locations on the surface of one of the completely sealed panels and allow to remain for 3 minutes. Absorb the ink with the blotting paper and wipe the spots lightly with a damp cloth. Examine the surface for indications of the presence of ink.

QUALITY ASSURANCE: All test specimens will be prepared and tested by an operator properly skilled in the methods to be used. Records will be kept of all test conditions, i.e., temperature, relative humidity, dry film thickness, etc. Standard coatings will serve as controls.

3.21 Surface Contact Transfer Effects (Blocking): ASTM D4946 Blocking Resistance of Architectural Paints

COATING CATEGORY: 2, 4

SUMMARY OF TEST METHOD: This is a straightforward test using paper charts with the coatings to be tested. It is applicable to all types of coatings. Dried paint films are place face-to-face and a pressure of about 1.8 psi is applied. These paint films are put into an oven for 30 minutes to make the test more stringent. After cooling, the blocked panels are peeled apart. The degree of blocking is rated subjectively for tack or seal using a series of standard descriptive terms corresponding to numerical ASTM values of 10 to 0.

QUALITY ASSURANCE: All test specimens will be prepared and tested by an operator properly skilled in the methods to be used. Records will be kept of all test conditions, i.e., temperature, relative humidity, dry film thickness, etc. Standard coatings will serve as controls.

3.23 Water Resistance: ASTM D870-92 Testing Water Resistance of Coatings Using Water Immersion

COATING CATEGORY: 1

SUMMARY OF TEST METHOD: The proposed test for industrial maintenance coatings will be for 1000 hours at 100 F. Immersion will be in stirred beakers. Water will be changed and beakers cleaned out weekly. Water permeates the coating at rates that are dependent upon the characteristics of the coating and upon the temperature of the water. We will make appearance observations after the test (including color and gloss). We will also make pencil hardness measurements (ASTM D3363) and perform the tape test for adhesion (ASTM D3359). After a 24-hour drying period, we will repeat the measurements to obtain some estimate of permanent and temporary effects of exposure.

QUALITY ASSURANCE: All test specimens will be prepared and tested by an operator properly skilled in the methods to be used. Records will be kept of all test conditions, i.e., water temperature, duration, dry film thickness, etc. Standard coatings will serve as controls.

3.24 Wear, Mar and Abrasion Resistance: ASTM D2486-96 Scrub Resistance of Wall Paints, and ASTM D5178-91 Mar Resistance of Organic Coatings

A. ASTM D2486 Scrub Resistance of Wall Paints (Will be used on the architectural coatings)

COATING CATEGORY: 2 (interior), 4 (interior)

SUMMARY OF TEST METHOD: This test method covers a procedure for determining the resistance of wall paints to erosion caused by scrubbing. This test method covers determination of the relative resistance of different wall paints to erosion when repeatedly scrubbed to remove the stains during the life of the paint. The test paint is applied to a black plastic panel. After curing, the coated panel is placed over a ½ inch by 10 mil shim and held in place on a glass plate in a washability machine by means of a gasketed frame. It is then scrubbed with a nylon bristle brush and an abrasive scrub medium until failure occurs over the shim.

QUALITY ASSURANCE: All test specimens will be prepared in duplicate and tested by an operator properly skilled in the methods to be used. Records will be kept of all test conditions, i.e., temperature, relative humidity, dry film thickness, mean number of cycles to failure, any deviations from standard procedure, etc. Standard coatings will serve as controls. Will be compared to abrasion tests on Leneta scrub test calibration panels, form P121-A, P212-C and P-121-D. Periodically these calibration panels will be scrubbed and the number of cycles to break through entered into the test record. This will give some control over the variability of this test method

B. ASTM D5178 Mar Resistance of Organic Coatings

COATING CATEGORY: 1

SUMMARY OF TEST METHOD: Will be used on industrial coatings as the industrial coatings are too hard to show much abrasion with the scrubbing machine. Mar resistance is defined as the ability of a coating to resist damage caused by light abrasion. This test method covers the determination of the mar resistance on smooth, flat surfaces. Results are expressed in terms of force-to-mar films of organic coatings. The coatings under test are applied at uniform thickness to flat panels of uniform surface texture. After drying/curing, the mar resistance is determined by pushing the panels beneath a rounded stylus or loop that is loaded in increasing amounts until the coating is marred.

