

**ENVIRONMENTAL PROTECTION
OFFICE OF AIR QUALITY MANAGEMENT
AIR QUALITY REGULATION PROGRAM**

Air Pollution Control

Prevention of Air Pollution from Architectural Coatings

Adopted Amendments: N.J.A.C. 7:27-23.1, 23.2, 23.3 and 23.5; and 7:27A-3.10

Adopted New Rules: N.J.A.C. 7:27-23.4 and 23.8

Proposed: July 21, 2003 at 35 N.J.R. 2983(a) (see also 35 N.J.R. 4241(a))

Adopted May 21, 2004, by Bradley M. Campbell, Commissioner,

Department of Environmental Protection

Filed: May 27, 2004 as R.2004 d. 236, **with substantive and technical changes** not requiring additional public notice and comment (see N.J.A.C. 1:30-6.3)

Authority: N.J.S.A. 13:1B-3(e), 13:1D-9 and 26:2C-1 et seq., in particular 26:2C-8

DEP Docket Number: 13-03-06/248

Effective Date: June 21, 2004

Operative Date: July 20, 2004

Expiration Date: Exempt, N.J.A.C. 7:27; November 9, 2004, N.J.A.C. 7:27A.

The New Jersey Department of Environmental Protection (the Department) is adopting new rules and amendments at N.J.A.C. 7:27-23, which establish standards for architectural coatings for manufacturers, suppliers, distributors, retailers and persons who apply architectural coatings for compensation. The Department is also adopting related amendments at N.J.A.C. 7:27A-3.10, Air Administrative Procedures and Penalties, Civil Administrative Penalties and Requests for Adjudicatory Hearings. These amendments and new rules will help the State continue to make progress towards attainment of the one-hour and eight-hour ozone standards.

The proposal of these new rules and amendments was published on July 21, 2003, at 35 N.J.R. 2983(a). The Department extended the close of the comment period from September 19, 2003, to October 15, 2003 (see 35 N.J.R. 4241(a), September 15, 2003).

Summary of Hearing Officer's Recommendation and Agency Response:

The Department held a public hearing on September 9, 2003, at the War Memorial Building, Trenton, New Jersey, to provide interested parties the opportunity to present comments on the Department's proposed amendments and new rules. The public comment period closed on October 15, 2003. Chris Salmi, Assistant Director of the Air Quality Management, served as the Hearing Officer. After reviewing the comments presented at the hearing and the written comments received by the Department, the Hearing Officer recommended that the proposed amendments and new rules be adopted with the changes described below in the Summary of Public Comments and Agency Responses and in the Summary of Agency-Initiated Changes. The Department has accepted the Hearing Officer's recommendation.

The hearing record is available for inspection in accordance with applicable law by contacting:

Department of Environmental Protection
Office of Legal Affairs
ATTN: Docket No. 13-03-06/248
401 East State Street
PO Box 402
Trenton, New Jersey 08625-0402

Copies of this adoption document are also available from the Department's website at www.state.nj.us/dep/aqm, where Air Quality Management rules, proposals, adoptions and State Implementation Plan (SIP) revisions are posted.

Summary of Public Comments and Agency Responses:

The Department accepted comments on the proposal through October 15, 2003. The following persons timely submitted written and/or oral comments and/or made oral comments at the public hearing:

1. Jim Sell and Robert Nelson, National Paint and Coatings Association
2. Hal Bozarth, New Jersey Paint Council
3. Anthony Russo, Chemistry Council of New Jersey and New Jersey Paint Council
4. Herbert B. Bennett, Bennett & Yoskin, on behalf of Sherwin-Williams
5. Dan Forestiere, Sherwin-Williams, Wood Products Division
6. Barry A. Jenkin, Benjamin Moore & Company
7. Lewis S. Ripps, Palmer Asphalt Company
8. Reed Hitchcock, Roof Coatings Manufacturer's Association
9. Gerald E. Thompson, BonaKemi USA, Inc.
10. Kyle R. Frakes, TNEMEC Company Incorporated
11. Allen Rapaport, J. Rapaport Flooring
12. Jeff Tittel, N.J. Sierra Club, New Jersey Chapter
13. James E. Ralston, New York Department of Environmental Conservation

The timely submitted comments and the Department's responses are summarized below. The number(s) in parentheses after each comment identifies the respective commenter(s) listed above. The general comments are presented first, followed by comments relating to specific aspects of the proposal.

GENERAL RULE SUPPORT

1. **COMMENT:** Two commenters expressed support for the rules. (12, 13)
2. **COMMENT:** The impact of the rules has been far reaching and to date has resulted in the development of several new products. (10)

RESPONSE TO COMMENTS 1 AND 2: The Department acknowledges the commenters' support.

CONCURRENCE WITH OTHER COMMENTS

3. COMMENT: Two commenters expressed support for the comments submitted by the National Paint and Coatings Association (NPCA) regarding the Department's rule proposal. (4, 6)

4. COMMENT: Two commenters stated support for the comments made by the NPCA and any member company regarding the Department's rule proposal. The commenters request that the Department withdraw the rule proposal and consider the alternate proposal put forward by NPCA and pending a good scientific look at the issue that NPCA raises. (2, 3)

RESPONSE TO COMMENTS 3 AND 4: The Department acknowledges the commenters' support for NPCA's comments. The individual aspects of NPCA's alternate proposal are discussed in detail below throughout this document.

COATING DURABILITY

5. COMMENT: In a demand for ever lower volatile organic compound (VOC) products, performance characteristics of the coatings can suffer to the point where application becomes more difficult, more initial coats will be required to provide adequate coverage and hiding, and durability and surface abrasion resistance are lowered. All of these performance problems will result in more coatings being applied initially and earlier repainting of surfaces. All of this of course will result in higher costs for consumers and society, and increased, not lowered, VOC emissions. The commenter has developed an alternative proposal to the New Jersey architectural coating rules and the Ozone Transport Commission (OTC) model rule. The commenter believes that its proposal should be considered by the Department as a viable alternative to the OTC model rule. The commenter believes that in order to have a comprehensive understanding of its position and arguments, it is necessary for the Department to read all of the material submitted. It demonstrates, going all the way back to California's adoption of the limits at issue, why the commenter strongly believes that the New Jersey proposal is not sound, and will result in more, not less VOC emissions at a great cost to industry and consumers alike. (1)

RESPONSE: The Department has concluded that no significant changes to the rules, as proposed by the commenter, are necessary or warranted. The Department has read all of the materials submitted and the Department has determined that the commenter has not supported its claims that the lower VOC coatings will result in lower durability. The OTC and the Department have requested several times over the last four years that manufacturers submit specific data supporting their claims. Neither prior to publication of the proposed rules nor during the comment period did any manufacturer present specific data to support the claims of decreased durability with lower VOC coatings.

In 2001, prior to the publication of the proposed rules, the commenter invited representatives of the Department to visit the Rohm and Haas testing facility in the Northeast, where they were shown some testing panels. It was not made clear to the Department what the VOC content of the panels were, as Rohm and Haas does numerous tests with VOC content limits lower than the adopted New Jersey rules. Two of the panels that Department representatives viewed were a panel with a solvent-based exterior coating, which was flaking and chipping, and a panel with low VOC latex exterior coating, which was not flaking or chipping. A representative of Valspar pointed out that the panel with the low-VOC latex coating demonstrated color fading. However, the Department representatives observed that the low VOC latex coating was not flaking or chipping. Rohm and Haas representatives and the Valspar representative stated that some of the

advantages of latex coatings are that they have better crack resistance, can be more durable and are non-yellowing. In light of the observed performance of the low VOC latex coatings, the Department concludes that the commenter provided insufficient basis for the claim that the solvent-based coating is more durable.

The statements of Rohm and Haas and Valspar representatives are not the only basis for concluding that low VOC coatings have advantages over solvent-based coatings. The commenter provided the Department with a paper entitled "Discussion of the Generic Differences in Performance Characteristics between Water-based and Solvent-based Coatings" prepared by the commenter. This paper states that water-based coatings have performance advantages over solvent-based coatings, which include excellent color retention and excellent caulk resistance (leak resistance) and exterior durability. It also notes that disadvantages of solvent-based coatings include poorer gloss retention and caulk resistance on exterior exposure. The article further supports the Department's position that low VOC coatings are not less durable than solvent-based coatings.

Although the commenter is a national trade association for coatings manufactures, not all coatings manufacturers agree with its position with regard to the need for a change in VOC limits. Of the approximately 300 architectural coating manufacturers in the U.S., only nine have commented negatively on these rules. According to the Delaware AIM (architectural and industrial maintenance coatings) Response Document, dated January 14, 2002 (Delaware Response Document), in a letter to the Delaware Department of Natural Resources & Environmental Control (DNREC) dated September 17, 2001, an ICI Paints representative commented that "ICI Paints endorses the adopted VOC content limits, as they are very similar to the limits already adopted by the South Coast Air Quality Management District. We do not agree with the modified VOC content limits as proposed by the National Paint and Coatings Association as they interject yet another set of limits that spoil the chances for consistent national VOC content limits among state rules. We also do not share the same view with the NPCA on the product averaging exemption. I can understand the averaging concept when regulations are driving the technology as in California. I do not see a need for averaging when the technology already exists...Our goal is consistency..."

Coating formulations that meet the adopted VOC content limits already exist and are marketed nationally. Additional details regarding the specifics for each coating category for which the commenter recommended an alternative proposal are discussed throughout this document.

CLIMATE RELATED TO COATING DURABILITY

6. COMMENT: New Jersey should not be adopting California's rule because the climate differences between California and New Jersey will reduce coating life in the Northeast. One of the commenters, a national trade association, attached to its comments, and incorporated by reference, letters from three of its members companies, one undated and unaddressed, one undated and addressed to the commenter, and one dated July 31, 2000 addressed to the commenter, that expressed the same concerns regarding the OTC architectural coatings model rule, on which New Jersey's adopted rules are based, and the DNREC rule, which was also based on the OTC model rule, respectively. (1, 2, 3, 4, 6)

7. COMMENT: None of the real world consequences are examined in the New Jersey rulemaking. Instead, they are ignored or are assumed away. And they are assumed away largely

on the basis of an uncritical adoption of limits in a rule that was adopted in California, a state with much more benign weather than New Jersey. A state in which freeze-thaw is not an issue in its most populated areas. A state in which cold temperature applications and durability of a coating under the yearly extreme temperature swings of this state are not an issue. In the high population center of California, its coastline and non-mountainous areas, there were no freezing cycles last year. In contrast, New Jersey had over 100. Also, it is noteworthy that Rohm and Haas maintains two separate paint field testing and exposure stations for these areas precisely because of the radically different conditions. Time and time again, the New Jersey record reflects its reliance on the fact-findings of the underlying California rulemakings, including the costs associated with the rule's limits. But surely even if one wishes to emphasize that indeed California has cold winters in its mountains, which would affect coatings there, a common sense evaluation of the relative impacts of weather on coatings between New Jersey and California, in light of where most of the coatings are applied in these states, would have to recognize a very large relative and material difference.

The commenter, a national trade association, attached to its comments, and incorporated by reference, an undated letter to it from one of its members regarding the OTC's architectural coating model rule. The member company's letter comments that the weather in the Northeast is significantly different than southern California in rainfall and temperature. The weather differences require products to have coalescing solvent and glycols in them in insure, especially under marginal weather conditions like low temperature, that the products will perform to stated warranty claims. (1)

8. COMMENT: This past year there were a 100 plus freeze-thaw days in New Jersey, while in Southern California, there were no freeze-thaw days. (7)

9. COMMENT: Enough cannot be said about the differences in climate between California and New Jersey. It is clear for anyone who has ever been to California and spent time in New Jersey that these places are dissimilar in such a strong way. (2)

RESPONSE TO COMMENTS 6 THROUGH 9: Similar climate conditions, such as humidity, sun (which causes fading), extreme high and low temperatures, cold climates, and freeze-thaw cycles, which can affect coating application and durability, can be found in both California and the Northeast, including New Jersey. The California Air Resources Board Suggested Control Measure, dated June 2000 (CARB SCM) was developed for the entire state of California, excluding the South Coast Air Quality Management District (SCAQMD). The Department has adopted rules based on the CARB SCM, not the SCAQMD rule. The SCAQMD rule has VOC content limits that are more stringent than the CARB SCM and the adopted New Jersey rules. Eighteen of the California air districts have adopted the CARB SCM, which represent over 95 percent of the population in California.

California has numerous populated areas in air districts that have adopted the CARB SCM with extreme hot and cold temperatures, temperatures below freezing and freeze-thaw cycles. Information obtained from the Western Regional Climate Center on April 22, 2004, shows 65 monitoring stations, within California air districts that have adopted the CARB SCM, where 54 of the stations show a number of freeze-thaw cycles ranging from one to 218 annually, with an annual average of 33, for the period from 1971 to 2000. The data show 42 monitoring stations with a number of freeze-thaw cycles ranging from one to 195 annually, with an annual average of 27 for 2002. The data also show 35 monitoring stations with a number of freeze-thaw cycles

ranging from one to 186 annually, with an annual average of 19 for 2003. These monitoring stations are located in areas such as Tahoe, San Diego, Sacramento and Palm Springs.

In addition, the Department concludes that the commenters did not sufficiently support their claims that coatings compliant with the adopted rules will be less durable than higher VOC coatings due to climate differences between California and New Jersey or colder climates in general. As discussed above in the Response to Comment 5, in some cases lower VOC coatings are more durable.

The OTC and the Department have requested several times over the last four years that manufacturers submit specific data supporting their claims. No testing data have been presented that support the claims of decreased durability with lower VOC coatings. One commenter states that Rohm and Haas has testing facilities in California and the Northeast, but no specific information or testing results have been provided to the Department from these facilities regarding how climate differences between California and New Jersey can affect low VOC coatings compared to high VOC coatings.

Coating formulations that meet the adopted VOC content limits already exist and are marketed nationally in all U.S. climates. Additional details regarding specifics for each coating category and cost impacts are discussed elsewhere in this document. Based on the discussions throughout this document, the Department does not agree that changes to the rules' VOC content limits are necessary or warranted based on climate variability concerns.

CLIMATE RELATED TO COATING FREEZE-THAW (DURING STORAGE AND TRANSPORT)

10. COMMENT: The climate differences between California and New Jersey will create freeze-thaw problems, which is the ability of a liquid coating to undergo freezing, but retain its efficacy (while being stored or transported). One of the commenters, a national trade association, attached to its comments, and incorporated by reference, letters from two of its members, one undated to the commenter, and one dated July 24, 2001 to the New York Department of Environmental Conservation (NYSDEC), that expressed the same concerns regarding the OTC's architectural coating model rule. One of the member companies commented that flat coatings should have a VOC content limit of 200 grams per liter (g/l) to address freeze-thaw issues. (1, 2)

RESPONSE: General climate differences between California and New Jersey are discussed in the Response to Comments 6 through 9. The freeze-thaw issue, regarding storage or transport of a coating, is not a new issue for manufacturers, distributors, retailers or consumers. Product data sheets and container labels for existing products with VOC contents that comply with the newly adopted rules and for existing products with VOC contents higher than the newly adopted rules recommend product storage above freezing temperatures. Therefore, manufacturers, distributors, retailers and consumers are already addressing this issue.

Further, as discussed in the Delaware Response Document, several companies queried by DNREC (ICI, Cash Coatings, Führ International, Behr) indicated that freeze-thaw is not a problem for coatings that comply with the adopted rules because heated storage, transportation control and the use of anti-freeze VOCs that double as co-solvents, can adequately address the problem. In addition, most coatings today are formulated to withstand three to five freeze-thaw

cycles without serious performance deterioration. Additional details regarding specifics for each coating category are discussed elsewhere in this document.

THE CARB RESEARCH AND SURVEYS

11. COMMENT: The tests performed by the National Technical Service (NTS), Harlan Associates, Inc. and KTA-Tator, Inc. were faulty. The tests were not adequately performed and conclusions were inadequately drawn. The rules are based on flawed and inaccurate product test data, a disregard for weather conditions and do not have the proper scientific backing. The central problem with the conduct and reported results of the NTS and KTA-Tator, Inc. studies is that the studies do not comport with critically important basic approaches and methodologies that industry employs in determining whether a coating meets acceptable performance characteristics in order to justify its production and sale. In some cases, critical aspects relating to the coatings performance, such as mil thickness, and UV stability, were not reported.

The SCAQMD has not responded to industry concerns regarding low VOC primers for wood and water-based primers for metal surfaces and gloss retention of the lower VOC products. The California Air Resource Board (CARB) staff found low or zero VOC coatings to be always similar over all to the high VOC coatings, despite the results that showed that high VOC coatings performed better in a number of tests involving performance characteristics that are not trivial. The NTS study results as recorded clearly demonstrated that high VOC coatings performed better than low and zero VOC materials in a number of tests. In a strict sense, the statement about overall similarity is not incorrect, but the low VOC coatings are not sufficient in all respects to replace existing higher VOC coatings.

Regarding the Harlan study, it is an incomplete report, providing only raw data for the CARB staff to interpret. Information on the individual coatings is not included in the report, making it difficult to evaluate and compare the data in the summary sheets. The report was not peer reviewed by industry. Blind samples were used, making any verification or comparison to other test results impossible. Different contractors were involved for subjective tests. The quality assurance/quality control (QA/QC) procedures are unknown.

Long term durability performance characteristics, such as loss of gloss, color retention, chalking, and blistering, have not yet been evaluated under the NTS study and await future evaluation. The NTS study did not include a critically important application study in which the coatings would be applied in real world conditions to determine the impact on the coatings. This is a test that is used by industry because the application environment directly affects the long term and short term performance of a coating and thus effects its utility to the end user. The commenter, a national trade association, attached to its comments, and incorporated by reference, a letter dated August 28, 2001 from one of its members to the DNREC regarding its rule. The member company's letter expresses the same concern and also comments that all panels prepared for the NTS studies were prepared by draw down instead of one or more methods of application that are used in the field, and that this is not the generally accepted procedure. The size of the exposure panels was too small and there were no positive or negative controls to have a baseline for comparison.

The commenter also attached to its comments, and incorporated by reference, an undated letter to it from one of its members regarding the OTC's architectural coating model rule. The member

company's letter comments that the technical assessments cited in the SCAQMD process are flawed in content and conclusions. (1)

RESPONSE: The parameters, procedures and methodology for the NTS and KTA-Tator, Inc. studies were developed through a technical advisory committee (TAC), which was established to oversee contractor selection, coating selection, testing protocol development, and analysis of results. In addition to staff members of the SCAQMD and CARB, most of the members of the TAC were from the coating industry. In addition, CARB's overall conclusions are based on numerous things including the testing studies, the CARB surveys, review of product data sheets, and interviews with product manufacturers, resin manufacturers and suppliers.

In February 1995, the CARB published the results of performance testing of architectural coatings by Harlan Associates, Inc. The purpose of the study was to determine the physical properties and performance of representative products in eight coating categories. A total of 110 coating products, purchased during late 1993 and throughout 1994, were tested in the following categories: industrial maintenance primers and topcoats, high-temperature industrial maintenance coatings, lacquers, varnishes, non-flats (including quick-dry enamels), primers/sealers (including quick-dry primers/sealers), sanding sealers and waterproofing sealers (wood and concrete). In developing the SCM, the CARB and district staff analyzed and summarized the raw data. This performance study was used to supplement the newer NTS study. The study did not include any analysis of the data or conclusions by design in order to minimize any potential bias of the contractor. The published raw data allow for peer review and analysis by all interested parties. Testing was done in accordance with ASTM and Federal Test Method Standard testing methods, Federal specifications and the contractor's recommendations. Samples were not identified in this or any other study to avoid potential bias and to maintain the confidentiality concerns of industry. The QA/QC procedures are discussed in the June 9, 2000 CARB Final Program Environmental Impact Report (CARB EIR), Appendix I, Responses to Comments.

In support of the 1999 amendments to its architectural coatings rule (Rule 1113), the SCAQMD contracted with NTS to test performance characteristics of six significant architectural coating categories: industrial maintenance coatings, non-flat coatings, primers, sealers, and undercoaters, quick-dry enamels, quick-dry primers, sealers, and undercoaters and waterproofing sealers. The purpose of the NTS study was to test the application and durability performance of very low-VOC, low-VOC, and just-compliant coatings. The CARB staff participated on the contract's TAC. One problem encountered was that not all industry members agree on procedures. Testing was done in accordance with ASTM and Federal Test Method Standard testing methods, Federal specifications and the contractor's recommendations. Accelerated weathering was simulated in the laboratory.

The CARB staff analyzed the data from the laboratory portion of the NTS study. In some cases lower VOC coatings performed better than higher VOC coatings for some of the characteristics tested and in other cases vice versa. The CARB's evaluations concluded that, overall, the complying coatings performed similarly to the non-complying coatings.

In addition to the laboratory results, accelerated exposure, real time exposure, and application characteristics studies have continued after the date of the commenters' letters and after the date of the Staff Report for the Proposed Suggested Control Measure for Architectural Coatings, California Environmental Protection Agency, Air Resources Board, June 2000 (CARB Staff Report). Although the field portion of the NTS study is ongoing, the CARB SCM was not

dependent on this study. Results of accelerated outdoor weathering studies paralleled the results of the accelerated laboratory weathering study. The TAC also provided input on a NTS two-year real-time exposure study, initiated in April 2000, to evaluate the performance of coatings under ambient weathering conditions. Using the same paints evaluated in the laboratory study, coated panels were placed on exposure racks in Saugus, a hot, dry climate, and in El Segundo, a cool, humid, marine environment. The tests were on zero, low and high VOC non-flat and industrial maintenance coating systems. Evaluations were consistent with the findings of the laboratory and accelerated outdoor exposure tests. At the end of the two-year test, zero and low VOC coatings were noted to have similar weathering and durability characteristics as higher VOC coatings. In some cases, the lower VOC coatings outperformed the solvent-based coatings, as measured by gloss levels.