QUALITY ASSURANCE: All test specimens will be prepared and tested in duplicate by an operator properly skilled in the methods to be used. Records will be kept of all test conditions, i.e., temperature, relative humidity, dry film thickness, load at the marring fail-

ure point (kg), panel material and surface preparation, any deviation from the specified procedure, etc. Standard coatings will serve as controls.

3.25 Weathering Resistance: ASTM D1006-93 Conducting Exterior Exposure Tests of Paints on Wood, ASTM D1014-95 Conducting Exterior Exposure Tests of Paints on Steel, and ASTM D4141-95 Conducting Accelerated Outdoor Exposure Tests of Coatings (Procedure C)

A. Outdoor Weathering Tests for house paints and trim paints on new previously unpainted wood ASTM D1006-93 Conducting Exterior Exposure Tests of Paints on Wood

COATING CATEGORY: 2 (exterior), 4 (exterior)

FIELD TESTS ON SELECTED COATINGS IN SCAQMD BASIN:

SUMMARY OF TEST METHOD: ASTM D1006-93 Conducting Exterior Exposure Tests of Paints on Wood. All coatings will be applied in strict accordance with the coating manufacturer's written recommendations. Measure and record the film thickness of each coat. Allow the proper drying time between coats for multiple paint systems and before exposure as required by the coatings manufacturer and include in the test record. Paint the back and edges of all test specimens with the same systems as that being tested on the front of each panel. This painting provides considerable information on the behavior of the paint system on the reverse side. Mount the specimens so they do not cast shadows on each other, or contact each other or any metallic material, or any material capable of acting as a wick. Mount the specimens so that the products of weathering and rain water drippings do not flow from on to another. Inspections will be made after 3 months, and at intervals of 3 months during the first years, and every 6 months thereafter

QUALITY ASSURANCE: Since natural environment varies with respect to season, geography, and topography, test results can vary in accordance with location and may not correlate to actual in-service performance. The climatic conditions of the test sites should be representative of those of the area in which the paints are to be used. For reliable results, exposure sites should be selected that are representative geographically, climatically, and in atmospheric contamination with those of the locality in which the paint will be used. The flat exposed surface will be drawdown coated, and the remaining surfaces, brush painted to reduce bare wood exposure problems. Where exposure area is limited, existing wood coated panels will be cut after being coated to the required size, and the unpainted surfaces sealed. Planned exposure will be in one of NTS's locations in Southern California: Saugus, Fullerton, or Los Angeles Airport (LAX)

All test specimens will be prepared and tested in duplicate by an operator properly skilled in the methods to be used. Records will be kept of all test conditions, i.e., duration, type of exposure, orientation of the samples, site location comments, dry film thickness, panel ma-

terial and surface preparation, any deviation from the specified procedure, gloss and color measurements (see Appearance 3.2), etc. Standard coatings will serve as controls. Tests may continue beyond the contract with access granted to SCAQMD to inspect the panels on a regular basis.

B. Outdoor Weathering Tests of exterior paints when applied on steel surfaces exposed out-of-doors, ASTM D1014-95 Conducting Exterior Exposure Tests of Paints on Steel

COATING CATEGORY: 1

FIELD TESTS OF SELECTED COATINGS IN SCAQMD BASIN:

SUMMARY OF TEST METHOD: ASTM D1014-95 Conducting Exterior Exposure Tests of Paints on Steel. All coatings will be applied in strict accordance with the coating manufacturer's written recommendations. Measure and record the film thickness of each coat. Allow the proper drying time between coats for multiple paint systems and before exposure as required by the coatings manufacturer and include in the test record. Paint the back and edges of all test specimens with the same systems as that being tested on the front of each panel. This painting provides considerable information on the behavior of the paint system on the reverse side. Mount the specimens so they do not cast shadows on each other, or contact each other or any metallic material, or any material capable of acting as a wick. Mount the specimens so that the products of weathering and rain water drippings do not flow from on to another. Inspections will be made after 3 months, and at intervals of 3 months during the first years, and every 6 months thereafter.