In conjunction with the TAC, in March 2001 the SCAQMD contracted with KTA-Tator, Inc. to perform additional coating performance tests which focused on a comparison of high and low VOC formulations for floor coatings, non-flat high gloss paints, primers, sealers and undercoaters, and interior stains. The selection of the contractors, the protocol for conducting the study and the coatings evaluated, resulted from discussions and a consensus between the SCAQMD and the TAC. Floor (concrete) coatings were tested for adhesion, chemical resistance, abrasion resistance, impact resistance, pencil hardness and efflorescence resistance. High gloss coatings were tested for lapping (uneven coating distribution due to overlapping), adhesion, scrub resistance, blocking resistance (the ability of a coating to resist sticking at locations such as doors and windows) and weathering (measured by gloss and color retention). Primers, sealers, undercoaters were tested for grain raising, adhesion, sandability, chemical resistance, tannin stain blocking and weathering. Interior stains were tested for lapping, grain raising, adhesion, tannin stain blocking and scrub resistance. All paints were testing for hiding, dry time and sag resistance (the ability of a coating to resist sagging or running when applied to a vertical surface). All water-based products were tested for freeze resistance. The results of the study showed that low VOC products are available and overall perform as well as or better than higher VOC products.

The commenter noted that long term durability performance characteristics such as loss of gloss, color retention, chalking, and blistering have not yet been evaluated under the NTS study and await future evaluations. As discussed in the Response to Comment 5, the commenter provided the Department with a paper entitled "Discussion of the Generic Differences in Performance Characteristics between Water-based and Solvent-based Coatings" prepared by the commenter. This paper states that water-based performance advantages include excellent color retention and excellent caulk resistance (leak resistance) and exterior durability. It also notes that disadvantages to solvent-based coatings include poorer gloss retention and caulk resistance on exterior exposure. These statements seem to contradict the commenter's concerns regarding loss of gloss, color retention and blistering.

In addition to evaluating the testing studies, the CARB staff conducted a comprehensive survey of currently available coatings that forms the primary basis for the SCM. The CARB believes that, in general, commercially available coatings have undergone extensive real time exposure testing prior to their introduction to the market to ensure reliable performance. The CARB staff also conducted literature reviews and held discussions with manufacturers and resin suppliers. In addition, the CARB staff evaluated hundreds of coatings product data sheets from many resin manufacturers and coating formulators. The CARB's review of product data sheets shows existing compliant products with characteristics including, but not limited to, maximum

protection against UV color fade, fade and chalk resistant, resists blistering, peeling, and flaking, superior color retention and excellent color and gloss retention. Based on the CARB's full analysis, the CARB staff determined that low-VOC compliant coatings are technically feasible and commercially available with performance characteristics comparable to higher VOC coatings.

Low VOC primers for wood are discussed in the Response to Comments 48 and 49. Water-based primers for metal surfaces were not commented on further by the commenter; however, rust preventative coatings, which have a VOC content limit higher than primers, sealers and undercoaters, can be used as metal primers.

12. COMMENT: The commenter attached and incorporated into its comments a letter it wrote in 2002 to SCAQMD, in which the commenter stated that the SCAQMD has excluded zinc rich coatings (from the definition of metallic pigmented coatings in the SCAQMD rule), while the regulatory record leading up to the SCAQMD rule adoption in no way reflected such a non-obvious exclusion. (1)

RESPONSE: While it is true that the SCAQMD excluded zinc coatings in its definition of metallic pigmented coatings, the comment is not relevant to this rulemaking because such an exclusion is not in the proposed or adopted New Jersey rules.

13. COMMENT: The SCAQMD has informally clarified that the category of tank lining coatings does not include certain caustic materials, although this exclusion was not reflected in the SCAQMD rulemaking record. (1)

RESPONSE: The statement is not relevant to this rulemaking because in the adopted New Jersey rules, tank lining coatings would most likely fall under the industrial maintenance coatings category, which has a VOC content limit that differs from both the SCAQMD rule and the CARB SCM. As discussed below in the Response to Comment 40, the VOC content limit requested by the commenter for industrial maintenance coatings was incorporated into the OTC model rule and the proposed and adopted New Jersey rules.

14. COMMENT: Too much reliance has been placed upon product data sheets, which may minimize problems or state that the problems are not substantial if instructions for use are closely followed. Also, caution should be exercised in relying on information from resin and coating manufacturers and their promotional materials that are not peer reviewed. Statements about the properties of a resin starting formula from resin manufacturers are representative of where the coating formulation begins to determine whether an adequate cost-effective coating may be developed, but not necessarily representative of the end result. (1)

RESPONSE: The Department does not agree that information from product data sheets and resin manufacturers has been misused. This information is important and was part of the CARB's overall evaluation, which included other sources of information. The CARB staff also conducted a comprehensive survey of coatings available in 1996, which formed the primary basis for the SCM. The CARB staff also conducted literature reviews and held discussions with manufacturers and evaluated the results of laboratory testing.

15. COMMENT: The CARB Survey has flaws. Low VOC products may be successfully used to meet the performance requirements of one particular application and exposure environment of

a general class of coatings; however, there must first be a thorough evaluation of this technology before it can be mandated as being feasible for all or even most of the application, performance, and exposure requirements of the general class of coatings to which it belongs. The Pechan survey conducted for the OTC makes the same wrong assumption. (1)

RESPONSE: In 1998, the CARB staff conducted a comprehensive survey of coatings available in 1996. The survey was an important part of the overall analysis. CARB's overall conclusions were based on a thorough analysis of numerous things including the testing studies, the CARB survey, review of product data sheets, and interviews with product manufacturers, resin manufacturers and suppliers. Product application, performance, and exposure requirements were considered and evaluated through the use of the NTS and Harlan studies. The CARB reviewed information on hundreds of commercially available products that comply with the limits in the SCM. Subcategories of the rule categories were also evaluated, included differences between interior and exterior coatings, and among clear, semi-transparent and opaque coatings. The specific categories of concern are discussed below throughout this document.

A report prepared by E.H. Pechan & Associates, Inc., dated March 31, 2001 (Pechan Report), summarizes a survey of coating availability in the Northeast Ozone Transport Region (OTR). Pechan sent out a request for information to 32 manufacturers of architectural coatings, asking for information such as VOC content, performance information and sales data for the OTC states. Eighteen manufacturers responded to the survey. Most provided information in the form of material safety data sheets (MSDS), product information sheets or references to the company website. The Pechan Report was not meant to duplicate CARB's entire evaluation. It demonstrates that complying coatings are currently available in the Northeast similar to in California.

16. COMMENT: The commenter attached to its comments, and incorporated by reference, a letter dated April 7, 2000 from it to CARB regarding the CARB Environmental Impact Report (EIR). The letter stated that more than 30 percent of the products listed as lacquers in Appendix E of the CARB EIR are in reality polyurethane varnishes. (1)

RESPONSE: The comment was contained in a letter written to CARB prior to the CARB's issuing its final EIR. When the final EIR was issued, the CARB revised Appendix E in accordance with the comment. The comment does not relate to the New Jersey rules.

17. COMMENT: Seven of the coatings characteristics that the CARB EIR evaluated are insignificant. The insignificant characteristics are: range of VOC, average VOC content, average solids by volume, average coverage, average dry time, average pot life (the amount of time a two-component system is able to be used for application after mixing) and average shelf life. The CARB EIR should have evaluated performance, application latitude (defined as the type of equipment is need for application; whether highly sophisticated spray equipment is required; whether there are any limits on the application temperature, humidity or atmospheric conditions under which the coating can be applied; and the film thickness that must be applied in order for the coating to meet the required performance characteristics), surface latitude (which is the type of surface can the coating be applied to and the type of surface preparation must be done to insure a proper job), cost effectiveness and waste considerations. This is one of the reasons why the research and testing evaluated by CARB is flawed. (1)

RESPONSE: According to the CARB EIR, manufacturers have repeatedly told CARB that solids, coverage, dry times, pot life, and shelf life are vital factors in determining performance. CARB disagrees with the commenter's assertion that these properties do not relate to performance, durability, or suitability of a coating for a particular job. In addition, the CARB staff considered all of the coating characteristics and categories that the commenter identifies. The CARB considered performance, through the use of product data sheets, the NTS study, the Harlan study, and data provided by manufacturers. It evaluated product data sheets for information on application latitude and surface latitude. It also considered cost effectiveness and waste impacts, and testing data provided by manufacturers or users of coatings. As a result of these evaluations, the CARB proposed changes to the CARB SCM, such as to the industrial maintenance category. The CARB proposed five industrial maintenance breakout categories: anti-fouling coatings, flow coatings, temperature-indicator safety coatings, rust preventative coatings, and antenna coatings. Finally, it proposed a provision that would allow the use (in appropriate situations) of industrial maintenance coatings, with a higher VOC content limit of 340 g/l, for the districts in the San Francisco Bay Area, North Central Coast, and North Coast Air Basins, where areas exist with persistent fog and low temperature conditions. In adopting the VOC content limits in its rules, the Department reviewed the CARB material and determined that a VOC content limit of 340 g/l was appropriate for New Jersey for similar reasons.

FLAT AND NON FLAT COATINGS: FLAT

18. COMMENT: The VOC content limit for exterior flat coatings should be 150 g/l, instead of the VOC content limit of 100 g/l in the proposed rule. The lower VOC content limit will result in an inferior coating, additional coats will be necessary initially for proper hiding ability, and additional coats will be necessary later due to coating failures, especially due to the harsh climate conditions in the Northeast as compared to California. American Tradition is an example of a high quality coating that will be eliminated if the 100 g/l VOC content limit for flat coatings is adopted. Reapplication frequency of this coating is less due to its high quality, resulting in lower overall emissions.

The commenter, a national trade association, attached to its comments, and incorporated by reference, an undated letter to it from one of its members regarding the OTC's architectural coating model rule. The member company's letter comments that the VOC content limit for flat coatings should be 200 g/l. The higher quality products will suffer the most with the proposed rule, causing customer complaints. (1)

RESPONSE: The Department does not agree that change to the proposed VOC content limit for flat coatings is necessary or warranted. As discussed in the Response to Comment 5 and in more detail below, the Department concludes that the commenter has not supported its claims that the lower VOC coatings will result in lower durability.

The 1998 Architectural Coatings Survey Results Final Report, California Environmental Protection Agency, Air Resources Board, September 1999 (1998 CARB Survey) shows that 49 percent of flat coatings sold and 42 percent of exterior flat coatings sold were complying with the VOC content limit of 100 g/l in California in 1996. The 2001 Architectural Coatings Survey Final Report, California Environmental Protection Agency, Air Resources Board, October 2003 (2001 CARB Survey) shows that 73 percent of flat coatings sold were complying with the VOC content limit of 100 g/l in California in 2000.

The CARB Staff Report identified 276 exterior flat coating products that complied with the VOC content limit of 100 g/l. The CARB Staff Report indicates that complying quality products are offered by Dunn Edwards, ICI-Dulux, Rodda Paint and Tru-test.

Complying products found available in California are sold nationally. The March 31, 2001 Pechan Report summarizes a survey of coating availability in the Northeast OTR as discussed in the Response to Comment 15. The survey showed that 38 percent of the flat coatings in the survey complied with the limits adopted in these New Jersey rules prior to March 31, 2001.

The CARB research shows that coatings complying with the adopted New Jersey rules for flat coatings perform similarly to their higher VOC counterparts, including scrub resistance, and durability. The CARB Staff Report also indicates that independent product testing done in New York by Consumer's Union, an independent, non-profit organization, also showed that complying products exist and meet quality requirements for cracking, color change, dirt buildup, mildew growth and other problems. For each brand, three colors that represent the basic tint bases (light, medium and dark) were tested. The paints were purchased mostly from the Northeast.

Complying products can also be found in publications from the Master Painters Institute (MPI). The MPI is an organization devoted to listing manufacturers and products that meet a certain set of strict product performance standards for architectural coatings. The MPI is relatively new and has rapidly gained a following. For example, the Department of Defense recently began requiring manufacturers to be listed on the MPI. The MPI purports to represent the user, not the manufacturer, and to develop specifications that are primarily aimed at coating durability. Manufacturers must apply for membership, pay a fee and the coating lines to be listed on the approved product list must undergo strict testing. Not all products pass. Those that do carry the MPI seal of approval. Some manufacturers may elect not to join. Behr, MAB, AFM Safecoat and many small regional manufacturers do not yet belong. As more users list the MPI approval in their specifications, more manufacturers will likely seek the MPI approval.

The MPI lists the following approved exterior flat coatings with a VOC content at or below 100 g/l under the MPI #10 Exterior Latex Flats: Color Wheel Contractor's Choice 310, Color Your World Outsider 5900, Dunn-Edwards Acri-Flat, Flex Bon Exterior Flat 10-1, ICI Dulux Sinclair Stuc-O-Life, Para Paints Ultra Extension Latex Flat 7000, Porter Paints Acri-Pro 100 Flat 930, PPG Sunproof Exterior Latex Flat 72 Line, Rodda Velvet Flat Exterior Latex AC-911, Vista Paint Coverall Exterior Flat 2800, Vista Paint Acribond 3000.

There are several organizations throughout the country that have developed regional coating specifications similar to the adopted New Jersey rules that meet performance criteria. Green Seal is a non-profit organization devoted to developing environmentally friendly specifications for a number of consumer products. Green Seal has a set of specifications for paint that includes the absence of certain toxic compounds as well as limiting VOC content. Green Seal's paint specifications include performance testing for washability, scrubability and hiding power. Only coatings that pass its stringent tests are approved for use. Various organizations such as the Department of Defense, the State of Pennsylvania's Department of Transportation and the Aberdeen Proving Ground (APG) in Maryland have adopted Green Seal coating specifications for various coating categories. The APG lists five Benjamin Moore exterior flat product lines with a VOC content less than 100 g/l. Other organizations such as Clean Air Counts in Chicago; the Austin, Texas, Green Building Program; and the University of Minnesota's Technical

Assistance Program have published coating VOC content limits for their voluntary programs. The specified VOC content limits are at or below those in the adopted New Jersey rules.

Based on this discussion, the Department does not agree that a change to the proposed VOC content limit for flat coatings is necessary or warranted.

FLAT AND NON-FLAT COATINGS: NON-FLAT

19. COMMENT: The VOC content limit for non-flat coatings should be 200 g/l, instead of 150 g/l in the proposed rules. The lower VOC content limit will result in an inferior coating, additional coats will be necessary initially for proper hiding ability, and additional coats will be necessary later due to coating failures, especially due to the harsh climate conditions in the Northeast as compared to California. The higher VOC is needed for scrub resistance and blocking resistance. A decrease in open time (the time it takes a coating to dry) will effect flow and leveling (the ability of a coating to even out after applying), appearance and hiding. Also the coatings will skin in the can. At the Rohm and Haas testing facility, the materials being tested clearly showed problems with discoloration with the darker colors. These problems are more acute for this category than the flats category due to the higher gloss and thus higher solids content. In this category, higher quality (and therefore higher solids) coatings would suffer even more so; coatings are harder to apply due to inherent increased viscosity (exacerbated by cooler weather) and more rapid drying (speeded by higher temperatures). (1)

RESPONSE: The Department does not agree that a change to the proposed VOC content limit for non-flat coatings is necessary or warranted. As discussed in the Response to Comment 5 and in more detail below, the Department finds that the commenter has not supported its claims that the lower VOC coatings will result in lower durability.

The CARB Staff Report shows that 76 percent of low gloss coatings sold in California in 1996 (representing 472 products from 22 companies) complied with the VOC content limit of 150 g/l, the same limit as in the adopted New Jersey rules, and 19 percent of the low gloss coatings in the California market had a VOC content of 100g/l or less. The 2001 CARB Survey showed that 79 percent of low gloss coatings in the California market complied with the 150 g/l limit. In 1996, the survey of medium gloss products (which were surveyed separately) showed that 57 percent of the products sold (representing 805 products from 28 companies) complied with the 150 g/l limit (36 percent in the 2001 CARB Survey) and 23 percent of the market had a VOC content of 100 g/l or less.

The CARB Staff Report indicates that complying quality products are offered by AFM, Conlux, Dunn Edwards, Evr-Gard, Flex Bon, Griggs Paint, ICI Dulux, Kelly-Moore, Sherwin-Williams and Spectra-Tone. A partial list of available complying coatings is shown in the CARB Staff Report on pages 93-96, listing 50 coatings from these manufacturers.

Complying products available in California are also sold nationally. The March 31, 2001 Pechan Report summarizes a survey of coating availability in the Northeast OTR as discussed above in the Response to Comment 15. The survey showed that 42 percent of the non-flat coatings in the survey, which coatings were available in the Northeast OTR prior to March 2001, complied with the limits in the adopted New Jersey rules.

The CARB and the SCAQMD research and testing show that non-flat coatings complying with the adopted New Jersey VOC content limits perform similarly to their higher VOC counterparts. The CARB Staff Report also indicates that independent product testing done by Consumer's Union, an independent, non-profit organization, showed that complying products exist and meet quality requirements.

Consumers Union tested 15 brands of low luster paints marketed as higher-grade paints. A number of interior satin and eggshell paints with VOC levels below 150 g/l were included in the tests, including four zero VOC paints. For each brand, three colors that represent the basic tint bases were tested. The paints were purchased mostly from the Northeast. All the paints tested performed well, rating good or better in overall scores. Sears Best Easy Living Satin, which complies with the adopted New Jersey VOC content limit, was recommended as one of the four best low-luster paints and received the highest overall score. Consumers Union also tested 17 brands of exterior latex non-flats. Three of the four recommended low-luster exterior paints comply with the 150 g/l limit (Glidden Dulux Endurance Satin, Sears Best Weatherbeater Satin and Sears Weatherbeater Satin). One of the four recommended semi-gloss paints (Sears Best Weatherbeater Semi-Gloss) also complies.

The MPI placed on its approved product list non-flat exterior coatings with a VOC content of 150 g/l or less from the following manufacturers: Diamond Vogel, Dunn-Edwards, Flex Bon, Frazee, Miller Paint, PPG, Rodda, Sherwin-Williams, Spectra-Tone, Farrell-Calhoun, General Paint, ICI, Kelly-Moore and Vista. The MPI also approved non-flat exterior coatings with a VOC content of 150 g/l or less for concrete and masonry surfaces from the following manufacturers: Coronado, Duron, Envirocoatings, Kwal-Howells CGI, Mills Paint, Northern Paint and Vista. The MPI also placed on its approved product list non-flat interior coatings with a VOC content of 150 g/l or less from the following manufacturers: Hallman Lindsay, Parker Paint, PPG, Sherwin-Williams, Spectra-Tone, Cloverdale, General Paint, ICI, Kelly-Moore, Kwal-Howells, Miller Paint, Sico Coatings, Dunn-Edwards, Hirshfields, Iowa, Porter Smiland, Vista, Duron, Frazee, Mills Paint, Para Paints and Rodda Paints. In addition, the MPI placed on its approved product list high performance non-flat interior coatings with a VOC content of 150 g/l or less in all gloss levels from the following manufacturers: Durant, ICI, Sherwin-Williams, Vista, Hirshfields, Kelly-Moore, Parker Paint, Bennette, Columbia, Devoe, Diamond Vogel, Porter, PPG, Rhodda, Smiland and Spectra Tone. A high performance architectural latex coating is designed to provide a significantly higher level of performance than conventional latex paints in the areas of scrub resistance, burnish resistance, and ease of stain removal.

As discussed in the Response to Comment 18, organizations such as Green Seal; Clean Air Counts in Chicago; the Austin, Texas, Green Building Program; and the University of Minnesota's Technical Assistance Program, have all published coating VOC content limits for their voluntary programs with VOC content limits at or below those in the New Jersey rules as adopted.

Green Seal has a low VOC paint specification for the Aberdeen Proving Ground (APG) that included a non-flat interior paint VOC content limit of 150 g/l. Its report lists 36 interior semi-gloss lines from nine manufacturers, including Benjamin Moore, Bruning, Duron, Dutch Boy, Glidden, Lasting Paints, PPG, Sears and Sherwin-Williams, that met the 150 g/l VOC specification. All were judged to be of a quality to perform the intended purposes. The Green Seal specification includes the requirement to pass certain performance tests related to washability, scrubability and hiding power.

Based on the discussion above, the Department does not agree that a change to the proposed VOC content limit for non-flat coatings is necessary or warranted.

FLAT AND NON-FLAT COATINGS: NON-FLAT – HIGH GLOSS

20. COMMENT: The VOC content limit for high gloss coatings should be 380 g/l, instead of 250 g/l as proposed. The lower VOC content limit will result in an inferior coating, additional coats will be necessary initially for proper hiding ability, and additional coats will be necessary later due to coating failures, especially due to the harsh climate conditions in the Northeast as compared to California. In order to achieve a gloss, as defined in the rules, a solvent-based or alkyd coating is required. The rules would eliminate alkyd systems altogether. The Master Painters Institute (MPI) product list does not show an alkyd, non-flat, high gloss coating with a VOC content at or below 380 g/l.

The commenter, a national trade association, attached to its comments, and incorporated by reference, an undated letter to it from one of its members regarding the OTC's architectural coating model rule. The member company's letter comments that it is impossible to make an alkyd gloss enamel that would dry quickly enough, be hard enough, and not yellow severely at 250 g/l. The alternative latex gloss products are inferior to the alkyd enamels for the properties stated above. (1)

RESPONSE: The Department does not agree that a change to the proposed VOC content limit for high gloss coatings is necessary or warranted. As discussed in the Response to Comment 5, and here in more detail, the Department concludes that the commenter has not supported its claims that the lower VOC coatings will result in lower durability.

When representatives of the Department attended the Rohm and Haas facility demonstration, an MSDS for a typical high gloss coating was used as an example in a demonstration. The VOC content of the coating was 195 g/l, which is well below the adopted New Jersey limit. When this was pointed out, the speaker said to add 40 or 50 g/l for exterior coatings, which would result in a coating with a VOC content of 235 g/l to 245 g/l, also within the adopted New Jersey limit.

The 1998 CARB Survey shows that 75 percent of high gloss coatings sold in California in 1996 were found to be water-based and 25 percent were solvent-based. The CARB found that in the period from 1993 to 1996, the overall sales in California of water-based products in this category increased 46 percent, and the sales of solvent-based products decreased 64 percent. The overall sales-weighted average VOC content of high gloss coatings decreased 17 percent in California between 1990 and 1996.

The 1998 CARB Survey shows that 100 products, or 97 percent of the volume of interior high gloss coatings sold in California in 1996, almost a decade prior to the New Jersey compliance date, complied with the VOC content limit of 250 g/l. Forty-six percent (82 products) of exterior high gloss coatings complied, and 79 percent (136 products) of the high gloss coatings sold for both interior and exterior use complied. The CARB recommended the higher VOC content limit of 250 g/l, instead of the 150 g/l adopted in the SCAQMD. The CARB felt the higher limit was more appropriate because it matched the limit for quick-dry enamels, which overlaps the high gloss category. They believed if the limits were different, manufacturers could re-label high gloss coatings as quick-dry enamels.

Complying products available in California are sold nationally. The March 31, 2001 Pechan Report summarizes a survey of coating availability in the Northeast OTR, as discussed above in the Response to Comment 15. The survey showed that 42 percent of all types of non-flat coatings in the survey complied with the VOC content limits in the adopted New Jersey rules.

It is true that there are no products with a VOC content under 380 g/l on the MPI list under Interior Alkyd, Gloss. In fact, there are no listed products under this category at all. This appears to be because the alkyd coatings are being replaced with low VOC latex coatings. Although there are no alkyd products listed that meet the VOC content limits in the adopted New Jersey rules, there are many water-based products that do. Twelve of the products listed under the MPI #110 - Water-Based Light Industrial Enamel are at or below the adopted VOC content limit of 250 g/l. Nineteen of 20 products listed under the MPI #114 - Interior Latex, Gloss, are at or below the VOC content limit of 250 g/l, including coatings from Sherwin-Williams and Benjamin Moore. According to the Delaware Response Document, although the specification for the MPI #114 calls for a gloss of a minimum of 65 units at 60 degrees, all the coatings listed actually had a gloss above 70 units, thus meeting the rule definition of gloss.

According to the Delaware Response Document, Robert Welch, Technical Director of the MPI, said that water-based exterior gloss products were preferred in many instances because they retain their gloss and color for a longer period upon exposure, while alkyd gloss products seem to have better abrasion resistance. He went on to say that it has been his observation that as VOC content limits become more stringent, manufacturers have been able to reformulate to obtain water-based product properties that are equal to or better than the displaced solvent-based products. Mr. Welch also said, in his estimation, the limits in the rules are attainable.

The CARB and the SCAQMD research and testing shows that coatings complying with the VOC content limit of 250 g/l perform similarly to their higher VOC counterparts. The KTA-Tator, Inc. study tested high gloss coatings for lapping, adhesion, scrub resistance, blocking, weathering (measured by gloss and color retention), hiding, dry time, sag resistance and freeze resistance. The results of the study showed that low VOC products are available and, overall, perform as well as or better than higher VOC products.

Based on this discussion, the Department does not agree that a change to the proposed VOC content limit for high gloss coatings is necessary or warranted.

FLAT AND NON-FLAT COATINGS, MISCELLANEOUS

21. COMMENT: By eliminating low temperature coatings, the rules will shorten the application season and increase emissions during the ozone season. Outside emergency painting due to storm damage during the winter months could be severely reduced, if not eliminated. Elimination of the coatings will also result in economic consequences for painters and developers. (1, 4)

22. COMMENT: A review of product data sheets for the water-based exterior and interior coatings systems at the VOC levels of the proposed rules demonstrates some fairly consistent restrictions and limitations on their use. They cannot be applied in temperatures at or below 50 degrees or when such temperatures are expected in 24 hours after application. Also, many caution against application in certain humidity conditions.

The commenter, a national trade association, attached to its comments, and incorporated by reference, a letter dated July 24, 2001 from one of its members to the NYSDEC regarding the OTC's architectural coating model rule. The member company's letter comments that although products may exist below many of the published limits in the OTC model, there are situations, particularly in the Northeast, when very low VOC formulas may not work. In part, the member company was concerned with low temperature applications. One very likely result is increased VOC emissions when unacceptable paint jobs are corrected. (1)

RESPONSE TO COMMENTS 21 AND 22: Low temperature coatings (coatings that can be applied at temperatures between 35 degrees Fahrenheit and 50 degrees Fahrenheit) that comply with the adopted New Jersey rules now exist. ICI markets the Decra Shield line, which is advertised as a premium quality, durable, fade and chalk resistant coating that can be applied down to a temperature of 35 degrees Fahrenheit and has a VOC content below 100 g/l. Sherwin Williams markets several lines in light, medium, and dark tint bases, which can be applied down to a temperature of 35 degrees Fahrenheit and have a VOC content below 100 g/l such as Duration Exterior Latex Flat and Satin, Exterior Accents Latex Flat, Satin and Gloss (advertised as "provides vivid bright and deep colors for most exterior surfaces..") and Superpaint Exterior Latex Satin and Gloss (advertised as "Finest quality exterior stain finish").

In addition, many existing flat and non-flat coatings that comply with the adopted rules can be applied at temperatures as low as 50 degrees Fahrenheit, thereby allowing application outside of the ozone season.

Also, restrictions on application during certain weather conditions are not limited to low VOC coatings. Currently-available products with a high VOC content that do not comply with the adopted rules have application restrictions based on temperature and humidity conditions similar to the lower VOC coatings. Moreover, for paints intended for interior use, temperature and humidity conditions can be controlled, thereby limiting the relevance of external weather conditions.

23. COMMENT: Coatings formulators will not be able to formulate a full range of colors because bright colors and masstones (a pigment-vehicle (resin) mixture which contains a single pigment only or a pigment-vehicle mixture which contains no white pigment) need a higher VOC content limit in order to allow sufficient pigment loading, which is needed to get sufficient hiding and to develop full color. The bright colors such as phthalo blue, phthalo green, carbon black, bright reds and yellows require dispersion in order to obtain maximum efficiency. In order to develop a product that will satisfy the end user, the coatings formulators need the flexibility of modifying the formulas so that the properties of the deep color bases will approximate the characteristics of the light color bases. This usually means that either a different resin (harder type – latex coatings) or different ratios of solvent-based resins must be incorporated in the formulas. With the latex systems a harder resin requires higher coalescing solvents in order to help the resin cure. Without the coalescent solvent, the film would not properly cure, causing slow dry and early failure. In order to produce the deep color bases, harder resins must be used which require coalescent solvents. Production of bright colors in a flat latex coating would require a higher VOC content limit than what is proposed.

The commenter, a national trade association, attached to its comments, and incorporated by reference, a letter dated July 24, 2001 from one of its members to the NYSDEC regarding the

OTC's architectural coating model rule. The member company's letter comments that very low VOC coatings may not accept tinting material properly reducing the range of colors available to consumers or negatively impacting the performance of these colors. (1)

RESPONSE: As discussed in detail in the Response to Comments 18 and 19, coatings that comply with the adopted New Jersey rules currently exist in sufficient quantity and colors to show that an adequate color range can be accomplished. The testing by Consumers Union and Green Seal includes different color ranges. As discussed in the SCAQMD July 21, 2000 Annual Status Report, the SCAQMD staff's technology assessment and review of product data sheets show existing complying products with a full range of colors and scrub resistance equal to or greater than their higher VOC counterparts. Although the Army at the APG site might not use all of the colors in complying formulas, Green Seal did test and approve all colors as meeting the category VOC content limits. In addition, the colorant added to a tint base, at the retail level, is exempt from the definition of VOC content, leaving flexibility regarding the final VOC content of the coating after the addition of colorant.

24. COMMENT: There is an excellent article written by a manager from Rohm and Haas, an international supplier of paint raw materials and a company that has taken an aggressive development course for waterborne materials. Besides being a good basic primer on the ways and wonders of waterborne technology, it also is an honest assessment of the performance trade-offs that occur with the technology as it exists today and for the foreseeable future. He discusses the softer binders required of low solvent waterborne coatings: "In contrast, formulating with softer binders forces low-solvent paint makers to make some difficult choices. If they obtain good hardness and block resistance through such mechanisms as heterogeneity and cross linking, low temperature film formation may not be possible." (That is, the ability to apply the paint in relatively cold weather.) Also he says the use of heterogeneity and a cross-linking mechanism typically has a detrimental effect on scrub resistance. (Scrub resistance is the ability of a coating to withstand hard scrubbing, such as occurs in kitchens and children's rooms.) He also notes that the absence of other solvents such as glycol makes freeze-thaw stability highly problematic, which is another issue of more concern in New Jersey. Freeze-thaw stability is the ability of a waterborne coating to withstand freezing without being destroyed, an issue for all waterborne coatings being moved and stored in this state during the winter. Some in our industry have decided to abandon this performance characteristic in order to use the limited solvent allowed under limits like those in the New Jersey rule proposal to remedy other performance problems. What this means is that trucks carrying such coatings will have to be heated as will warehouses. And this will impose added costs not only on the manufacturer/shipper, but on the end user too and on society in the form of more energy consumption. None of these costs or consequences are considered in the rulemaking. The Rohm and Haas article concludes that progress over time will be made and the performance gap between conventional and low solvent chemistry will diminish. We think that is an interesting choice of words, "that it will diminish." Here is a knowledgeable individual with every economic incentive to want this difference to disappear completely but still predicts it only will diminish over time. (1)

RESPONSE: Low temperature coatings are discussed in the Response to Comments 21 and 22. Scrub resistance is discussed in the Response to Comments 18 and 19. Freeze-thaw is discussed in the Response to Comment 10. Costs related to freeze-thaw issues are discussed in the Response to Comment 100. The performance of low VOC coatings are discussed throughout this document under the individual coating categories. The statement that performance gaps between conventional and low solvent chemistry will diminish, but will not disappear, can be

interpreted as an optimistic view of low VOC paints. The Rohm and Haas article from which the quote was taken, Technological Challenge, by J. Rusty Johnson, dated October 2000, does not specify the VOC content limits that the author is evaluating. However conversations with the author indicate that he was referring to VOC content limits between 100 (for flat paints) and 150 (for non-flat paints), which are identical to (or similar to) those in the adopted rule. The article also states that the limitations discussed are of little concern in flat paints.

25. COMMENT: With respect to the Aberdeen Proving Ground (APG) Study, the companies that supplied the majority of the coatings used in the study, Sherwin-Williams, Benjamin Moore, and Duron, oppose the proposed rules and support the commenters alternative. While these companies make waterborne coatings, they realize that they have certain application and performance limitations. Additionally, it is our understanding that the APG program allowed for variances from the water-based systems. To fully understand the implications of the APG experience, this should be looked into and it should be determined whether the variance was used and why. Its mere existence demonstrates that water-based systems cannot do it all. In addition, a military base differs greatly from a civilian environment, both in the selection of coatings that are allowed and the ability to control the timing of when painting can occur. Even the general's wife does not get to freely select the coatings for her husband's office or their home. (1)

RESPONSE: The Department acknowledges the opposition of the manufacturers mentioned, some of whom have provided the Department with comments on these rules. The APG in Maryland has adopted as its standard the Green Seal coating specifications for various coating categories. The APG procedure includes a provision for a variance if for some reason a particular coating is unavailable or unsatisfactory for the intended use. According to the Delaware Response Document, the variance provision has not been used. Although all colors may not be used by the Army at the APG site, all colors were tested and approved by Green Seal as meeting the category VOC content limits.

26. COMMENT: The commenter, a national trade association, attached to its comments, and incorporated by reference, a letter dated July 31, 2000 from one of its members to it regarding the OTC's architectural coating model rule. The member company's letter comments that with the VOC calculation in the OTC model rule (where water has to be removed first), the rules are already eliminating acrylic coatings, which require the addition of a coalescing solvent with a VOC content greater than the 100 g/l limit for flats, and 150 g/l limit for non-flats, leading to inferior paints that crack, pick up dirt, and block (causes surfaces to stick together) when applied to doors and windows. (1)

RESPONSE: As discussed in the Response to Comments 18 and 19, paints that comply with the adopted New Jersey VOC content limits currently exist in the Northeast in sufficient quantity and quality. The Department concludes that no change to the proposed VOC content limits for flat or non-flat coatings is necessary or warranted.

ANTI-GRAFFITI COATINGS

27. COMMENT: The commenter, a national trade association, attached to its comments, and incorporated by reference, a letter dated August 30, 2001 from one of its members to it regarding the DNREC architectural coating rule. The member company's letter comments that the rule should include a new coating category, anti-graffiti coatings, which is in the Federal rule at a VOC content limit of 600 g/l. Solvent-based coatings are more efficient at graffiti resistance

than other coatings and do not have to be reapplied as often, thereby reducing VOCs. Testing to date of water-based systems has shown a minimum of a two-day cure time before the coating resists spray paint or marking pens. Even then, some stains are not fully removed when methyl ethyl ketone is used to clean the walls. The member company's coating, Tex-Cote Graffiti Gard is a permanent solvent-based, high performance urethane anti-graffiti coating that can be washed between 10 to 15 times before it is no longer effective. Sacrificial anti-graffiti coatings (water-based) usually last one to three washings before they must be replaced. The high performance urethane system is the best to date in film forming abilities, and early resistance to graffiti. For the most part, anti-graffiti coatings are used not only to protect walls, eliminating the need to recoat, but also protect surfaces that cannot be repainted, such as murals. In addition, the quantity of these protective coatings is low; only 333 gallons were sold in the OTC region in 2000. The use of anti-graffiti coatings is typically done in low-income areas, or to protect murals from vandalism. The member companies solvent-based anti-graffiti coating is sold for less than half the cost of water-based coatings. Water-based anti-graffiti coatings are considered too expensive to be used in most projects (low-income areas). Given the extremely low quantity of anti-graffiti coatings used, less than 0.01 percent of paints used nationwide, raising the VOC content limit to 600 g/l would have minimal impact on the total VOCs in the region. (1)

RESPONSE: The Department has determined that it is unnecessary to create a separate category with a higher VOC content limit for anti-graffiti coatings. In the USEPA's architectural coating rule, permanent (not sacrificial) anti-graffiti coatings are a regulated category with a VOC content limit of 600 g/l. However, in the New Jersey rules as adopted, anti-graffiti coatings are classified as either industrial maintenance coatings with a VOC content limit of 340 g/l, or general flat or non-flat coatings with a VOC content limit of 100 g/l or 150 g/l. Permanent anti-graffiti coatings would generally be classified as industrial maintenance coatings because they are designed to resist repeated scrubbing and exposure to harsh solvents, cleansers, or scouring agents. Sacrificial anti-graffiti coatings would generally be classified under the flat or non-flat coatings categories because they do not meet the criteria of an industrial maintenance coating.

According to the 1998 CARB Survey, there are numerous manufacturers that produce and sell adequate anti-graffiti products that comply with the adopted New Jersey VOC content limits. In addition, the sales weighted average VOC content of these anti-graffiti products reported in the 1998 CARB Survey is 225 g/l, which is well below the 600 g/l requested by the commenter, indicating that a lower VOC is achievable. The products that comply with the adopted New Jersey VOC content limits include both permanent and sacrificial products, many of which have a VOC content at or near zero.

Based on this discussion, the Department has determined that it is not necessary to create a separate category with a higher VOC content limit for anti-graffiti coatings.

BITUMINOUS ROOF COATINGS AND PRIMERS

28. COMMENT: The definitions for bituminous roof coating and bituminous roof primer at N.J.A.C. 7:27-24.2 are too restrictive because they prohibit a manufacturer from producing or offering for sale a product that has a formula that may be designed for more than one use. The definition of bituminous roof primer is too limiting because bituminous roof primers can also be used for dampproofing and waterproofing. The use of these products for waterproofing is quite

small and it is an unfair and costly burden to have to offer the same product in two different labeled packages. The word "exclusively" should be deleted from the definitions. (7, 8)

RESPONSE: The Department does not agree that it is necessary to change the definitions for bituminous roof coatings and primers. The rules allow a product to be marketed for more than one purpose, provided the product meets the "most restrictive limit" as shown at N.J.A.C. 7:27-23.3(b). A product marketed as a bituminous roof coating or bituminous roof primer must meet the VOC content limit associated with that category. If a bituminous roof coating is also to be marketed as a waterproofing sealer, then it must meet the definition and lower VOC content limit for waterproofing sealers. If in addition to being marketed as a bituminous roof coating the product is marketed as a waterproofing concrete/masonry sealer, then the product complies with the adopted rules because the category of waterproofing concrete/masonry sealers has a VOC content limit less stringent than bituminous roof coatings and primers. Bituminous roof primers are exempted at N.J.A.C. 27:23.3(b)3 from meeting the most restrictive VOC content limit.

29. COMMENT: The Department should add bituminous roof coatings to the 21 item list of products exempted from a more restrictive VOC content limit (if marketed for more than one purpose) similar to bituminous roof primers which are already on the list. (7)

RESPONSE: The Department does not agree that it is necessary to include bituminous roof coatings to the exemption list at N.J.A.C. 7:27-23.3(b). Bituminous roof primers are on the list because the products also meet the definition of a primer. Therefore, bituminous roof primers are exempted from meeting the more stringent VOC content limit that applies to primers, sealers and undercoaters. Bituminous roof coatings do not need to be exempted from a more stringent limit, because they do not meet the definitions of flat or non-flat coatings. The definitions of flat and non-flat coatings exclude other coatings if they are defined elsewhere in the subchapter. The definition of primers does not.

30. COMMENT: The VOC content limit for bituminous roof primers should be 450 g/l not 350 g/l due to the climate conditions in New Jersey. A lower viscosity is needed to fill nooks and crannies. At lower temperatures the primer is more difficult to apply. The roof performance will be diminished. A thicker coat will be needed, thereby not necessarily reducing the VOCs emitted. The VOC content limit of 350 g/l does not meet (or will have difficulty meeting) the ASTM standards (ASTM D-41 "Standard Specification for Roof Primers"). The usage of these primers is small, less than five percent of bituminous roof coatings use primers, but the importance is there. (7, 8)

31. COMMENT: Currently available complying bituminous roof primers do not work as well, are less efficient to use and cause delays in roofing projects while the roofer waits for the heavier film to dry. Thinner film products contain more highly volatile solvents and probably emit more hazardous solvents to the atmosphere. (7)

RESPONSE TO COMMENTS 30 AND 31: The Department does not agree that a change to the proposed VOC content limit for bituminous roof primers is necessary or warranted. The CARB originally intended to regulate bituminous roof primers as a primer at a VOC content limit of 200 g/l. The category was ultimately created by the CARB at a VOC content limit of 350 g/l to account for the colder climates in California. Prior to the adoption of New Jersey's new architectural coating rules at N.J.A.C. 7:27-23, bituminous primers were listed under the primer, sealer, and undercoater category, which was subject to a VOC content limit of 350 g/l.

Under these adopted rules, bituminous roof primers have their own category; however, the applicable VOC content limit remains 350 g/l. This same VOC content limit of 350 g/l has been in effect in New York and New Jersey for 14 years, and in Massachusetts and Rhode Island since 1995 and 1996, respectively. The CARB Staff Report states that the market share complying with the VOC content limit of 350 g/l in 1996 was approximately 57 percent of the California market. This is due largely to the fact that a VOC content limit of 350 g/l has been in effect in several California air district rules for 14 years, as well. The 2001 CARB Survey shows a 73 percent market share that complies with the VOC content limit of 350 g/l in 2000 for bituminous roof primers in California. According to the industry data provided to the CARB, products which comply with the VOC content limit of 350 g/l can be applied with a spread of application rate that is comparable with higher VOC content products, demonstrating that the amount of VOC applied per square foot will not increase. Based on this discussion, the Department does not agree that a change to the proposed VOC content limit is necessary or warranted.

CALCIMINE RECOATERS

32. COMMENT: The commenter, a national trade association, attached to its comments, and incorporated by reference, a letter dated July 24, 2001 from one of its members to NYSDEC regarding the OTC's architectural coating model rule. The member company's letter comments that the rule should include a new category, calcimine recoaters at a VOC content limit of 475 g/l. Calcimine is a very old type of finish that dries to a powdery coating. Dry calcimine, while it can last for many years, is water-soluble, so latex paint will not adhere to it. Often, the best solution is to use a flat alkyd coating over the calcimine. The alkyd penetrates the powdery surface and, because it dries by crosslinking, tightly binds the calcimine. It is worth noting that this is a problem found in very old homes, such as those that exist in significant numbers in the Northeast. Although the volume of calcimine recoater sold is very small, it performs an important function in those communities where calcimine coating is still present. Introducing this category to be consistent with the Federal rule would have a negligible impact on VOC release and would avert costly and messy paint failure over calcimine. Adopt the National definition for calcimine recoater. (1)

RESPONSE: The Department included in its proposed and adopted rules the category of calcimine recoater, with a VOC content limit of 475 g/l, as the commenter recommends. No change was made from the proposal.

CONCRETE PROTECTIVE COATINGS

33. COMMENT: The commenter, a national trade association, attached to its comments, and incorporated by reference, a letter dated August 30, 2001 to it from one of its members regarding the OTC's architectural coating model rule. The member company's letter comments that the Department should add a category for concrete protective coatings, which is in the Federal rule at a VOC content limit of 400 g/l. XL-70 Bridge Cote is a concrete protective coating that has a proven life span of over 20 years protecting bridge abutments, medians and other concrete surfaces. The reasons for the creation of a special category are similar to the reasons for the creation of the varnish category. The use of this low volume coating saves time, labor and materials in comparison to a water-based coating. In addition, no primer is needed when applying this coating over cured or uncured concrete. These are all the factors that led the USEPA to the creation of the concrete protective coating category. While the volume of Tex Cote XL-70 Bridge Cote sold is not huge, 38,300 gallons of XL-70 Bridge Cote were sold in the

OTR in the year 2000, the coating is valuable in that it can be applied to wet, green concrete, as well as older surfaces without the use of a primer. The material can also be applied in freezing temperatures. There are no water-based products that will perform all these functions and all water-based coatings require the use of a primer. Also, the typical life span of acrylic (water-based) coatings is only three to five years. Both these factors would lead to an actual increase in VOCs in the OTC area. In addition, water-based coatings cannot be applied in cold, damp weather, a critical factor in the Northeast, where road construction crews are strained to complete work in suitable weather conditions. The CARB is adding a category for concrete protective coatings in its rule. (1)

RESPONSE: The Department does not agree that a new coating category is necessary for concrete protective coatings. These coatings fit the definition for the waterproofing concrete/masonry sealer category, which has a VOC content limit of 400 g/l, the same as requested by the commenter. With regard to the comment that the CARB is adding the category to its rule, the CARB has added a category for waterproofing concrete/masonry sealers, but, to the knowledge of the Department, has no plans to add the category concrete protective coatings.