QUALITY ASSURANCE: Experience indicates that the steel used as a test surface has a marked bearing upon the weathering results. It is the purpose of this test method to minimize the influence of variation in steel surfaces on any series of tests by providing for uniformity in the selection of the steel surface, particularly in cooperative work. The surface preparation for the test panels should be that expected to be done in the field or in-service. The surface preparation shall be the same for all test panels in the test program. Surface preparation must be essentially identical for all test panel, as the thoroughness of preparation may directly determine the performance life of the applied coating system. Steel panels are made from standard low-carbon, cold-rolled steel complying with ASTM A366, a109, and QQ-S-698 (Q-Panel Matte, dull Finish Steel Panels, Type R). Since the natural environment varies with respect to season and geographic location, test results may not correlate with in-service performance.

All test specimens will be prepared and tested in duplicate by an operator properly skilled in the methods to be used. Records will be kept of all test conditions, i.e., duration, type of exposure, orientation of the samples, site location comments, dry film thickness, panel ma-

terial and surface preparation, any deviation from the specified procedure, gloss and color measurements (see Appearance 3.2), etc. Standard coatings will serve as controls. Tests may continue beyond the contract with access granted to SCAQMD to inspect the panels on a regular basis.

.

C. Accelerated Outdoor Weathering Tests, ASTM D4141-95 Conducting Accelerated Outdoor Exposure Tests of Coatings (Procedure C)

COATING CATEGORY: 1, 2 exterior, 4(exterior)

FIELD TESTS OF SELECTED COATINGS AT Q-LAB ARIZONA:

CONTRACTED TESTS:

SUMMARY OF TEST METHOD: All coatings will be applied in strict accordance with the coating manufacturer's written recommendations. Measure and record the film thickness of each coat. Allow the proper drying time between coats for multiple paint systems and before exposure as required by the coatings manufacturer and include in the test record. Paint the back and edges of all test specimens with the same systems as that being tested on the front of each panel. This painting provides considerable information on the behavior of the paint system on the reverse side. Mount the specimens so they do not cast shadows on each other, or contact each other or any metallic material, or any material capable of acting as a wick.

QUALITY ASSURANCE: We will contract with Q-Lab Arizona for use of the Q-Trac Natural Sunlight Concentrator. The Q-Trac is in conformance with ASTM G90, cycle 3 Night Time Wetting for an exposure time of 85 days which is the amount of UV light a test specimen would receive outdoors during one standard Florida year (280 Mj/m2). Provides acceleration of the degradation that coatings experience during natural weathering. Exposure on a Fresnel reflector panel rack that provides a high intensity of sunlight irradiation by following the sun and focusing the sunlight on the test panels by means of mirrors. The panels are wet periodically by deionized water spray. Because outdoor weather conditions vary from season to season and year to year, these procedures are not reliable for establishing absolute performance ratings for coatings. The procedure should be used only for comparing the relative performance of coatings exposed at the same time at the same location.

All test specimens will be prepared and tested by an operator properly skilled in the methods to be used. Records will be kept of all test conditions, i.e., duration, type of exposure, orientation of the samples, site location comments, dry film thickness, panel material

and surface preparation, any deviation from the specified procedure, gloss and color measurements (see Appearance 3.2), etc. Standard coatings will serve as controls.

Note: For purpose of this contract and to ensure uniformity we will use steel panels made from standard low-carbon, cold-rolled steel complying with ASTM A366, a109, and QQ-S-698 (Q-Panel Matte, dull Finish Steel Panels, Type R)