CONCRETE SURFACE RETARDERS

34. COMMENT: The Department should add a category for concrete surface retarders at a VOC content limit of 780 g/l. (1)

RESPONSE: The Department included in its proposed and adopted rules the category of concrete surface retarders, with a VOC content limit of 780 g/l, as the commenter recommends. No change was made from the proposal.

CONVERSION VARNISHES

35. COMMENT: The Department should not have added a category for conversion varnishes, it is not necessary. The commenter claims to be one of two major manufacturers that manufacture conversion varnishes. Conversion varnishes consist of only three percent of all sales of finishes used in the hardwood flooring industry. Conversion varnishes are obsolete and are being replaced with superior water-based products. Conversion varnishes are illegal in many European nations for safety issues because they emit formaldehyde and are a fire danger. The category should be deleted, or at least set at the feasible limit of 525 g/l. (9)

RESPONSE: The Department has not removed the category of conversion varnishes from the proposed rules. As defined in the adopted rules, a conversion varnish means a clear acid-curing coating with an alkyd or other resin blended with amino resins and supplied as a single component or two-component product. Conversion varnishes produce a hard, durable, clear finish designed for professional application to wood flooring. Film formation is the result of an acid-catalyzed condensation reaction, affecting a transesterification at the reactive ethers of the amino resins. The other manufacturer's arguments for including this category are as follows: conversion varnishes are more durable than other types of floor coatings and therefore require fewer coats over the life of the floor; the product will be driven off the market if this category is eliminated, because there is no technologically feasible option for reformulation; and sales of the product are very low and will not effect VOC emission reductions. Also, the other manufacturer claims "we are confident that a conversion varnish category could not and would not become a loophole for polyurethane or water-based finish manufacturers to distribute otherwise non-

compliant products." The New Jersey definition, as adopted, specifies that the product is for professional application to wood flooring. Therefore, professionals will be able to handle the product properly if they choose to use the product. The Department has determined that the use of this product is small. Nevertheless, the Department may monitor the sales of this product in the future to ensure that the product sales do not increase significantly.

With regard to the commenter's suggestion that the Department change the VOC content limit for conversion varnishes, in order to be consistent with the Federal limit of 725 g/l, the Department is not changing the VOC content limit of 725 g/l to 525 g/l.

EXTREME HIGH DURABILITY COATINGS

36. COMMENT: There should be an additional coatings category definition added to allow the use of air-dried fluoropolymer-based coatings. These high performance finishes are designed to provide extended color and gloss retention in critical areas, eliminating the need for multiple coating applications over time. At a VOC content of 400 g/l, these products will actually reduce the VOC released over the lifetime of high profile architectural structures. These coatings are typically used for field touch up, repair and overcoating of aged Kynar 500 shop-applied coatings that require force curing at 400 degrees Fahrenheit, and new construction projects. The Federal rule's VOC content limit is 800 g/l, but the commenter is proposing a VOC content limit of 400 g/l. (10)

RESPONSE: The Department does not agree that it is necessary to add category for extreme high durability coatings. These coatings, which include air-dried fluoropolymer-based coatings, were provided with a separate category in the USEPA's architectural coatings rule, with a VOC content limit of 800 g/l, but this category is not in the CARB SCM. The CARB did not believe this category was necessary because extreme high durability coatings would generally be classified as industrial maintenance coatings. The Department agrees with CARB that not adding the category is appropriate, because extreme high durability coatings are designed for "exterior exposure of metal structures and structural components," one of the criteria that qualify a coating as an industrial maintenance coating. Also, since these products are designed for touch-up, the exemption for one liter or smaller containers could apply.

FLOOR COATINGS

37. COMMENT: The VOC content limit for floor coatings should be 400 g/l instead of 250 g/l in the proposed rules. A solvent-based coating is needed to penetrate wood in order for exterior wood porches to have adequate durability under the expected heavy use and exposure to natural elements of New Jersey winters. There are no compliant coatings that can fulfill all the performance requirements for use on exterior wooden floor surfaces, such as wooden porches. Wooden porches are far less common in California than in New Jersey. The California testing was for concrete floors only, not wooden floors and California officials state "there are no wood porches in southern California." The commenter claims there was no demonstration by the Department of the existence of acceptable complying products and failure by the Department to address this issue shows the arbitrary and capricious nature of the rules. (4)

38. COMMENT: The VOC content limit for water-based floor coatings should be 250 g/l, and the VOC content limit for solvent-based floor coatings should be 380 g/l instead of 250 g/l in the proposed rules. The commenter claims that the MPI restricts water-based coatings to concrete

floors where there is no possibility of water penetration from below, and to wood floors and porches without high traffic. Also, the MPI does not list water-based floor coatings for garages because the hot wheels from arriving cars will lift the coating. For garages, the MPI recommends solvent-based coatings. The commenter also states that the MPI recommends a VOC content of 350 g/l and above for high traffic. (1)

RESPONSE TO COMMENTS 37 AND 38: The Department does not agree that a change to the proposed VOC content limit for floor coatings is necessary or warranted. As discussed above in the Response to Comment 5 and in more detail in this response, the Department finds that the commenters have not supported their claims that the lower VOC coatings will result in lower durability.

The CARB Staff Report indicates that floor coatings are recommended for application to either wood or concrete flooring including, but not limited to, residential and commercial garage floors, commercial parking garages, warehouse floors and residential and commercial wood floors, decks, porches and steps, all of which are found in California and in New Jersey.

In addition, the CARB raised its proposed VOC content limit from 100 g/l to 250 g/l due to enforcement issues to be consistent with industrial maintenance coatings, stains and waterproofing sealers, since coatings in these categories may also be applied to floors. The CARB was concerned that manufacturers would re-label their products instead of reformulating them.

The CARB Staff Report, referring to the 1998 CARB Survey, stated that there were 373 products in California in 1996 complying with the VOC content limit of 250 g/l for an 85 percent complying market share, by volume. The CARB Staff Report lists 14 complying products found through a literature search, two of which specifically mentioned their use as wood coatings; Resydrol AY466 (Vianova Resins) and Performance Skid-Proof (Seal-Krete, Inc.). In addition, the Delaware Response Document lists three more complying products. As discussed in the Delaware Response Document, Acrylic Floor Paint from Mautz, according to Rick Potter, Technical Director, has a VOC content of 150 g/l and is recommended for use on semi-exterior wood or concrete, and is also recommended for basements and garages. Underlying water seepage is not a problem, according to Mr. Potter, although ever-present water should be avoided. According to the Delaware Response Document, Behr gave high marks to its Porch and Floor Enamel with a VOC content of 250 g/l and below. These products are recommended for high traffic areas such as porches, decks and steps and are usable for basement floors where some water seepage is possible. The products are not recommended for garage floors due to the possibility of paint lifting. AFM Safecoat makes a product called Deckote, which is recommended for wood and concrete patios, walkways, and decks. Deckote has a VOC content of 240 g/l.

In addition, the KTA-Tator, Inc. study tested floor coatings (concrete) for adhesion, chemical resistance, abrasion resistance, impact resistance, pencil hardness, efflorescence, hiding, dry time, sag resistance and freeze resistance. The results of the study showed that low VOC products are available and, overall, perform as well as or better than higher VOC products.

As stated by one commenter, the MPI lists one category of floor coatings for use on surfaces not prone to water permeation from below. However, it also lists three other categories of floor coatings that do not have this restriction. The MPI lists coatings with a VOC content of 250 g/l

or less under category #60, Interior/Exterior Latex Porch and Floor Enamel – Low Gloss, for use on concrete and primed wood surfaces not prone to water permeation from below, primarily for low and medium traffic areas. These products are listed from the following manufacturers: California Paints, Coronado Paints, General Paint CGI and ICI. The MPI lists complying coatings under the category #127, Exterior Latex Deck Coating, for light traffic exterior concrete, plywood and fiberglass coated decks from the following manufacturers: Color Your World, General Paint CGI, Cloverdale, Northern Paint, ICI and Sherwin-Williams. No mention is made of limitations based on water seepage from below. The MPI category #93 is an exterior water-based epoxy floor paint for use on concrete and wood floors, stairs, and landings where a durable, abrasion resistant finish is required, but the odor of solvent-based epoxy products would preclude their use. Products with a VOC content of 250 g/l or less are listed from the following manufacturers: Columbia Paint CGI, Griggs Paint, Insl-x, Mobile Paint, Smiland Paint, Spectra Tone-CGI, Cloverdale and ICI. No mention is made of limitations based on water seepage from below or for high traffic. The MPI lists one coating with a VOC content of 250 g/l or less by Rodda Paint under category #68, Interior/Exterior Latex Floor Enamel –Gloss, for use on interior and exterior wood and concrete floor surfaces in residential and light traffic commercial and industrial locations. No mention is made of limitations based on water seepage from below.

One commenter claims that the MPI recommends VOC levels of 350 g/l and above for high traffic areas such as steps and porches. The MPI does not show this recommendation on its website. The MPI lists quality approved products from manufacturers that apply for inclusion on the MPI's lists. Quality complying products can also exist that are not on the MPI listings. As discussed above, Behr, which has a high-traffic area porch and floor enamel with a VOC content of 250 g/l, chooses not to list with the MPI.

Similarly, the MPI does not recommend solvent-based coatings for garages, nor does it limit water-based coatings to concrete floors where there is no possibility of water penetration from below. If water-based coatings for garage floors or for concrete floors with some water seepage from below were submitted to the MPI for application and found to be satisfactory by the MPI, these products would be listed.

As discussed in more detail in the Response to Comments 6 through 9, similar climate conditions can be found in California and the Northeast that can affect coating application and durability. The commenters did not sufficiently support their claims that coatings, which are compliant with the adopted New Jersey rules, will be less durable than higher VOC coatings due to climate conditions.

Based on this discussion, the Department does not agree that a change to the proposed VOC content limit for floor coatings is necessary or warranted.

INDUSTRIAL MAINTENANCE COATINGS AND PRIMERS

39. COMMENT: The definition for non-industrial use should be eliminated. It restricts the use of industrial maintenance coatings in places like natatoriums (swimming pools), schools, hospitals, and water theme parks. These facilities contain areas that are subject to one or more of the extreme conditions listed in the industrial maintenance coatings definition. The CARB SCM, the SCAQMD Rule 1113 and the National architectural coating rule do not contain a definition of non-industrial use. The intent is to allow high performance coatings in any area where extreme environmental conditions exist as noted in the definition. (10)

RESPONSE: The term non-industrial use is used in the New Jersey rules in the definition of rust preventative coatings at N.J.A.C. 7:27-23.2, which defines rust preventive coatings as "a coating formulated exclusively for non-industrial use..." The restriction of non-industrial use is not included in the definition of industrial maintenance coatings. The labeling requirements for industrial maintenance coatings require one of three labeling options: "for industrial use only"; "for professional use only"; or "not for residential use" (or "not intended for residential use"). Based on the adopted New Jersey rules' requirements, the Department concludes that industrial maintenance coatings are not prohibited in the places specified by the commenter; therefore, the elimination of the term non-industrial use is not necessary.

40. COMMENT: The commenter attached to its comments, and incorporated by reference, a letter dated August 21, 2000 that it sent to NYSDEC regarding the OTC architectural model rule. The commenter's letter stated that the Department should adopt a higher VOC content limit for industrial maintenance coatings than the proposed 250 g/l. The lower VOC content limit will result in an inferior coating, additional coats will be necessary due to coating failures, especially due to the harsh climate conditions in the Northeast as compared to California. It states that the CARB SCM recommended limit for this category is 250 g/l, however, the CARB SCM allows a variance, which allows a VOC content limit of 340 g/l in areas with inclement weather conditions (high humidity, persistent fog and cold temperatures) such as those found in the Northeast. (1)

RESPONSE: The Department included in its proposed and adopted rules a VOC content limit of 340 g/l for industrial maintenance coatings, as the commenter recommends. No change was made from the proposal.

IMPACTED IMMERSION COATINGS

41. COMMENT: Regarding impacted immersion coatings, please consult the comments of Mr. Beitleman of the Army Corps of Engineers which we understand are being sent to you (DNREC) (1)

RESPONSE: The Department did not receive the comments referenced by the commenter that were sent to the DNREC. The Department included in its proposed and adopted rules the category of impacted immersion coatings, with a VOC content limit of 780 g/l, as the commenter recommended in the letter sent to the DNREC. No change was made from the proposal.

LACQUERS

42. COMMENT: The Department should eliminate the category for clear brushing lacquers. These products raise safety issues because they emit formaldehyde and are a fire danger. While the commenter does not produce clear brushing lacquers, it believes there is technically no supportable reason to have a brushing lacquer category (for use as sealers or finishes) when functionally equivalent and commercially viable alternatives are available. The clear brushing lacquers category should be entirely removed from the rules or, at a minimum, lowered to be consistent with what is technically feasible, 550 g/l for clear brushing lacquers, the same as for the lacquer category. (9)

RESPONSE: The Department does not agree that clear brushing lacquers should be removed from the adopted New Jersey rules, or regulated at a VOC content limit of 550 g/l as requested by the commenter. Based on the CARB's research, including information provided by industry, there are no known clear brushing lacquer formulations at 550 g/l capable of providing the necessary application and finish characteristics that are available with the adopted VOC content limit of 680 g/l. The formulation changes required to produce a spraying lacquer with a VOC content of 550 g/l are not acceptable for brushing lacquers. Achieving a 550 g/l brushing lacquer requires the use of solvents, such as acetone, that result in unacceptable performance with regard to application and finish. Lacquers are typically applied in multiple coats to achieve the desired finish. Formulations with a VOC content of 550 g/l bite into underlying coats of lacquer, which results in an unacceptable brush drag and the brush becoming stuck in the previous coat. With spraying lacquers this is not an issue.

43. COMMENT: The VOC content limit for lacquers should be 680 g/l, instead of 550 g/l in the proposed rules. Acetone, which will be used to replace the VOCs, is a fire hazard and causes application problems. The lower VOC content limit will result in spraying of as much as 15 percent to 20 percent more coating, due to the rapid evaporation of acetone. As acetone evaporates, the painted surface dries. In order to obtain a uniform appearance by preventing lap marks, it is necessary to maintain a wet surface, which can only be accomplished by applying additional coating. (1)

RESPONSE: The Department does not agree that a change to the proposed VOC content limit for lacquers is necessary or warranted. The CARB Staff Report states that the VOC content limit of 550 g/l is technologically and commercially feasible, based on information from coating manufacturers and the evidence of complying market share. According to the CARB Staff Report, the use of acetone as an alternative solvent has resulted in achieving VOC content of 550 g/l without sacrificing significant properties preferred by the wood finishing industry. Major manufacturers have introduced nitrocellulose lacquers using acetone to lower the VOC content to 550 g/l. The SCAQMD Rule 1113 was amended in June 1996 to include a VOC content limit of 550 g/l for these coatings, with the support of coating formulators. Surface Protection, Inc., Guardsman, Akzo-Nobel, Sherwin-Williams and AMT all introduced acetone-based formulations of nitrocellulose lacquers.

The 1998 CARB survey shows 138 products that comply with the VOC content limit of 550 g/l, with a complying market share of approximately 14 percent in California in 1996.

Complying products found available in California are sold nationally. The March 31, 2001 Pechan Report summarizes a survey of coating availability in the Northeast OTR, as discussed above in the Response to Comment 15. The survey showed that 83 percent of the lacquers in the survey complied with the VOC content limit of 550 g/l.

The MPI lists under categories numbered 84, 85, 86, 87, 122, 123 and 124 clear and pigmented lacquers with a VOC content of 550 g/l or less in flat, gloss, satin and semi-gloss, from the following manufacturers: Griggs, Dunn-Edwards, Vista, Frazee and Columbia.

According to the Delaware Response Document, product literature from R.J. McGlennon Company, a manufacturer of wood finishes for over 40 years, shows a number of solvent and water-based lacquer products that comply with the VOC content limit of 550 g/l. Though located in California, the manufacturer is a national supplier. Products such as the 33 series Low

VOC Nitrocellulose Lacquers with a VOC content of 550 g/l (includes acetone in the formulation); 63 Series Aqualac Water-based Lacquer Color Topcoats with a VOC content of 175 – 275 g/l; 62 Series Water-based Precatalyzed Clear Topcoats with a VOC content of 240-275 g/l (which, it says, provides an exceptionally durable, non-yellowing, chemical resistant finish) and 60 Series Water-based Clear Topcoats with a VOC content of 200-210 g/l are all compliant. They are designed to be applied by spray.

According to the Delaware Response Document, Cash Coatings, a small manufacturer in Wisconsin, manufactures a line of exclusively water-based products including Aqua-Cote Clear Finishes, a non-yellowing, non-flammable lacquer that provides harder finish than single-component nitrocellulose lacquers with better moisture, alcohol and mar resistance with a VOC content of about 200 g/l. They are designed for spray application.

Regarding the fire hazard of using acetone, a solvent exempt from the Department's definition of VOC at N.J.A.C. 7:27-23.2 and the USEPA's definition of VOC at 40 CFR 51.100(s), to keep the VOC content within limits while imparting desirable working properties, many solvents used in solvent-based lacquers or other coatings are also flammable and must be handled with care. Acetone's flash point, flammability classification and lower explosive limit are similar to other solvents found in solvent-based coatings such as methyl ethyl ketone, toluene and xylene. Proper guidelines for working with flammable coatings must be followed in order to avoid creating dangerous conditions or fire hazard.

Based on this discussion, the Department does not agree that a change to the proposed VOC content limit for lacquers is necessary or warranted.

44. COMMENT: The STAPPA/SCM and Delaware rules recognize a VOC content limit of 550 g/l for lacquers. (1)

RESPONSE: The STAPPA, CARB SCM, Delaware and New Jersey rules are consistent on the VOC content limits for lacquers. New Jersey, like STAPPA/SCM and Delaware, recognizes a VOC content limit of 550 g/l for clear brushing lacquers and 680 g/l for other lacquers.

LOW-SOLIDS COATINGS

45. COMMENT: Certain water-based stains cannot meet the low-solids definition of 120 grams or less of solids per liter, but yet, when VOC content is calculated using the low-solids composition formula, they fall below the VOC content limit of 120 g/l VOC. Further, lowering the solids of these water-based stains to meet the 120 g/l definition was tried and resulted in a poor quality coating. The Department should modify the definition of low-solids composition to include all water-based clear or semi-transparent stains, regardless of solids content. (1, 4)

RESPONSE: A low solids coating is defined in the adopted rules as a coating containing 0.12 kilogram or less of solids per liter (one pound or less of solids per gallon) of coating material. The low solids coating category was not designed to replace the stain category. The stain category exists in the CARB SCM, the Federal rule, and also in the adopted New Jersey rules. It would not be appropriate to include all stains in the low solids category. If a stain cannot meet the low solids definition, then it must meet the VOC content limit for stains.

METALLIC PIGMENTED COATINGS

46. COMMENT: The proposed definition for metallic pigmented coatings should be expanded to include both metallic pigmented coatings and those that contain special mica pigments that also give the metallic appearance. Mica is a complex of hydrospotassium aluminum silicate minerals, and is not considered a metallic pigment by definition, although it yields an appearance that meets the definition of metallic paint. This change in definition for metallic pigmented coatings was recently accepted by the SCAQMD in rule 1113. The commenter has 107 metallic colors and two product lines, that they claim any reasonable person would consider metallic by evaluating their appearance. Only 25 of these 107 colors will meet the metallic pigmented coatings definition. It is important that the Department consider the inclusion of wet ground mica as an acceptable pigment for the metallic pigmented coatings definition. Mica is a chemically-inert material that offers improved color and exterior performance over elemental metallic pigments. This will provide more latitude for metallic architectural coatings in their color choices, and result in additional benefit of improved exterior performance. (10)

RESPONSE: On adoption the Department has added mica particles to the definition of metallic pigmented coatings at N.J.A.C. 7:23-2 consistent with the SCAQMD rule 1113 definition of metallic pigmented coatings. The CARB SCM, upon which the New Jersey rules are based, is based on the SCAQMD rule 1113, with some modifications. The SCAQMD recently made this change to its rule 1113, after the adoption of the CARB SCM. The SCAQMD Staff made the change in Response to Comments because they agreed with the commenter's statements that coatings with mica look like metallic pigmented coatings and that by not allowing mica to be used would restrict the color choices and appearance characteristics that need mica in the formulation. The SCAQMD Staff agreed with the same commenter and revised the definition of metallic pigmented coatings to include mica based on discussions with the commenter on specific colors and appearance characteristics that need mica in the formulation, as discussed in the Response to Comments, Appendix A, of the SCAQMD Staff Report for Amended Rule 1113, dated December 6, 2002. This change to the SCAQMD rule, made after the adoption of the CARB SCM, is appropriate for New Jersey's rules.

NUCLEAR COATINGS

47. COMMENT: The commenter, a national trade association, attached to its comments, and incorporated by reference, a letter dated August 30, 2001 from one of its members to DNREC regarding the DNREC architectural coating rule. The member company's letter comments that the rule should include a new category, nuclear coatings, at a VOC content limit of 450 g/l. (1)

RESPONSE: The Department included in its proposed and adopted rules the category of nuclear coatings, with a VOC content limit of 450 g/l, as the commenter recommends. No change was made from the proposal.

PRIMERS, SEALERS, UNDERCOATERS: EXTERIOR WOOD PRIMERS

48. COMMENT: The commenters do not recommend using water-based exterior wood primers. Water-based primers cause bleed-through of tannins in the case of real wood and on composition board problems can occur like bleed through of wax, surfactants can leach out, and swelling. One of the commenters, a national trade association, attached to its comments, and incorporated

by reference, a letter dated July 31, 2000 from one of its members to it, that expressed the same concerns regarding the OTC's architectural coating model rule.

The Department should either revise the definition of primers, sealers and undercoaters to exclude exterior wood primers and add exterior wood primers to the category of specialty primers, sealers and undercoaters, or include a new category for exterior wood primers with a VOC content limit of 350 g/l

In a case study, two exposure panels, one with a solvent-based primer and one with a water-based primer, both with a latex topcoat, were exposed in Medina Ohio for 82 months. The panel with the latex primer showed bleed through of tannins and poor protection of the substrate. Alkyd resin can bind to the wood better than latex coatings. Latexes are fairly large sized particles, which are not dissolved in water, but rather are dispersed in it. The latex resins do not penetrate deeply into the substrate, instead they will tend to sit on the surface. Without the solvent-based primer, the latex is more likely to peel and chip off of the wood substrate, especially due to temperature variations and rain. The commenter states that its company recommends that all water-based top coats must have an alkyd primer for use on bare exterior wood.

The Department has not demonstrated that there are any acceptable complying products. There are no compliant coatings that can fulfill the performance criteria. The Department's failure to address this issue shows the arbitrary and capricious nature of the rules. (1, 4)

49. COMMENT: Stain blocking primers have not been specifically studied by the SCAQMD (the agency which supplied much of the research and testing upon which the CARB based its SCM). (1)

RESPONSE TO COMMENT 48 AND 49: The Department does not agree that a change to the definitions or categories for primers, sealers and undercoaters is necessary or warranted. Regarding stain blocking wood primers, the Department does not agree that they belong in this category. According to the CARB Staff Report and the July 20, 2001 SCAQMD Annual Status Report on Rule 1113, the CARB SCM (and New Jersey rules) specialty primer category with a VOC content limit of 350 g/l includes primers applied to block tannins and other stains, and to condition excessively chalky surfaces. Stain blocking primers are not in the SCAQMD rule definition of specialty primers, but are in the CARB SCM definition of specialty primers, sealers and undercoaters and are also included in the adopted New Jersey rules.

According to the CARB Staff Report, data reported in the 1998 CARB survey indicate that 73 percent (945) of primers, sealers and undercoaters sold in California in 1996 complied with the VOC content limit of 200 g/l. The survey indicates that 31 percent of the products reported in this category are for exterior use and 28 percent can be used on either interior or exterior surfaces.

According to the CARB Staff Report, in 1995 Harlan Associates, Inc. tested 20 different primers/sealers. Most of the low VOC primers had performance characteristics similar to the high-VOC primers, including stability, application, adhesion, appearance, dry to touch time, flexibility, grain raising, sag resistance and alkali resistance. Two differences were noted between the low-VOC and high-VOC primer/sealers: freeze-thaw resistance and dry-to-recoat items. The freeze-thaw resistance test is used to determine the resistance of a coating to storage

in very cold temperatures and only affects water-based coatings. Nine out of 12 low-VOC coatings passed the test. Also, 10 of the 12 low-VOC coatings tested had acceptable dry-to-recoat times of six hours or less.

As indicated in the CARB Staff Report, the CARB staff's analysis of the NTS data from the SCAQMD's "Phase II Assessment of Study of Architectural Coatings" indicates that overall, low-VOC primer, sealer, and undercoater coatings exhibited similar performance to high-VOC primer, sealer, and undercoater coatings. This study evaluated the performance characteristics of primers, sealers, and undecoaters for a variety of characteristics, including brushing properties, dry times, leveling, sag resistance, hiding, and film thickness.

The KTA-Tator, Inc. study tested primers, sealers, undercoaters for grain raising, adhesion, sandability, chemical resistance, tannin stain blocking, weathering and freeze resistance. The results of the study showed that low VOC products are available and overall perform as well as or better than higher VOC products.

In addition, the MPI lists coatings with a VOC content of 550 g/l or less under category #6, Exterior Wood Primers, recommended for use on woods containing extractable staining materials, such as cedar and redwood. Complying products are listed from the following manufacturers: Benjamin Moore, California, Cloverdale, Color Wheel, Columbia, Diamond Vogel, Dunn Edwards, Farell-Calhoun, Flex Bon, Frazee, General Paint, Hallman Lindsey, ICI, Hirshfields, Iowa, Kelly-Moore, Kwal-Howells, Miller, Parker, Rodda, Sherwin-Williams, Spectra-Tone and Vista.

Frazee Paint manufactures #168 Prime Plus Interior/Exterior Acrylic Primer/ Sealer/Stain Killer with a VOC content of 66 g/l. These coatings will effectively seal bare cedar, redwood or other woods containing extractable staining materials.

According to the Delaware Response Document, other manufacturers (Behr, ICI, and PPG) do not claim the need for an alkyd primer under exterior latex over bare wood. ICI markets Dulux Exterior Latex Primer with a VOC content of 142 g/l that has, ICI says, "good stain resistance over cedar and redwood." ICI also market Dulux Professional Exterior 100 percent Acrylic Latex Primer with a VOC content of 95 g/l that it says "resists nail head staining and tannin staining over woods such as redwood or cedar." Its Ultra-Hide Durus Exterior Acrylic Primecoat at a VOC content of 143 g/l is recommended for all bare woods.

Based on this discussion, the Department does not agree that any changes to the definitions or categories for primers, sealers and undercoaters are necessary or warranted.

50. COMMENT: The Department should either revise the definition of primers, sealers and undercoaters to exclude exterior wood primers and add exterior wood primers to the category of specialty primers, sealers and undercoaters, or include a new category for exterior wood primers with a VOC content limit of 350 g/l, because water-based coatings cause failure and warping of hardboard or composition board used as exterior siding for houses. (1, 4)

RESPONSE: The commenter has not supplied any evidence that shows that hardboard siding failures are a result of the type of primer used on the siding. Hardboard, particularly when used as siding for a home, has gained a reputation for swelling, buckling, and other moisture induced problems. Due to an increasing number of law suits by contractors and home owners against

manufacturers of hardboard siding for poor product performance, the Masonite Corporation recently announced it had stopped production of all hardboard siding products (Journal of Light Construction website http://www.jla-update.com/archives/5_01/masonite_siding.htm).

Based on this discussion, the Department's position is that no changes to the definitions or categories for primers, sealers and undercoaters are necessary or warranted.

PRIMERS, SEALERS, UNDERCOATERS: SEALERS

51. COMMENT: The Department should delete sealers from the primers, sealers, undercoaters category and establish a new category of sealers with a VOC content limit of 350 g/l. (1)

RESPONSE: The Department does not agree that a change to the definitions or categories for primers, sealers and undercoaters is necessary or warranted. The commenter has provided no supporting discussion to justify the change it suggests. As discussed above in the Response to Comments 48 and 49, sealers that comply with the adopted rule exist and exhibit similar performance to high-VOC sealers.

PROFESSIONAL VARNISH, SANDING SEALER AND STAIN

52. COMMENT: The commenter, a national trade association, attached to its comments, and incorporated by reference, a letter dated August 28, 2001 from one of its members to the DNREC regarding its rule. The member company's letter comments that a new coating category of professional varnish, sanding sealer and stain should be created to encompass higher VOC content products than the current categories for varnishes, sanding sealers and stains allow. Lower VOC stains, sealers and varnishes do not provide the necessary performance. Also, the CARB Architectural Survey data indicate there are no currently available products that meet performance requirements. (1)

RESPONSE: The Department does not agree that it is necessary to add this a category for professional varnishes, sanding sealers and stains and that the adopted VOC content limits in the rule for varnishes, sanding sealers and stains are appropriate, as discussed in the Response to Comments 55 through 58, and 70 through 73.

QUICK-DRY ENAMELS

53. COMMENT: The VOC content limit for quick dry enamels should be 380 g/l instead of 250 g/l in the proposed rules. The higher VOC content is necessary for cold, inclement weather conditions to repair storm damaged structures in winter months in which siding must be coated to protect it. (1)

RESPONSE: The Department does not agree that a change to the proposed VOC content limit for quick-dry enamels is necessary or warranted. According to the CARB Staff Report quick-dry enamels are typically used where the coated surface needs to dry quickly to minimize dust contamination (for example, new home construction) or the area needs to be returned to service quickly (for example, restaurants). As with other non-flat coatings, quick-dry enamels may be used on surfaces where frequent cleaning is necessary and in rooms where moisture is present. Kitchens, bathrooms, hallways, children's rooms, doors, window frames, shutters, and wood trim

may be coated with such coatings. Commercial buildings and institutions may use quick-dry enamel coatings on surfaces such as walls, corridors, and stairwells.

The CARB Staff Report indicates that a number of water-based latex coatings that comply with the adopted limit meet the gloss and dry-time requirements of this category. Since data sought for the 1998 CARB Survey were deemed confidential by manufacturers of products for this category, the number of complying products is unknown. By contacting individual suppliers, the CARB determined that complying products were available from Dunn-Edwards, Evr-Gard, ICI, Kelly-Moore and Sherwin-Williams.

Independent laboratory performance tests of a number of coatings were conducted by the NTS under contract with the SCAQMD. Included in those tests were eight coatings with VOC levels at or below 250 g/l that met the gloss and dry time criteria of quick-dry enamels. The NTS also tested five coatings that were labeled as quick-dry enamels that had VOC levels of 400 g/l. Although three of the five coatings with VOC levels of 400 g/l did not meet the gloss criterion, they were included in the NTS's comparison. Those coatings complying with the adopted 250 g/l limit (low-VOC coatings) were compared with the 400 g/l coatings (high-VOC coatings) by the NTS. Similar performance for low-VOC and high-VOC coatings was seen in tests of brushing properties and film thickness. The high-VOC coatings had somewhat better leveling performance, but the low-VOC coatings performed better with regard to sag resistance. Block resistance tests for the interior coatings showed that some of the best-performing coatings were in the low-VOC category. Block resistance for exterior coatings was somewhat better for high-VOC coatings. Low- and high-VOC interior coatings had similar results in tests for dirt removal ability. High-VOC interior coatings generally showed better scrub abrasion resistance, although one low-VOC coating had the best performance in this test.

The March 31, 2001 Pechan Report summarizes a survey of coating availability in the Northeast OTR as discussed above in the Response to Comment 15. The survey showed that 48 percent of the quick dry enamels in the survey complied with the VOC content limit of 250 g/l.

The product definition and actual product use do not support the commenter's contention that the quick-dry category is required for cold-weather structure repair. The primary purposes of quick dry enamels are to minimize dust contamination, and to return a facility to use quickly. Based on this discussion, the Department does not agree that a change to the proposed VOC content limit is necessary or warranted.

QUICK-DRY PRIMERS, SEALERS AND UNDERCOATERS

54. COMMENT: The VOC content limit for quick dry primers, sealers and undercoaters should be 350 g/l, instead of 200 g/l in the proposed rules. The higher VOC content is necessary for cold, inclement weather conditions to repair storm damaged structures in winter months in which siding must be coated to protect it. (1)

RESPONSE: The Department does not agree that a change to the proposed VOC content limit for quick-dry primers, sealers and undercoaters is necessary or warranted. As discussed above in Response to Comment 53, quick-dry primers, sealers and undercoaters are typically used where the coated surface needs to dry quickly to minimize dust contamination (such as in new home construction) or the area needs to be returned to service quickly (such as in restaurants).

According to the CARB Staff Report, approximately 44 percent of the volume of products in this category were water-based in California in 1996. Also, 35 percent of the volume of quick-dry primers, sealers and undercoaters sold in California in 1996 had VOC contents below 200 g/l. These include products recommended for interior, exterior and dual uses. The CARB Staff Report states that the VOC content limit of 200 g/l is technologically and commercially feasible, based on a review of product data sheets, analysis of complying market share, information provided by manufacturers and laboratory performance tests. The CARB questions the need for this category at all, and set the same VOC content limit for quick-dry primers, sealers and undercoaters and for primers, sealers, undercoaters. A study conducted by Harlan and Associates, Inc. for the CARB in 1995 concluded that the majority of products sold as quick dry primers, sealers and undercoaters did not meet the definition of quick dry primers, sealers and undercoaters. The CARB has included the category in the SCM to avoid confusion, but recommends it eventually be eliminated.

A discussion on complying primers, sealers and undercoaters is included in the Response to Comment 48 and 49.

The March 31, 2001 Pechan Report summarizes a survey of coating availability in the Northeast OTR as discussed above in the Response to Comment 15. The survey showed that 23 percent of the quick dry primers, sealers and undercoaters in the survey complied with the VOC content limits of the adopted New Jersey rules.

The product definition and actual product use do not support the commenter's contention that the quick-dry category is required for cold-weather structure repair. Based on this discussion, the Department does not agree that a change to the proposed VOC content limit for quick-dry primers, sealers and undercoaters is necessary or warranted.

SANDING SEALERS AND VARNISHES

55. COMMENT: The VOC content limit for sanding sealers should be 550 g/l, instead of 350 g/l in the proposed rules because the lower VOC sanding sealers will cause grain raising. Water-based products do not penetrate wood as well as solvent-based products. Sanding will not remove the raised grain without destroying the underlying wood substrate and will increase the cost of the job. (1, 4, 5)

RESPONSE: A sanding sealer is a clear-finish primer formulated for application over bare wood. It is not recommended for use over stained wood. It provides a finish that can be sanded to create a smooth surface under polyurethane topcoats. Therefore, if grain raising does occur, the surface may be sanded prior to topcoating. Sanding sealers are an optional economical first coat, but are not always required. For example, the directions for Minwax Fast-Drying Polyurethane, posted on the Minwax website at <http://www.minwax.com/products/protective/fast-poly.cfm>, do not recommend the use of the Minwax sanding sealer with its Fast-Drying Polyurethane.

The Department does not agree that a change to the proposed VOC content limit for sanding sealers is necessary or warranted. The VOC content limit of 350 g/l, as adopted in the New Jersey rules, has been in effect in many California air quality management districts for many years. The 1998 CARB Survey shows that five sanding sealers complied with the VOC content limit of 350 g/l, out of 31 sanding sealer products sold in California in 1996. The 2001 CARB

Survey shows 18 sanding sealers complied with the limits, out of 40 sanding sealer products sold in California in 2000. This indicates a large increase in the number of complying products from 1996 to 2000.

Sanding sealers that comply with the VOC content limit of 350 g/l are available from the following manufacturers: AFCO, Absolute Coatings, AFM, Basic Coatings, Behr, Bonakemi, Coronado, Deft, Delta Tech, Diamond Vogel, Federal Flooring, Fuhr, Harco Chemical, Hillyard, McCloskey, Poloplaz, Target Coatings, UGL, Vista Paint, Van Technologies, National Coatings and Valspar.

Grain raising is a problem that can occur with solvent-based as well as water-based products, but it is more closely associated with water-based finishes. There are several factors involved in grain raising, such as the type of wood (soft and open grain woods show this problem more readily than hard and tight grain woods), and the coating formulation. Thus, test panels of pine and oak, both soft woods, might show grain raising more readily than maple, a harder wood, for example. In several meetings with one of the commenters prior to the rule proposal comment period, visual demonstrations of wood panels were shown to the Department in order to demonstrate the difference between solvent-based and water-based sanding sealers and grain raising. The products used, their VOC contents, the wood type used and the application procedures were not presented to the Department. The Department's position is that interpretation of the visual submittals is subjective and the Department did not see an inadequately prepared wood surface.

Water-based products on the market that comply with the VOC content limit of 350 g/l that are advertised as causing minimal grain raising are available from the following manufacturers: AFM, BonaKemi, Delta Tech, Popoplaz, Van Technologies and Vista Paints.

Based on this discussion, the Department does not agree that a change to the proposed VOC content limit for sanding sealers is necessary or warranted.

56. COMMENT: The commenter, a national trade association, attached to its comments, and incorporated by reference, a letter dated August 28, 2001 from one of its members to the DNREC regarding its rule. The member company's letter commented that the VOC content limit of 350 g/l for sanding sealers has been in effect in California since the early 1990s; however, the sales weighted average VOC content in the 1998 CARB Survey is 648 g/l, implying that although the limit is in effect in many districts, it is not being complied with. Less than 20 percent of the sales comply with a VOC content less than 550 g/l, and less than five percent comply with a VOC content limit of 350 g/l. (1)

RESPONSE: The survey information quoted by the commenter includes products sold in containers of one liter or less, that were exempted from the CARB rules, and which N.J.A.C. 7:27-23.1(d)3 exempts from the VOC content limits of the adopted rules. Also, not all air quality districts in California had a VOC content limit of 350 g/l in 1996. Consequently, it was lawful in some parts of California to sell a sanding sealer with a VOC content in excess of 350 g/l. The CARB surveys show products exist that comply with a VOC content limit of 350 g/l, thereby demonstrating that the technology is feasible.

57. COMMENT: The VOC content limit for varnishes should be 450 g/l, instead of 350 g/l in the proposed rules. Solvent-based products are not feasible at the lower limit because they are

too thick and tacky, causing application problems and drying problems. Water-based products are less durable and more expensive, as shown in a Consumer Reports article that was provided to the Department previously. One of the commenters, a national trade association, attached to its comments, and incorporated by reference, letters from two of its members, one undated to it and one dated August 28, 2001 to DNREC, that expressed the same concerns regarding the OTC's architectural coating model rule and the DNREC architectural coating rule, respectively. (1, 4)

58. COMMENT: The commenter objects to any rule that would limit the VOC content of varnishes to 350 g/l. Experience has shown that products with such low levels of VOC have inferior and unacceptable application, handling and performance properties when used during installation or refinishing of wood flooring and would cause irreparable harm to the commenter's business and reputation. (11)

RESPONSE TO COMMENTS 57 AND 58: The Department does not agree that a change to the VOC content limit for varnishes is necessary or warranted. The VOC content limit of 350 g/l has been in effect in many California air quality management districts for many years. The 1998 CARB survey shows that 50 percent of clear varnishes complied with the VOC content limit of 350 g/l (142 complying products) with a 79 percent complying market share (for containers greater than one quart) in California in 1996, and 73 percent of semi-transparent varnishes complied (11 complying products) with a 100 percent complying market share (for containers greater than one quart). The 2001 CARB Survey shows 83 percent complying market share for clear products (178 complying products) and 88 percent complying market share for semitransparent products (six complying products) in California in 2000. As discussed further in the Response to Comments 62 and 63, in the current existing market, many consumers prefer water-based finishing systems because they like the clear character of a water-based finish as compared to an amber or yellowed solvent-based finish, they dry faster and have less odors.

The 1995 Harlan study showed that water-based and solvent-based varnishes performed similarly for characteristics including hardness, application, appearance, flexibility and gloss. The abrasion resistance, adhesive properties and resistance to water stains of the low VOC coatings was superior to the high VOC coatings.

Water-based varnishes with a VOC content of 350 g/l or less are also available and being used currently in the Northeast. Water-based varnishes currently sold in New Jersey that comply with the adopted rules include Flecto Varathanes, Profinisher Water-based Polyurethane, Minwax Polycrylic, Zar Aqua Water-based Polyurethane, Olympic Polyurethane, Ace Poly-Finish, Deft Millennium Polyurethane and Sherwin-Williams Polyurethane.

The Maple Flooring Manufacturers Association (MFMA) lists 34 approved water-based varnishes, some of which are at or below the VOC content limit of 350 g/l.

The MPI lists solvent-based semi-gloss varnishes with a VOC content of 350 g/l or less under the MPI #29 from the following manufacturers: Color Your World, Dunn-Edwards, Frazee CGI, Glidden, Spectra-Tone. The MPI lists water-based clear satin varnishes with a VOC content of 350 g/l or less under the MPI #128 from the following manufacturers: Cloverdale, Color Wheel CGI, Color Your World, Glidden, Griggs, Hirshfield's Paint CGI, ICI Dulux, Insl-x, Miller Paint, Para Paints, Porter Paints and PPG.

As discussed further in the Response to Comments 62 and 63, several coating manufacturers, including GaylerHillyard, BonaKemi, Basic Coatings, National Coatings and Valspar, recommend their water-based flooring systems.

The Consumer Reports article provided to the Department by one of the commenters was undated, but the Department determined it to be from a February 2001 article. The article shows that the performance of water-based varnishes is equal to that of solvent-based varnishes. It shows that water-based finishes dry faster are easier to cleanup and have excellent UV resistance. On a page 41 of the article, which was not provided by the commenter, the article indicates that while solvent-based varnishes historically had greater resistance to wear and scratches, that advantage did not show up in their lab tests. The article also indicates, as pointed out by the commenters, that the water-based varnishes are more expensive than the solvent-based varnishes. This apparently has not deterred existing consumers.

Based on this discussion, the Department does not agree that a change to the proposed VOC content limit for varnishes is necessary or warranted.

59. COMMENT: A Consumer Reports article (provided to the Department by the commenter) shows that water-based varnishes need more material per square foot than their solvent-based counterparts and require four coats instead of the three coats required for solvent-based coatings, negating VOC emission decreases. The Consumer Reports article provided to the Department by the commenter was undated, but the Department determined it to be from a February 2001 article. (1)

RESPONSE: The Department does not agree that four coats are necessary when using water-based varnishes. However, even if four coats are applied, the Department's position is that the end result will still be less VOC emissions from water-based varnishes than from solvent-based varnishes. According to the CARB Staff Report, the sales weighted average VOC content of water-based semi-transparent varnishes in 1996 was 296 g/l, the sales weighted average VOC content of water-based clear varnishes in 1996 was 260 g/l, the sales weighted average VOC content of solvent-based semi-transparent varnishes in 1996 was 459 g/l, and the sales weighted average VOC content of solvent-based clear varnishes in 1996 was 463 g/l. Assuming three coats of solvent-based varnish at a VOC content of 450 g/l and four coats of water-based varnish at a VOC content of 296 g/l, the VOC emissions from the water-based varnish application are less than from the solvent-based application. In other words, three times 450 g/l is greater than four times 296 g/l.

As discussed further in the Response to Comments 62 and 63, consumers seem to prefer the water-based varnishes. Therefore, encouraging the water-based varnishes encourages better water-based technology for the future, and also encourages development of water-based varnishes with VOC contents below the limit in the adopted New Jersey rules.

60. COMMENT: The commenter, a national trade association, attached to its comments, and incorporated by reference, a letter from one of its members dated August 28, 2001 to the DNREC regarding its rule. The member company's letter comments that the VOC content limit of 350 g/l for varnishes has been in effect in California since the early 1990s, and the sales weighted average VOC content (for all clear varnishes) is 406 g/l in the CARB 1998 survey. Over 70 percent of the varnishes sold in California are solvent-based, with a sales weighted average VOC content (for solvent-based clear varnishes) of 463 g/l. This shows that additional

time has not and will not solve the basic technical issues resulting in the poor performance of and lack of customer satisfaction with water-based varnishes. (1)

RESPONSE: The survey information quoted by the commenter includes products sold in containers of one liter or less, that were exempted from the CARB rules, and which N.J.A.C. 7:27-23.1(d)3 exempts from the VOC content limits of the adopted rules. Also, not all air quality districts in California had a VOC content limit of 350 g/l in 1996. Consequently, it was lawful in some parts of California to sell a varnish with a VOC content in excess of 350 g/l.

61. COMMENT: The commenter, a national trade association, attached to its comments, and incorporated by reference, a letter from one of its members dated August 28, 2001 to the DNREC regarding its rule. The member company's letter comments that the final appearance of both the varnished and the sealed, stained and varnished panels that the member company showed to the Department were distinctly different. The water-based coatings showed an appearance without depth, reminiscent of the photographed-type of wood appearance found on artificial substrates and not expected on a natural wood substrate. (1)

RESPONSE: The commenters conclusions are subjective. As discussed further in the Response to Comments 62 and 63, in the current existing market, many consumers prefer water-based finishing systems because they like the clear character of a water-based finish as compared to an amber or yellowed solvent-based finish. The water-based products also dry faster and have less of an odor than the solvent-based products.

62. COMMENT: The VOC content limit for sanding sealers should be 550 g/l, and the VOC content limit for varnishes should be 450 g/l, instead of 350 g/l for both, because water-based sanding sealers and varnishes cause panelization of maple gymnasium floors. Panelization occurs when water-based sealers seep into the space between boards in a maple floor and tend to glue the boards together as the water-based sealer dries. Sometimes the glue bond is so strong that when the floorboards expand and contract due to environmental humidity variations, boards will split along grain lines. The only solution when panelization occurs is to replace the affected flooring boards.

A survey conducted by the MFMA showed that 100 percent of respondents indicated that panelization during new installations occurred primarily when using water-based finish, 92 percent of the respondents indicated that one of their solutions was to avoid water-based sealers and 67 percent of respondents indicated that their solution was to avoid all water-based products. There are no approved water-based sanding sealers listed with the MFMA. All MFMA approved sanding sealers are solvent-based. (1, 4, 5)

63. COMMENT: The Department has not demonstrated that sanding sealers exist that comply with the proposed New Jersey rules. There are no compliant coatings without the risk of panelization. The lack of investigating this issue shows that the rules are arbitrary and capricious. (4)

RESPONSE TO COMMENTS 62 AND 63: The Department does not agree that a change to the proposed VOC content limit for sanding sealers or varnishes is necessary or warranted. As discussed in the Response to Comments 57 and 58, the VOC content limit of 350 g/l, as adopted in the New Jersey rules, has been in effect in many California air quality management districts

for many years, and there are several products on the market that comply with the VOC content limit of 350 g/l in California and in the Northeast.

As discussed by the commenter, in 1999 the MFMA commissioned a study among installers to detail the panelization problem. In the study 22 of 32 responders reported problems, at some time, with panelization. Of 64 reported problems, 38 were with sports floors. Although water-based finishes were always listed as being a component of a floor failure, the study did not detail other known detrimental effects, such as tongue and groove flooring, lack of climate control, or a solid continuous sub-floor. When installers were asked what are the primary causes of the panelization problems they experienced, the installers' responses showed numerous causes in addition to the use of water-based sealers. The enumerated causes included improper installation, substandard or defective flooring product, and improper maintenance of the floor after installation, as well as other causes.

The MFMA notes on its website, "The use of water-based finishes has 'occasionally' produced a sidebonding effect, which may result in localized excessive cracks between the boards. The MFMA recommends that you consult with your flooring contractor and finish manufacturer to obtain their procedures for sealing and finishing a raw maple strip floor with water-based products." The Delaware Response Document cites two MFMA articles, October 1997 and January 2000 that discuss the subject of panelization. According to the articles, the MFMA is not recommending that water-based products not be used. Rather, it is saying that panelization can be avoided if the proper installation and care procedures are followed. Proper care and installation include acclimating the product to the environment, maintaining proper humidity and temperature, and assuring that any concrete subfloor is properly cured.

According to the Delaware Response Document, Dan Heney, Technical Director of the MFMA, indicated in a telephone conversation that panelization is much less of a problem today than it was 10 years ago. He believes that water-based finishes, sanding sealers in particular, are a contributing factor, but are not the sole cause of panelization. Instead, it is a combination of factors (floor installation, finish application methods, ambient conditions), along with a water-based sanding sealer, that are responsible. Mr. Heney believes there are water-based sanding sealers on the market today that virtually eliminate panelization. He expects the MFMA will eventually approve some water-based sanding sealers.

The fact that the MFMA currently has no recommended water-based sanding sealers on its approved product listing does not lead to the conclusion that water-based sanding sealers should not be used. The MFMA says that the user must contact the coating manufacturer for advice and specific directions. The MFMA does list approved water-based varnish top coats, some of which are at or below the adopted New Jersey VOC content limit of 350 g/l, and many of which recommend water-based sealers. Several coating manufacturers, including Hillyard, BonaKemi, Basic Coatings, National Coatings and Valspar, recommend one of their water-based sanding sealers (with VOCs at or below the 350 g/l limit) as a companion to their water-based varnish. Each manufacturer provides certain directions for surface preparation and temperature/humidity limits during application. At least one of the recommended finish coats recommended by the MFMA (Hillyard Tip-off) is, according to the manufacturer's application instructions, suitable for use as stand-alone coating with no sealer required.

According to the Delaware Response Document, the DNREC discussed maple sports floors with Dan Crawford, Sales Manager of Gayler/Hillyard in Newark, Delaware, a manufacturer of

coating products. Gayler/Hillyard sells Hillyard products like Court Guard Sealer (VOC less than 250 g/l), Contender top coat (VOC less than 350 g/l) and Tip-off top coat (VOC less than 275 g/l). Crawford said “20 years ago, when they introduced the Contender line, they did have some problems with panelization but none since.” He thinks it is a minor problem, brought about by inattention to the application guidelines and particularly humidity excursions. The Gayler/Hillyard products are used on about 100 gym floors in a four state area each summer, of which about five are bare floors and two or three of those are coated with water-based products. Crawford stated that his guideline is “don’t do a floor if the humidity number is higher than the temperature or if the humidity is above 85 percent.” Gayler/Hillyard does not have a problem with panelization and it is recommended as a finish supplier by the MFMA.

Mr. Crawford confirmed that the MFMA does not recommend a water-based sealer (as mentioned by a commenter). However, he believes this relates to the MFMA’s concern for past problems and its very conservative attitude. He believes that newer water-based sanding sealers, when used correctly on a correctly installed floor, are not a problem, and manufacturers and installers will guarantee performance.

According to the Delaware Response Document, John Krol of the Valspar Flooring Division, Technical Service, recommends Aqua Guard top coat for gymnasium floors, a water-based varnish with a VOC content of 200 g/l. Valspar is one of the coating manufacturers recommended by the MFMA. According to the Delaware Response Document, DNREC also discussed water-based products with Kevin Rachuy of the Valspar Flooring Technical Division. Mr. Rachuy said, “WP-3, WP-10, WP-39 and Aquaguard are all water-based floor finishes with VOC contents in the range of 300 g/l.” He would recommend them for bare maple floors. Mr. Rachuy suggested that WP-3, a water-based sanding sealer, be used first, to ensure that problems such as panelization, do not occur. He says, “panelization is a minor problem if all application instructions are followed.”

Andy Charron, in his book “Water-Based Finishes,” says he likes water-based varnish because it dries so fast, thus reducing the possibility of dust contamination and allowing more coats per day. Also, he says, “The exceptional clarity of most water-based products makes them the ideal choice when you want the finish to protect the wood but not change its color. The resins used in water-based finishes have improved to the point where most products are at least as durable, if not more so, than solvent-based materials.”

According to the Delaware Response Document, Mike Parks of National Coatings technical service said that National Coatings has concern about panelization, which it attributes not to the water-based finishes themselves, but to improper handling of water-based finishes. Since people began to pay attention to the directions on the product, he says he has not seen a case of panelization in over five years. National Coatings recommends Armor Seal Sealer, a water-based sanding sealer with a VOC content of 130 g/l, and Crystal Shield Court & Gym Finish, a water-based sanding sealer with a VOC content of 104 g/l. Mr. Parks claims each works fine, and does not lead to panelization when properly applied.

According to the Delaware response document, Basic Coatings, a floor coating manufacturer, stated during a 1993 Chemical Specialties Manufacturers Association conference that “gyms are another high-growth spot for the use of water-based coatings. Water-based coatings won’t yellow, so the floor will remain light and bright.” Three to five gyms a year will develop some kind of problem, Mr. Sundell of Basic Coatings admits, but those problems are usually traceable

to some humidity or environment problem and not to the coating. The problems are in the temperate zones, such as New England. "We have very few problems in the desert country because it never gets very wet," Mr. Sundell explained. "The wood shrinks, but once it does, it stays that way. It's expansion and contraction that gives people trouble. When wood shrinks, cracks are going to open up. It doesn't matter what your base is, this same problem with expansion/ contraction is going to pop every time."

At least two manufacturers (BonaKemi and Berger-Seidle) produce water-based sanding sealers that are advertised as being "specifically formulated to reduce side bonding and panelization." According to the Delaware Response Document, Basic Coatings states that "benefits of using water-based systems include the ease of use and clean up, no waste disposal and no flammability problems. However, with the application process being new, contractors and maintenance crews will require proper training in the application technique." Basic Coating "Installation Treatment" is designed to address panelization by penetrating any open spaces and creating a surface that Basic Coating's finishes will not bond to. The recommended use of the coating is residential, commercial or sports floors, and the VOC content does not exceed 235 g/l. Basic Coatings indicates, "We have never been able to establish that sidebonding occurs when finish is properly applied; but, we have occasionally observed bottom bonding from finish going down spaces left for expansion. Field reports of sidebonding still persist. Installation Treatment is designed to address both issues by penetrating any open spaces and creating a surface that our finishes will not bind to."

One commenter provided the Department with excerpts from the Sherwin-Williams testimony at a hearing before the State of Delaware. At the hearing, Sherwin-Williams' representative stated that water-based products are the number one products being used on gym floors due to the lighter color, so that usage of oil-modified polyurethanes, typically amber, would not change the color of a school emblem. "Durability is equal, if not better, with oil-modified polyurethanes." When the witness was asked whether the cause of panelization was the "water-based [product] plus some attribute of how floor was put down," he responded, "I guess you could surmise that." The witness stated "Panelization can occur for other reasons. If you are at the right time of year you can apply water-based product and not have panelization."

Because the panelization problem is caused by many factors other than the VOC content of the coatings, because many consumers prefer water-based coatings and because the problem is being addressed regardless of the adopted rule, the Department concludes that the establishment of the adopted VOC content limits is appropriate. Based on this discussion, the Department does not agree that a change to the proposed VOC content limits for sanding sealers or varnishes is necessary or warranted.

64. COMMENT: The commenter, a national trade association, attached to its comments, and incorporated by reference, a letter from one of its members dated August 28, 2001 to the DNREC regarding its rule. The member company's letter comments that the label on Aqua-Cote Urethane Varnish states "do not use when ambient room temperature is below 60 degrees Fahrenheit." This clearly supports the concerns about panelization of wood floors when using waterborne systems related to application temperature and humidity issues. (1)

RESPONSE: Application restrictions like the one quoted by the commenter are not new, nor are they a result of these rules. Currently available water-based and solvent-based products with a variety of low and high VOC content limits have application restrictions based on temperature

and humidity. These restrictions are not limited to water-based coatings. For example, the directions for use for Valspar oil-modified finishes and sealers is the same as for its water-based finishes and sealers. The labels of each say, "Do not apply when temperature is above 95 F or below 65 F, or when humidity is above 80 percent." Regarding interior coating applications, interior temperature and humidity conditions can be controlled. For a discussion of panelization, see the Response to Comments 62 and 63.

SHELLACS

65. COMMENT: The commenter, a national trade association, attached to its comments, and incorporated by reference, a letter dated July 24, 2001 from one of its members to the NYSDEC regarding the OTC's architectural coating model rule. The member company's letter comments that the definition of shellacs in the rules is too rigid and does not permit the use of a broader range of resins in the manufacture of shellacs. The proposed rules define shellacs as being formulated solely with the resinous secretions of the lac beetle, while the Federal rule allows other natural resins. (1)

RESPONSE: The Department's definition of shellac is consistent with the CARB rule, rather than the Federal rule. As discussed in the CARB Staff Report, the USEPA's definition may increase emissions in this category, may cause confusion to the consumers, and will be difficult to enforce because of the inherent problems associated with defining natural resin. New Jersey has consistently defined shellac in its architectural coatings rules as being formulated from the lac beetle. Due to the limited availability of lac beetles, the use of shellac, as defined in the adopted rules, as a quick dry primer, general-purpose primer and wood finish is minimized. Because the VOC content limit for shellac is relatively high, using the USEPA definition would expand the availability of high VOC products, and could potentially reduce the emission reductions in the categories of quick-dry primers, sealers, and undercoaters; and primers, sealers, and undercoaters. Outside of California, alcohol thinned, natural resin products, not made from the lac beetle (but which are included in the National definition of shellac) are marketed as quick-dry primers, sealers, and undercoaters; or primers, sealers, and undercoaters.

SPECIALTY PRIMERS, SEALERS AND UNDERCOATERS

66. COMMENT: Exterior wood primers, sealers and undercoaters should be a subcategory of the specialty primers, sealers, and undercoaters category, or else application to exterior wood or wood-based surfaces should be included in the definition of specialty primers, sealers and undercoaters, since stains, such as tannin bleed through on wood siding. For example, the product data sheets of an ICI water-based primer, Aquacrylic Gripper, states, "Some highly water sensitive stains may require the application of solvent-based Stain JAMMER 110 for best results." (1, 4)

67. COMMENT: For a stain blocking primer, the ideal VOC level for consumer application ease is 400 g/l, because such materials are necessarily extremely viscous in order to provide the necessary blocking properties. The commenter recommends a VOC content limit of 350 g/l (by adding stain blocking primers to the specialty primer category).

The commenter, a national trade association, attached to its comments, and incorporated by reference, an undated letter to it from one of its members regarding the OTC's architectural coating model rule. The member company's letter comments that the VOC content limit for

specialty primers, sealers and undercoaters should be 400 g/l instead of 350 g/l in the proposed rules because we are fighting mother nature to get a stain blocking primer that works and that a consumer can apply at a VOC content of 350 g/l. (1)

RESPONSE TO COMMENTS 66 AND 67: The Department does not agree that a change to the proposed VOC content limit or definition for specialty primers, sealers and undercoaters is necessary or warranted. According to the 2001 CARB Survey, 95 percent of specialty primers, sealers and undercoaters sold in California in 2000 had a VOC content of 350 g/l or less, thereby meeting the adopted New Jersey VOC content limit for specialty primer coatings. Accordingly, it is possible, using available technology, to produce a product that complies with the adopted standard.

The Department does not see the need to change the VOC content limit for stain blocking primers or to include exterior wood primers, sealers and undercoaters as a subcategory of the specialty primers, sealers and undercoaters category for stain blocking purposes. As discussed in the Response to Comments 48 and 49, according to the CARB Staff Report and the July 20, 2001 SCAQMD Annual Status Report on Rule 1113, the specialty primer category in the CARB SCM includes primers applied to block tannins and other stains, and to condition excessively chalky surfaces. This inclusion is not in the SCAQMD rule definition of specialty primers, but was added to the CARB SCM and is also in the adopted New Jersey rules.

68. COMMENT: The specialty primer coating category definition should be modified to include concrete, plaster, wood and other masonry surfaces, where chalky conditions, or highly alkaline cement, plaster, or other cementitious surfaces may be present. Water-based primers cannot be applied to green concrete surfaces within 30 days as solvent-based coatings can. There have been many failures where water-based coatings were applied to either highly alkaline cementitious surfaces, or as a result of going over a previously powerwashed surface that contains residue of the form oils used in manufacturing the cementitious panels. Water-based systems cannot stand the highly alkaline surfaces of new concrete. The commenter, a national trade association, attached to its comments, and incorporated by reference, a letter from one of its member companies dated August 30, 2001 to DNREC regarding the OTC's architectural coating model rule. The member company's letter expresses the same comment. (1)

RESPONSE: The Department does not agree that a change to the definition of specialty primers, sealers and undercoaters is necessary or warranted. Wood primers are discussed above in the Response to Comments 66 and 67. The category already includes those products that are for use on excessively chalky surfaces. The CARB has identified primers for use on concrete and plaster that comply with the VOC content limit of 250 g/l for the primer, sealer and undercoater category, as specified in the adopted New Jersey rules. According to the CARB Staff Report, the concrete must be fully cured prior to application, approximately 30 to 60 days. In addition, following proper surface preparation instructions is very important. Release compound must be removed prior to coating. Products may no longer be available that coat concrete prior to full curing, which means the coating application will have to wait until the concrete is fully cured. However, the Department anticipates that coatings will be formulated for this purpose. Textured Coatings of America makes XL-70 BRIDGECOTE, which is a Vinyl Toluene/Acrylic Copolymer (VTACL) coating system. This system uses a one coat, high build, single component coating. The product is recommended for damp, green uncured or cured masonry surfaces such as bridges, concrete walls, columns, spandrels, medians, dividers, curbs,

and old concrete. The manufacturer has reformulated this product to meet the VOC content limit of 400g/l for the waterproofing concrete/masonry sealer category.

69. COMMENT: The Department should expand the definition of specialty primers, sealers and undercoaters to include blocking of odors and efflorescence, and for highly alkaline cement, plaster and other cementitious surfaces. Efflorescence is caused by water-soluble salts deposited as moisture evaporates on the exterior of brick or concrete. These are usually sodium salts, which diffuse through the paint film from the substrate. It seems intuitively obvious that a water-based product would not be the ideal product to handle this problem. Also with respect to the odor barrier requirement, ICI markets an Interior Vapor Barrier Latex Primer-Finish, but it notes in its Directions for Use, Application that “multiple coats may be required to obtain recommended film thickness to achieve vapor barrier properties.” If this amounts to four coats, the application’s VOC emissions would exceed the one coat application of the solvent-based specialty primer with a VOC limit of 350 g/l, the VOC limit that the commenter recommends. The ICI coating information suggests that vapor/odor barrier requirements are not easily handled with ordinary applications of one or even two coats of waterborne coatings. Also it should be obvious that the demand for an odor barrier coating would be quite small. (1)

RESPONSE: The Department does not agree that a change to the definition of specialty primers, sealers and undercoaters is necessary or warranted. According to the CARB EIR, a review of product data sheets indicated that there are products marketed for use as an interior vapor barrier, however, these products would already be considered a specialty primer because they are also marketed as a stain blocker, or a shellac.

Product data sheet review by the CARB also indicated low-VOC products are available for use on substrates with efflorescence; therefore, the higher VOC content allowed for specialty primers is not necessary for substrates with efflorescence.

STAINS: OPAQUE

70. COMMENT: The stain category should be separated into two categories, and a VOC content limit of 350 g/l should be adopted for opaque stains. The commenter, a national trade association, attached to its comments, and incorporated by reference, an undated letter to it from one of its members regarding the OTC's architectural coating model rule. The member company's letter comments that the VOC content limit for all stains should be 500 g/l, because high solid products are no longer really stains, and because water-based stains do not work well on wood due to grain raising. (1)

RESPONSE : The Department does not agree that a change to the proposed VOC content limit or category for opaque stains is necessary or warranted. According to the CARB Staff Report, the adopted VOC content limit of 250 g/l is technologically and commercially feasible based on review of literature and trade journals, complying market share, existing regulatory limits, literature searches, and information provided by manufacturers or resin suppliers.

The 1998 and 2001 CARB Surveys show that 88 percent of opaque stains sold in California in 1996 and 74 percent of opaque stains sold in California in 2000 (not including containers less than one quart) complied with a VOC content limit of 250 g/l. The 1998 CARB Survey indicated that 99 percent of opaque stains were recommended for exterior use only, and less than one percent was for interior use only.

Behr Process Corp. markets two exterior opaque stains with VOC contents of less than 250 g/l. Deck Plus Solid Color Deck, Fence & Siding Stain is a 100 percent acrylic latex emulsion with a VOC content of 159-184 g/l. Plus 10 Solid Color Oil/Latex Stain is an oil-latex emulsion with a VOC content of 110-116 g/l.

Vianova Resins, Inc., has utilized an alkyd/acrylic hybrid polymer known as RESYDROL for formulating low-VOC (less than 250 g/l) semi-transparent, opaque, and interior wiping stains. The manufacturer states that exterior exposure studies indicate that over four years of exterior exposure can be expected, without any flaking, cracking, or peeling. This polymer will form a film at or near freezing temperatures without using any co-solvents. Several formulations below the adopted 250 g/l limit are available from Vianova Resins.

Sherwin-Williams has several opaque stains that have a VOC content of less than 250 g/l. Okon, Performance Coatings, FSM Corporation, PPA Technologies, Rhinoguard, and Sierra Performance Coatings also have opaque stains containing less than 250 g/l VOC.

Blue River Coatings markets a water-based stain with 60 g/l VOC content developed to act as a stain and primary sealer. The resins in the product are designed to help the product dry quickly (thus minimizing excessive grain raising), seal the wood to help repel water, and not allow the pigment to chalk off like other stains. A water-based or solvent-based sealer or topcoat is recommended.

The MPI lists opaque stains with a VOC content of 250 g/l or less under category #16, Exterior Solid Color Latex Stains. Complying products are listed from the following manufacturers: Benjamin Moore, California, Cloverdale, Color Wheel, Columbia, Diamond Vogel, Dunn Edwards, Flex Bon, Frazee, General Paint, Hallman Lindsey, ICI, Kelly-Moore, Kwal-Howells, Parker, Rodda, Sherwin-Williams, Spectra-Tone, Vista, Northern, PPG, Tamms and Tower.

Based on this discussion, the Department does not agree that a change to the proposed VOC content limit or category for opaque stains is necessary or warranted.

STAINS: CLEAR AND SEMI-TRANSPARENT

71. COMMENT: The VOC content limit for clear and semi-transparent stains should be 550 g/l. Water-based stains are inferior, cause lapping and grain raising. One of the commenters, a national trade association, attached to its comments, and incorporated by reference, an undated letter to it from one of its members expressing the same concerns regarding the OTC's architectural coating model rule.

Rapid penetration of water into the wood causes quick deposition and drying of colorant and resin on the wood surface. Water-based stains raise the grain, and subsequent sanding removes some of the stain, leaving surfaces with a speckled appearance. The effects of lapping and grain raising were demonstrated for the Department. A demonstration of one of the commenter's products showed unacceptable grain raising and lapping.

The final appearance of both the varnished and the sealed, stained and varnished panels shown to the Department were distinctly different between water-based and solvent-based, with water-

based showing an appearance without depth, reminiscent to the photographed-type of wood appearance found on artificial substrates and not expected on a natural wood substrate.

The Department has not demonstrated that acceptable complying products exist. The commenter knows of no water-based stain on the market in any state that can be used to stain flooring without ruining the application as a result of lapping. There are no compliant coatings that can fulfill the performance criteria for use on interior wood surfaces. Failure by the Department to address this issue shows the arbitrary and capricious nature of the rules. (1, 4)

72. COMMENT: The commenter, a national trade association, attached to its comments, and incorporated by reference, a letter dated July 31, 2000 to it from one of its members regarding the OTC's architectural coating model rule. The member company's letter comments that the oil-based stains have very little in common with paints. For them to penetrate the wood, solvent is necessary. (1)

73. COMMENT: The commenter objects to any rule that would limit the VOC content of clear and semi-transparent interior stains to 250 g/l. Experience has shown that products with such low levels of VOC have inferior and unacceptable application, handling and performance properties when used during installation or refinishing of wood flooring and would cause irreparable harm to his business and reputation. (11)

RESPONSE TO COMMENTS 71 THROUGH 73: The Department does not agree that a change to the proposed VOC content limit for clear and semi-transparent stains is necessary or warranted. According to the CARB Staff Report, the adopted New Jersey VOC content limit of 250 g/l is technologically and commercially feasible, based on a review of literature and trade journals, complying market share, existing regulatory limits, literature searches, and information provided by manufacturers or resin suppliers.

The 1998 and 2001 CARB Surveys show that 19 percent of clear and semi-transparent stains sold in California in 1996 and 16 percent sold in 2000 (not including containers less than one quart) comply with the VOC content limit of 250 g/l. The 1998 CARB Survey indicated that 50 percent of semi-transparent stains were for exterior use, 32 percent were for interior use and 18 percent were for interior and exterior use.

Behr Process Corp. markets two semi-transparent exterior stains with VOC contents of less than 250 g/l. Behr No. 9 Oil/Latex Redwood Stain is an oil-latex emulsion with 156 g/l VOC and Plus 10 Semi-Transparent Oil/Latex Stain is an oil-latex emulsion with 210-225 g/l VOC.

According to the CARB Staff Report, Vianova Resins, Inc., has utilized an alkyd/acrylic hybrid polymer known as RESYDROL for formulating low-VOC (less than 250 g/l) semi-transparent, opaque, and interior wiping stains. The manufacturer states that exterior exposure studies indicate that over four years of exterior exposure can be expected, without any flaking, cracking, or peeling. This polymer will form a film at or near freezing temperatures without using any co-solvents. Several formulations below the adopted 250 g/l limit are available from Vianova Resins.

According to the CARB, interior clear stains that comply with the VOC content limit of 250 g/l are available from PPG, Kelly-Moore, ICI, Spectra-Tone, Flecto and Armstrong-Clark Company. Exterior/Interior semi-transparent stains that comply with the VOC content limit of

250 g/l are available from Cal Western Paints, Armstrong-Clark Company, Benjamin Moore, ICI, Okon, PPG, Textured Coatings of America, Tru Serv, United Gilsonite, Valspar and Yenkin-Majestic Paint Corp.

According to the CARB, interior semi-transparent stains that comply with the adopted 250 g/l are available from Deft, Inc., Sierra Performance Coatings, PPA Technologies, Führ Research Laboratories, Sherwin-Williams, Flecto, PPG, TruServ, Vista, ICI and Yenkin-Majestic Paint Corp.

The MPI lists exterior semi-transparent stains with a VOC content of 250 g/l or less under category #33 from ICI, Rodda and Sico.

In several meetings prior to the rule proposal comment period, one of the commenters showed visual demonstrations of wood panels to the Department in order to demonstrate the difference between solvent-based and water-based stains, grain raising, lapping and lack of depth. The products used, their VOC contents, the wood type used and the application procedures were not presented to the Department. The interpretation of the visual submittals is subjective and the Department did not see an inadequately prepared wood surface.

The KTA-Tator, Inc. study concluded that the interior clear/semi-transparent stains that were classified below 250 g/l performed equivalent to, or in some cases better than, stains classified above the 250 g/l limit. This conclusion was based on the results of tests that the committee determined were important to the overall performance and quality of a stain coating. The study examined the performance of interior clear/semi-transparent stains that complied with the VOC content limit of 250 g/l. A joint committee of industry and regulatory representatives developed the procedures of the test, and were consulted by KTA-Tator, Inc. throughout the design, execution, and reporting of the study. KTA-Tator, Inc. tested interior clear/semi-transparent stains for lapping, grain raising, adhesion, tannin stain blocking, scrub resistance and freeze resistance.

The Department agrees that lapping and grain raising are undesirable. Manufacturers have found and the Department anticipates they will continue to find ways to mitigate the problem and improve the technology, while maintaining a complying level of VOCs. According to the CARB Staff Report, the new alkyd/acrylic hybrid polymers, alkyd-modified acrylics, and modified acrylic/water dispersible drying oil formulations make claims of acceptable open time and lapping performance. Open time is longer which also results in better penetration. Penetration has also been enhanced by advancements in pigment technology, which have substantially reduced the size of available pigments, which results in better penetration. There is also minimal, if any, grain raising. Also, one must consider the area to be covered as well as environmental conditions when determining the appropriate application technique which should be used in order to maintain a wet edge and avoid lapping problems. In addition, the use of water-based pre-stain and wood conditioners helps minimize blotching and reduces grain raising.

Based on this discussion, the Department does not agree that a change to the proposed VOC content limit for clear and semi-transparent stains is necessary or warranted.

74. COMMENT: The commenter claims that it tried to market a stain with a VOC content of 350 g/l. The product performed poorly and resulted in claims against the company for repair and restoration of floors. As a result, the product was dropped. (4, 5)

RESPONSE: The commenter does not specify in its letter if the product was a water-based product or a solvent-based product. Inasmuch as the commenter has told the Department in a meeting during the comment period that solvent-based stains at 350 g/l are not feasible because they have a high viscosity, are hard to apply, tacky and do not dry, the Department believes the letter is referring to a solvent-based product. The Department concludes, as discussed in the Response to Comments 71, 72 and 73, that water-based stains are acceptable when applied properly, and that the products will continue to improve as new technologies are developed.

75. COMMENT: The commenter, a national trade association, attached to its comments, and incorporated by reference, a letter dated August 28, 2001 from one of its members to the DNREC regarding its rule. The member company's letter commented that the stain limits (250 g/l) have been in effect in California since the early 1990s and the sales weighted average VOC content is 387 g/l in the 1998 CARB survey. The sales weighted average VOC content of all solvent-based clear and semi-transparent stains is 449 g/l and the sales weighted average VOC content of all interior clear and semi-transparent stains is over 510 g/l. Less than 12 percent of all clear and semi-transparent stains meet the proposed limit of 250 g/l. (1)

RESPONSE: The commenter implies that the VOC content limit of the stains in the survey is higher than the adopted rules' limits because the rules' limits are not possible. The Department agrees that the 1998 CARB survey shows relatively low sales of products that would meet the adopted New Jersey VOC content limit of 250 g/l, but has found that the technology exists and is feasible. The 1998 CARB survey figures quoted by the commenter include products sold in containers of one liter or less, which are exempted from the adopted New Jersey rules. Also, the commenter is mistaken regarding the VOC content limits in California air districts in the 1990s. The stain VOC content limit in some of the California Air Districts was 350 g/l, not the lower limit of 250 g/l that is in the adopted New Jersey rules. Therefore, at that time it was legal in some parts of California to sell stain with a VOC content of more than 250 g/l.

76. COMMENT: The CARB staff notes that the CARB Survey showed that 25.47 percent of stains sold complied; however, there has been some discussion as to the feasibility of such a limit with regards to interior stains and notes that they will be assessed further.

The commenter, a national trade association, attached to its comments, and incorporated by reference, a letter dated August 28, 2001 from one of its members to the DNREC regarding the DNREC architectural coating rule. The member company's letter comments that many water-based stains exceed the 250 g/l limit, and many even exceed 350 g/l. However, in use, the coatings with a VOC content of 350 g/l or more will emit from each can no more VOCs than the stains at 250 g/l. In most cases these stains still emit significantly less. California has formed a workgroup to consider the issues surrounding the calculation of VOC content which causes the discrepancy between the VOC content and the VOC amount that is actually emitted in water-based coatings. It is expected that the resolution will solve the problem addressed above. (1)

RESPONSE: The commenter presented no support for the statement that water-based stains with VOC contents of 250 g/l emit the same amount of VOCs as water-based stains with VOC contents of 350 g/l. Therefore, the Department sees no reason to accept this premise. As discussed in the Response to Comments 71, 72 and 73, complying water-based stains exist, showing the technology is feasible. Additionally, to date, the CARB has not modified its stain VOC content limits, definitions or formulas.

THERMOPLASTIC RUBBER COATINGS AND MASTICS

77. COMMENT: The Department should add a new category, thermoplastic rubber coatings and mastics at a VOC content limit of 550 g/l. (1)

RESPONSE: The Department included in its proposed and adopted rules the category of thermoplastic rubber coatings and mastics, with a VOC content limit of 550 g/l, as the commenter recommends. No change was made from the proposal.

WATERPROOFING CONCRETE/MASONRY SEALERS

78. COMMENT: The commenter, a national trade association, attached to its comments, and incorporated by reference, an undated and unaddressed letter from one of its members regarding the DNREC architectural coating rule. The member company's letter comments that the VOC content limit for waterproofing concrete/masonry sealers should be 600 g/l instead of 400 g/l in the proposed rules. Not all of the member company's products can meet the lower limit. This makes the rules technology forcing. (1)

RESPONSE: The Department does not agree that a change to the proposed VOC content limit for waterproofing concrete/masonry sealers is necessary or warranted. According to the CARB Staff Report, there were 138 products (a 95 percent market share) that complied with the VOC content limit of 400 g/l in California in 1996. The CARB found numerous manufacturers that make complying products.

Textured Coatings of America makes XL-70 BRIDGECOTE, which is a Vinyl Toluene/Acrylic Copolymer (VTACL) coating system. This system uses a one coat, high build, single component coating. The product is recommended for damp, green uncured or cured masonry surfaces such as bridges, concrete walls, columns, spandrels, medians, dividers, curbs, and old concrete. The manufacturer has reformulated this product to so that it will meet VOC content limit of 400 g/l the limit in the adopted New Jersey rules.

Glaze-N-Seal has reformulated its high performance acrylic lacquer sealer to incorporate the use of exempt solvents in order to comply with the VOC content limit of 400 g/l. Glaze-N-Seal also markets lower VOC water-based sealers. Although the reformulation of the acrylic lacquer sealer resulted in increased manufacturing costs, reformulation was necessary to meet performance demands that cannot be met by the company's water-based products.

Other manufacturers of waterproofing concrete/masonry sealers that comply with the VOC content limit of 400 g/l include H&C Floor Company, Okon, Behr, DOW Corning, Gloucester, Seal Krete, and Conspec. The VOC content of these coatings ranges from eight g/l to 400 g/l.

The MPI lists coatings with a VOC content of 400 g/l or less under the category #99 Interior/Exterior Concrete Floor Sealer from ChemRex, Cloverdale Paint, Color Wheel CGI, Columbia Paint CGI, Coronado Paint, Envirocoatings, Frazee, Griggs Paint, Hirshfields Paint CGI, Kryton, Kwal-Howells, CGIMiller Paint CGI, Parker Paint, PPG, Rodda Paint, Sherwin-Williams and Tamms. The MPI lists coatings with a VOC content of 400 g/l or less under the category #34 Water Repellent Clear Coating from Columbia Paint CGI, Frazee CGI, Kwals-Howells CGI and Tamms.

Additionally, the CARB authorized Harlan Associates, Inc. to test waterproofing sealers for concrete substrates. Seven of the eight coatings tested had a VOC content of 400 g/l or less, which means they would comply with the limit in the adopted New Jersey rules. One of these sealers was solvent-based, while the remaining seven were water-based coatings. The results of the tests on waterproofing sealers for concrete indicated equivalent or superior performance by all of the complying sealers relative to the non-complying sealer for application, appearance, accelerated weathering and water repellency. Four of the complying sealers displayed equivalent water adsorption performance to the non-complying sealer. The initial appearance and appearance after 300 hours of accelerated weathering of all the sealers showed no change in the color of the concrete. Five of the seven water-based sealers are considered to be low-solids coatings with a VOC content less than 120 g/l, calculated as the actual VOC content.

Also, under contract to the SCAQMD, the NTS tested four concrete waterproofing sealers. All coatings tested complied with the SCAQMD VOC content limit of 400 g/l, the same limit as New Jersey has adopted. The CARB concluded that, overall, the low-VOC coatings exhibited similar or superior performance compared to the higher-VOC coatings in the tests performed, which included freeze-thaw stability, water penetration, and water repellency.

Based on the above discussion, the Department does not agree that increasing the VOC content limit for waterproofing concrete/masonry sealers is necessary or warranted.

79. COMMENT: The definition for waterproofing/concrete masonry sealers should be changed to specifically include non-film forming or penetrating coatings. One of the commenters, a national trade association, attached to its comments, and incorporated by reference, letters from two of its members, one undated and unaddressed and one dated August 30, 2001 to the DNREC, that expressed the same concerns regarding the OTC's architectural coating model rule and the DNREC architectural coating rule, respectively. (1)

RESPONSE: The Department does not agree it is necessary to change the definition for waterproofing concrete/masonry sealers. In the adopted rules, the category of waterproofing sealers, with a VOC content limit of 250 g/l, includes penetrating sealers. As discussed above in the Response to Comment 78, there are many waterproofing concrete/masonry sealers that meet the VOC content limit of 400 g/l. In addition, there are waterproofing sealers available that meet the VOC content limit of 250 g/l.

RECORDKEEPING AND REPORTING

80. COMMENT: The requirement to label shipping documentation with the final destination of the product is too burdensome because the manufacturers sell their products to distributors without knowing the final destination of the product. A New Jersey manufacturer of a regulated coating cannot possibly know the final destination of a product it ships since many of its customers transship products from one state to another. (7, 8)

RESPONSE: The invoice labeling and documentation destination requirements are at existing N.J.A.C. 7:27-23. These requirements were not proposed to be changed, and, therefore, were not open to public comment and change on adoption. The Department is not making any changes to this provision.

81. COMMENT: The recordkeeping requirements are burdensome, costly, unrealistic, arbitrary and capricious, and do not provide information necessary for the enforcement of the regulation. Also, the OTC states are not consistent on the issue of recordkeeping and reporting. (1, 2, 3, 4, 6, 7, 8)

82. COMMENT: The Department has failed to evaluate the substantial costs of the recordkeeping requirements. Some of the information is not available on the commenter's computer system. In order to complete the California survey, the commenter had to employ two computer programmers and a regulatory professional for a period of one year. Cost of compliance was \$250,000 the first year and \$100,000 per year thereafter.

New Jersey has historically not maintained data on the coatings to which the rules would apply and has no sales history. It is unreasonable to require manufacturers to undergo the extraordinary efforts and costs associated with the maintenance of these records. The Department should wait until certain information is needed and then work together with industry to achieve a mutually agreeable data request. This is the procedure that has been followed by California and has resulted in successful data collection results.

The recordkeeping requirements should be changed from a retention period of five years to two years, and the requirement to submit data to the Department within 90 days be extended to at least 180 to 270 days. (4)

RESPONSE TO COMMENTS 81 AND 82: The Department agrees that the OTC states are not consistent on the issue of reporting. This is because the CARB SCM requires mandatory reporting for certain niche categories to prevent abuse of those categories, since CARB enacted the reporting provision in order to monitor sales to be sure that the provisions that apply to the niche categories apply only to products with limited sales. In an effort to reduce reporting requirements, New Jersey did not propose the mandatory reporting contained within the CARB SCM. New Jersey will work with the other to share data, and reduce resource needs for industry and the Department.

Adopted N.J.A.C.7:27-23.6(d) requires reporting for architectural coatings only if the Department requests information from the manufacturer. The records required to be kept include information necessary for enforcement of the rules and information that is consistent with the CARB Survey requirements. To make the process more efficient for industry and the Department, the Department can evaluate the results of any research done by the CARB and the NYSDEC. If the Department feels it is necessary to obtain New Jersey specific data, the rules provide for this option. The previously existing rules at N.J.A.C. 7:27-23.6(b) already contained a requirement for recordkeeping and reporting upon request, which requirement is similar to the recordkeeping requirements in the adopted rules.

Adopted N.J.A.C. 7:27-23.6(d) requires manufacturers to provide the Department, on request, "any or all" of the listed information. The Department does not anticipate it would need all of the information at once; however, if in the future the Department needed to request "all" of the information that is listed in the rules, the Department anticipates that it would work with the particular manufacturer to assist it in complying with the request. The Department's position is that 90 days is an acceptable timeframe within which the records could be produced.

In Response to Comments, the Department has revised N.J.A.C. 7:27-23.6(b) on adoption so that only records necessary to demonstrate compliance must be kept for five years. Manufacturers need to keep other more detailed records that are not necessary to demonstrate compliance for only three years. Three years was chosen instead of the two-year timeframe requested by the commenter because three years is consistent with the recordkeeping requirements of the New Jersey consumer products rules at N.J.A.C. 7:27-24, and the Federal architectural coatings rules at 40 CFR §§59.100 to 59.413.

83. COMMENT: The entire reporting procedure should be reviewed by the Department in consultation with a broad representation of regulated companies, including a substantial number of small manufacturers. (7)

RESPONSE: The Department invited comment from any interested party on all portions of the adopted rules. In addition to notice published in the New Jersey Register and six newspapers of general circulation, the Department provided notice on the Department's website, and by email to parties who signed up for the air quality management listserve, as well as mailing individual notices to the approximately 184 parties who requested notification of this rulemaking, trade organizations including the New Jersey Paint Council, and to all New Jersey manufacturers of architectural coatings listed in the 2001 Rauch Guide for the US Paint Industry. Only six commenters provided input on recordkeeping and reporting.

84. COMMENT: The reporting of gallonage shipped is proprietary information that does not seem to be protected anywhere in the proposed regulation. (7)

RESPONSE: The adopted rules state at N.J.A.C. 7:27-23.6(i) that any person who is required to submit information to the Department pursuant to this subchapter may assert a confidentiality claim for that information in accordance with N.J.A.C. 7:27-1.6. The Department will process and evaluate confidentiality claims and treat information claimed to be confidential in accordance with N.J.A.C. 7:27-1.6 through 1.29. The Department currently has this type of information, which was obtained from the CARB, and is treating it as confidential information in accordance with an agreement with the CARB. Electronic registration information, which does not include gallons shipped, may not be claimed confidential, as set forth in N.J.A.C. 7:27-23.6(c)6.

AVERAGING

85. COMMENT: The rules should contain a provision for averaging. Averaging is a key element of the alternative proposal. It is vital if industry is going to be able to continue to provide an adequate variety of architectural coating products to the public. The CARB SCM and the SCAQMD rules both have an averaging provision; therefore, the Department's rules should have one also. (1, 3, 4, 6)

RESPONSE: The CARB SCM does have an averaging provision, which expires on January 1, 2005. The operative date of the VOC content limits in New Jersey's rules is January 1, 2005. Accordingly, on that date the New Jersey rules will be consistent with the CARB SCM. Consistency with the CARB SCM is important regarding this issue because much of the technical research has been conducted by the CARB and it has the resources to administer an averaging program. Also, manufacturers desire consistency from state to state for ease of implementation. The SCAQMD has an averaging provision in its rule, which does not end on

January 1, 2005; however, the New Jersey rules are not based on the SCAQMD rule, but on the CARB SCM. The SCAQMD rule has VOC content limits that are more stringent than those in the adopted New Jersey rules.

The Department is opposed to including an averaging program for the following reasons: 1) if existing products that are already below the adopted VOC content limits are averaged with existing products above the adopted VOC content limits, then true emission reductions will not be realized; 2) averaging computations are subject to uncertainty and abuse, leading to less emission reduction; 3) to be consistent with the CARB; 4) an averaging program is complex and resource intensive for industry and the Department; 5) enforcement duties become more difficult and time-consuming with an averaging program in place; and 6) the USEPA discourages averaging, due to enforcement difficulty, and has issued a limited disapproval of some of the architectural coating rules in some of the California air districts based mainly on averaging.

Based on this discussion, the Department has not added an averaging provision to the adopted rules.

86. COMMENT: Averaging is needed for low temperature coatings, such as LowTemp 35 and for Everclean, a coating that can be cleaned and that prevents recoating sooner, thereby reducing emissions. (1, 4)

RESPONSE: As discussed in the Response to Comments 18, 19, 21 and 22, there are low temperature coatings, and flat and non-flat coatings that meet the VOC content limits of the adopted rules and that perform the same functions as the products referenced by the commenter. The Department does not agree that averaging is necessary.

VARIANCE

87. COMMENT: The Department should add a variance procedure for manufacturers who, due to extraordinary reasons beyond their control, for some period of time, cannot comply with the VOC content limits of one or more coating categories. (1)

88. COMMENT: The Department should add an architectural coating-specific variance/petition provision, which would allow for future new technology. (3, 6)

RESPONSE TO COMMENTS 87 AND 88: The Department is adding two new subsections, N.J.A.C. 7:27-23.3(j) and 23.6(j), and is adding additional language to N.J.A.C. 7:27-23.6(c), related to the Department's acceptance of limited timeframe variances or exemptions. The Department will recognize variances or exemptions that are issued by another state or one of the California air quality management districts that has adopted a rule with VOC content limits equal to those in N.J.A.C. 7:27-23. The Department is adding these variance provisions because adopted N.J.A.C. 7:27-23.1(e)1 allows painting contractors to purchase coatings in other states with the same or more stringent VOC content limits, such as the neighboring states of New York and Pennsylvania, for use in New Jersey. Because New York and Pennsylvania may grant variances or exemptions to some manufacturers, allowing them to sell coatings that otherwise would not conform to the VOC limits in the New York and Pennsylvania rules, under N.J.A.C. 7:27-23.1(e)1a painting contractor may legally purchase coatings in New York and Pennsylvania

for use in New Jersey, even if those coatings do not meet the VOC limits of the New Jersey rules.

If New Jersey were to not recognize the variances or exemptions of states with VOC content limits equal to New Jersey's, the non-complying coatings could be used, but not sold in New Jersey, thereby adversely affecting New Jersey retailers. Similarly, New Jersey manufacturers who obtained a variance or exemption in New York or Pennsylvania could not sell their products in New Jersey unless New Jersey recognized the New York or Pennsylvania limited variances or exemption. In order to avoid the economic hardship that might result to New Jersey manufacturers and sellers of products subject to a variance or exemption in one of those states, New Jersey is changing its rules on adoption to recognize variances or exemptions under certain circumstances.

The variance or exemption will not be valid for use in New Jersey unless the VOC content limit promulgated for the product by the agency that issued the variance is equal to the most stringent applicable VOC content limit in the adopted New Jersey rules. Prior to relying on a variance for compliance, the manufacturer must submit to the Department copies of the variance documentation information and information describing the product. If a manufacturer is using a variance to comply with the rules, the manufacturer is required to submit an electronic registration that indicates product information.

At present, in the northeast, Delaware, Pennsylvania, Maryland and New York have adopted rules substantially equivalent to N.J.A.C. 7:27-23 as adopted. Of those states, only Pennsylvania and New York (both OTC member states and direct neighbors to New Jersey) have adopted "limited timeframe" variance or exemption provisions. The variances or exemptions in both states are "limited timeframe," meaning they will expire after a period of time. Because under adopted N.J.A.C. 7:27-23.3(j) the variances or exemptions must be in effect in the issuing state to be valid in New Jersey, the existing Pennsylvania and New York variances will be valid in New Jersey for only a limited period of time.

The New York variance is designed for manufacturers with total production (not limited to New York state) of less than 3,000,000 gallons per year, and the manufacturer must prove financial hardship or technical inability to comply with the rules. (See 6 NYCRR § 205.7.) The deadline to apply for a variance in New York expired on May 14, 2004. Any issued variance must expire on or before December 31, 2007, although some manufacturers may apply for a three-year extension.

In Pennsylvania, the manufacturer must participate in a hearing at which it must prove that compliance with the rules is technically infeasible, and propose a timeframe in which it will come into compliance. (See 25 Pa.Code § 130.606)

In light of the fact that the duration of the variances or exemptions are for a limited period of time, that Pennsylvania requires a showing of technological infeasibility, and the New York variance is designed only for small manufacturers, the Department anticipates only an insignificant increase, if any, in VOC emissions in New Jersey from those materials regulated under this program.

INNOVATIVE PRODUCT EXEMPTION

89. COMMENT: The Department should add an innovative product exemption provision similar to the one in the consumer products rules.

The commenter, a national trade association, attached to its comments, and incorporated by reference, a letter dated July 24, 2001 from one of its members to the NYSDEC regarding the OTC's architectural coating model rule. The member company's letter expresses the same concern and also comments that the rules are technology forcing, especially in consideration of the climate in the Northeast. Therefore, the OTC should adopt an innovative technology provision. (1)

RESPONSE: The Department understands and supports coating manufacturer's attempts to develop new and innovative products; however, the Department's rules are consistent with the CARB SCM. Consistency with the CARB is important regarding this issue because much of the technical research has been conducted by the CARB and it has the resources and expertise to administer an innovative product exemption program. Also, manufacturers desire consistency from state to state for ease of implementation. While the architectural coatings rules and the consumer products rules at N.J.A.C. 7:27-24 are similar in some ways, each of the rules address different products. The architectural coatings rules, as adopted, contain an exemption for products in containers that are one liter or less. Generally, the innovative product exemption in the consumer products rules at N.J.A.C. 7:27-24 is designed for products that use an innovative method of delivery, so that the overall VOC emissions limit is not exceeded. Such an exemption is more applicable to consumer products than to architectural coatings, except those coatings that are delivered by aerosol. Aerosol coatings are not regulated by the architectural coatings rules in California, but are instead regulated as consumer products. Aerosol coatings are exempt from both the New Jersey consumer products rules and the adopted architectural coatings rules. The Department does not consider the rules technology forcing since, as discussed in several responses, complying products exist in every category.

FLEXIBILITY OPTIONS, MISCELLANEOUS

90. COMMENT: The consumer products rules have an averaging provision, an innovative product exemption and a variance provision, while the architectural coating rules have no flexibility options. This is unfair, arbitrary and capricious. (1, 4)

RESPONSE: Averaging, variances and innovative product exemptions are discussed in the Responses to Comments 85, 87, 88 and 89. The Department's consumer products and architectural coatings rules are consistent with the CARB's consumer products rules and the CARB SCM. While the architectural coatings rules and the consumer products rules are similar in some ways, they regulate different products and are not the same. There is an exemption for containers that are one liter or less in the architectural coatings rules, which is not in the consumer products rules. Also, the averaging provision in the CARB (and New Jersey) consumer products rules is different than the averaging provision in the CARB SCM. In the consumer products rules, products must be reformulated in order to be averaged. Existing products with a VOC content below the regulatory limits cannot be used to average.

91. COMMENT: The OTC adopted the model rule without the flexibility built into it by the CARB. The Department is ignoring the CARB's adoption of the SCM, which states that it intends on continuing a flexibility option after January 1, 2005. One option being considered by the CARB is changing the entire SCM to a reactivity basis prior to the January 1, 2005,

sunsetting of the averaging provision. The decision to exclude an averaging provision is arbitrary, capricious and indefensible, and places an unreasonable and unequal burden on the architectural coating industry. (1, 4)

RESPONSE: The Department has not specifically excluded flexibility options from the adopted rules. The Department's rules are consistent with the CARB SCM. As discussed in the Response to Comment 85, the CARB SCM has an averaging provision, which ends on January 1, 2005. The operative date of the VOC content limits in New Jersey's adopted rules is January 1, 2005. Accordingly, on that date the New Jersey rules will be consistent with the CARB SCM. As of April 21, 2004, the CARB has no plans to replace averaging with another form of flexibility by January 1, 2005.

RULEMAKING REGULATIONS

92. COMMENT: New Jersey is in violation of State law, which states that the rulemaking summary must include a detailed explanation of the reason or reasons that justify exceeding Federal minimum requirements, an evaluation of the cost-effectiveness of the proposed code, rule or regulation, in comparison with the cost-effectiveness of reasonably available alternatives, and a review of the reasonably available alternative measures considered by the Commissioner and an explanation of the reasons for rejecting such alternatives. The Department has failed to do this and the rulemaking is fatally flawed as a result. Without satisfactorily complying with all of these requirements, the regulation, if adopted, should be found to be invalid, null and void as arbitrary, capricious and an abuse of discretion. (1, 4)

RESPONSE: The Department has included a Federal Standards Analysis in both the proposal and adoption documents, in accordance with New Jersey law, to justify the rules' exceeding Federal standards. As discussed in the proposal, the new rules and amendments are needed to fulfill a SIP requirement, imposed by USEPA pursuant to the Federal Clean Air Act, 42 U.S.C. §§ 7401 et seq. The SIP requires that New Jersey adopt sufficient control measures to address additional VOC (ozone precursor) emission reductions identified by USEPA as being needed for New Jersey to attain the one-hour ozone standard by the mandated attainment dates of 2005 for the New Jersey portion of the Philadelphia non-attainment area, and 2007 for the New Jersey portion of the New York non-attainment area. As discussed in the Federal Standards Analysis, New Jersey worked with the OTC and other jurisdictions in the OTR to identify and develop a set of control measures to meet the additional emission reduction requirements by the mandated attainment dates. The architectural coatings rules are one of six control measures identified by the OTC group. The control measures were selected based on their inventory emissions, potential emission reductions, technological feasibility of the proposal and timeliness of potential implementation.

The Department is not required by law to present a reasonable alternative analysis in the proposed rulemaking, the Department is required to be reasonable in its rulemaking. The top three sources of VOC emissions in the New Jersey 1996 Inventory were light duty gasoline vehicles and trucks (270 tons per day (tpd) VOC), architectural coatings (87 tpd VOC) and consumer products (60 tpd). These emissions were projected to be 189 tpd of VOC for light duty gasoline vehicles and trucks, 91 tpd of VOC for architectural coatings and 81 tpd of VOC for consumer products in 2002. Within the attainment date for the one-hour ozone standard, light duty gasoline vehicles are being addressed by the USEPA Federal Tier2/Gasoline sulfur final rulemaking and New Jersey is preparing future rules relating to the California Low Emissions

Vehicle (LEV) and heavy-duty diesel smoke inspection and maintenance. However, the USEPA identified the need for additional emission reductions beyond those achievable for light duty gasoline vehicles and trucks. Therefore, it was both necessary and reasonable to consider the next two categories and others. Further, the USEPA committed to two rounds of national emission reductions from architectural coatings. The USPEA has yet to meet this commitment.

Cost-effectiveness was evaluated and presented in the proposal. The CARB economic analysis concluded that most manufacturers of architectural coatings would be able to absorb the cost of the proposed amendments with no significant adverse economic impacts. In addition, the estimated cost increases per product for the average homeowner are not anticipated to be significant. The Department is not obligated to eliminate a proposed rulemaking based on its costs. Other factors must be evaluated such as the feasibility of other alternatives, the need to protect the environment and the public health, and the need to comply with the USEPA requirements.

As discussed in the proposed rulemaking, neither the OTC nor the Department found other measures that could substitute for the six control measures identified by the OTC, and still meet the USEPA emission shortfall requirement. The VOC emission reductions from the architectural coating rules is the largest of the five VOC OTC control measures (there were five VOC control measures and one oxides of nitrogen control measure), with approximately 41 percent of the total VOC emission reductions expected from the five VOC rules. The Department estimates that emission reductions from this category will be 25 tpd, which is a significant reduction. No other options were identified by the OTC or the Department that could provide 25 tpd of VOC emission reductions, within the attainment dates, including adopting the California LEV program.

In addition, the Department prepared a Reasonably Available Control Measure Analysis in accordance with USEPA requirements, which can be found in the State Implementation Plan Revision for the Attainment and Maintenance of the 1-Hour Ozone National Ambient Air Quality Standard, September 12, 2001. That study as well could not identify any alternative measures that could substitute for this rulemaking in terms of providing comparable emission benefit within the attainment dates.

93. COMMENT: The rulemaking violates the Administrative Procedures Act (APA) because it does not identify or analyze the range of reasonable alternatives to the proposed rule such as altering limits for five of the 55 categories as suggested by the commenter based on comments provided to the Department in advance of the proposed rulemaking, or an averaging provision.
(4)

RESPONSE: The Department has not violated the APA because it was not obligated to discuss alternative proposals in the proposed rulemaking. Notwithstanding the absence of such requirement, the Department has evaluated the alternative proposals submitted by the commenter as discussed throughout this document. The Department has determined that the alternative proposals suggested by the commenter are not appropriate, for reasons discussed throughout this document.

ECONOMIC IMPACT/COST-EFFECTIVENESS

94. COMMENT: These rules as adopted will have an adverse affect on the industry and may result in a loss of jobs and revenues. The rules will render some of the products manufactured in the State ineffective. The Department needs to rethink what it is doing with the few paint manufacturers that are left in the State of New Jersey. There used to be dozens, but the State is left with a handful of relatively small business. (2, 3)

RESPONSE: The Department acknowledges the concerns of the commenter; however, no specific information was provided by the commenter such as companies that will be affected, products that will be affected or estimates of economic impact. The Department and other Northeast states in the OTC have added flexibility to the rules in order to help minimize the impact on manufacturers. As discussed in the Response to Comments 87 and 88, the Department added a provision to the rules to acknowledge variances that are granted in other states that have rules with the same VOC content limits as New Jersey. The adopted rules do not apply to aerosol coating products or any architectural coating that is sold in a container with a volume of one liter or less. To reduce burdensome labeling requirements, the adopted rules do not require the inclusion of the products manufacture date on the product label. Rather, a date code, which is generally used by industry is proposed as acceptable. Six specialty categories, which are included in the Federal rule, that are not included in the CARB SCM, have been added to the rules. These categories allow a higher VOC limit for coatings that meet the coating category definition. The sell-through provision in the CARB SCM has been modified so that any product manufactured before the operative date of the proposed limits can be sold, with no deadline for sell through. A higher industrial maintenance coating VOC limit of 340 g/l was chosen over the CARB SCM VOC content limit of 240 g/l to allow more flexibility in the use of these products and when they are applied. To reduce burdensome reporting requirements, reporting is not required on a periodic basis, but rather is required only upon request by the Department.

95. COMMENT: The changes to N.J.A.C. 7:27-23 will do great harm to the commenter, both financially and to its reputation as a manufacturer of "Superior High Quality Architectural Coatings." On the basis of year 2002 sales, the commenter claims it will lose over 40 percent of its products and 25 percent of its sales by volume. (6)

96. COMMENT: The prohibition on the sale and use of commercial quantities of solvent borne floor coatings, varnishes, sanding sealers, stains and exterior primers results in a substantial adverse economic impact on the commenter. (4)

RESPONSE TO COMMENTS 95 AND 96: The Department acknowledges the concerns of the commenters; however, no specific information was provided by the commenters to support the claims of financial loss. Coatings that comply with the adopted rules are currently available, demonstrating that the technology exists. Some coating manufacturers may be adversely impacted if they do not reformulate their products; however, the overall industry should not be impacted significantly. Based on the current availability of complying coatings, the Department's position is that the commenters have the ability to reformulate coatings so that they comply with the rules.

97. COMMENT: Specific New Jersey costs and impacts must be reviewed. Cost impacts will be substantially different in New Jersey than in California due to climate differences. Also, the California study is based on the California rule, which allows averaging. The Department states that it "undertook no independent cost analysis." A comparison of the Pechan cost effectiveness numbers show that the architectural coatings rules are four to 15 times less cost-effective than

any of the other VOC control measures. This difference should have demanded New Jersey specific costs. The OTC did not evaluate either the availability of, or the costs related to, implementation of the limits proposed for all of the categories of coatings to which the proposed rulemaking would apply. The California study looked at only 11 categories. The Department is proposing limits for 55 categories.

The CARB report contains numerous flaws that prevent it from being a valid cost basis even for the 11 categories it addressed. The cost per ton is understated. The CARB cost analysis assumes a 10 percent discount rate which is no longer appropriate in today's economy and discounted the cost estimates by two-thirds based on an assumption that the manufacturers were already complying with architectural coatings rules applicable in the SCAQMD. The cost is really three times the cost the Department has presented (approximately \$19,200 per ton). Even if one were to assume that production was technically achievable, which is a false assumption, at \$19,200 per ton, the price increase for interior stains would be \$24.00 per gallon, which is clearly not cost-effective. (4)

98. COMMENT: The rules are based on low product development cost estimations. (6)

RESPONSE TO COMMENTS 97 AND 98: The Department has found that the economic impact analysis conducted by the CARB and adjusted for the OTC model rule is representative of costs attributable to implementing the rules in New Jersey. As discussed in the rule proposal at 35 N.J.R. 2989, the CARB economic analysis concluded that most manufacturers of architectural coatings would be able to absorb the cost of the proposed amendments with no significant adverse economic impacts. In addition, the estimated cost increases per product for the average homeowner are not anticipated to be significant.

The estimated economic impacts are not too low, but have been conservatively estimated for many reasons. The first and most important assumption is that manufacturers will need to incur reformulation costs to meet the limits for all their product lines. That is, manufacturers will have to "start from scratch" when determining how to comply with the limits. In reality, however, this is unlikely to be the case because the limits that the Department has adopted mirror all of the existing 2002 limits in SCAQMD Rule 1113 and the 2003 limits in the CARB SCM. Thus, the majority of manufacturers are likely to have already conducted research and development and have taken other steps necessary to meet the SCAQMD and the CARB SCM limits. In addition, manufacturers will have to reformulate for the other states in the Northeast region adopting the OTC model rule, if the manufacturers intend to market their products in the Northeast region.

The CARB analysis is representative of the architectural coating industry. The Department understands that not all manufacturers will be affected the same way. It is not feasible for the Department to do an independent analysis of all 700 nationwide coating manufacturers (approximately 300 architectural coating manufacturers). The parameters assumed by the CARB are also reasonable for New Jersey. The Department anticipated detailed comments from specific manufacturers if they felt their companies would be affected differently than the Department assumed. The Department sent out several notifications of the proposed rulemaking, including notices to all New Jersey manufacturers listed in the 2001 Rauch Guide for the US Paint Industry, but did not receive any specific economic impact analysis or data from any manufacturers to evaluate, either before or after the comment period, except general statements from three commenters. Accordingly, the Department has determined that it is appropriate to rely upon the CARB analysis.

The assumptions the CARB made are still valid and are not changed by today's economy. To the contrary, the cost estimates are more conservative based on the present economy. The CARB assumed a discount rate (as defined by the CARB on page 321 of the CARB Staff Report, some economists refer to this rate as the amortization rate) of 10 percent throughout the project horizon (or life). The CARB's discount rate was based on the yield (or rate) for a U.S. Treasury Note of similar maturity to the project horizon at the time of the analysis, plus two percent to be conservative and to allow for interest rate movements and the higher cost of funds for private parties. At the time of the analysis the yield of such a note was eight percent, making the discount rate 10 percent. This discount rate was used to calculate a cost recovery factor, which in turn was used to calculate the estimated annualized costs to reformulate. As of April 20, 2004, the yield on a five-year U.S. Treasury Note was approximately three and one-half percent. The commenter is incorrect in its assumption that if the 10 percent discount rate were reduced, the estimated costs to reformulate would increase. Instead, if the discount rate were reduced, the cost recovery factor would be lowered and as a result the estimated annualized costs to reformulate would also be lowered. Therefore, the higher discount rate of 10 percent is conservative.

In concluding that most manufacturers of architectural coatings would be able to absorb the cost of the proposed amendments with no significant adverse economic impacts, the CARB relied primarily on industry responses to the December 1999 CARB Economic Impacts Survey. It also relied on certain cost information and assumptions contained in the rulemaking records for the 1998 USEPA architectural coatings rule and the 1999 SCAQMD Rule 1113 adoptions.

Other CARB assumptions are also still valid. The CARB assumed that, for a typical company, about one-third of its product lines are sufficiently similar to each other that no additional reformulation of that one-third is required to meet the limit. That is, once the manufacturer reformulates one of the products in the one-third group, it can transfer that technology to the remaining products in the one-third group. The remaining two-thirds of the typical company's product lines are then assumed to require a separate and independent reformulation for each line within that group.

The CARB assumed that the actual costs to reformulate are likely to be one-third to one-fifth that of the reported costs, based on actual data obtained from the USEPA and the SCAQMD as a result of their rulemakings. The CARB's 1999 Economic Impacts Survey appeared to confirm the assumptions. The Department finds it contradictory that the commenters claim that their coatings will be eliminated, not reformulated, which would result in no reformulation costs, but the commenter also claims that the estimated reformulation costs are too low.

As discussed in the Economic Impact analysis, the cost impacts of the 11 categories evaluated by the CARB are considered to be representative of the other regulated coating categories. No specific information was provided by industry during the comment period to show otherwise.

The averaging provision in the CARB SCM is not relevant to the economic impact analysis conducted by the CARB. The analysis is based on reformulation of products to meet the limits, not by meeting the limits using averaging. The CARB's technical and environmental analysis for the SCM was conducted assuming averaging would not be used.

Regarding the climate differences, as discussed in the Response to Comments 6 through 9, the Department's position is that the climate differences between California and New Jersey will not have an impact on the costs to reformulate coatings to comply with the rule.

One commenter refers to the Pechan Report's estimate that the architectural coatings rules are four to 15 times less cost effective than any of the other VOC control measures. However, the economic impact estimates presented in the March 31, 2001 Pechan Report, to which the commenter refers, were updated with a more detailed analysis, as shown in the proposal at 35 N.J.R. 2988 through 2990. The emission reduction calculations in the Pechan Report remain unchanged. The commenter claims that the Department states that it "undertook no independent cost analysis." The Department did not state this in the proposal. The Department and the OTC evaluated the CARB economic impact results for compatibility with the OTC model rule. Nor did the Department rely wholesale on the Pechan Report. Instead, as discussed in the proposal at 35 N.J.R. 2990, the cost-effectiveness of the New Jersey rules was adjusted to account for the higher industrial maintenance limit in the OTC model rule, compared with the CARB SCM. In addition, the Department did a more detailed analysis of costs for consumer products and portable fuel containers than what was shown in the Pechan Report. These results can be found in the proposed rules for consumer products at 35 N.J.R. 4241(b) (September 15, 2003).

Based upon the Department's and the OTC's evaluation, the overall cost effectiveness (as defined by CARB per page 320 of the CARB Staff Report) for the five OTC VOC rules was estimated to be: \$2.80/lb of VOC reduced for the architectural coatings rules, \$1.20/lb for the consumer products rules, \$0.50/lb for the portable fuel containers rules, \$0.80/lb for the mobile equipment repair and refinishing rules and \$0.70/lb for the solvent cleaning rules. As discussed in the rule proposal at 35 N.J.R. 2989, the estimated cost-effectiveness for the different product categories in the architectural coating rules ranged from a cost savings of \$0.40/lb of VOC reduced (a savings due to a lower cost to manufacture the product due to less expensive ingredients) to a cost increase of \$6.02/lb. The estimated cost-effectiveness for different product categories in the consumer products rules ranged from a cost savings of \$3.58/lb VOC reduced (a savings due to a lower cost to manufacture the product due to less expensive ingredients) to a cost increase of \$7.73/lb. Rule amendments related to VOC RACT, N.J.A.C. 7:27-16, proposed August 2, 1993 (25 N.J.R. 3339(a)), were estimated to cost \$1.00 to \$5.00/lb of VOC reduced. These figures show that the overall estimated cost-effectiveness of the coatings rules and the estimated cost-effectiveness of some of the individual coating categories are less than the estimated cost-effectiveness for some of the individual consumer products categories and the VOC RACT rules adopted previously by the Department.

Even if the cost per pound of VOCs reduced from the New Jersey architectural coatings rules were estimated to be considerably higher than the cost per pound of VOCs reduced by the other rules previously adopted by the Department, which it is not, the Department would not be legally required to eliminate the rulemaking. The Department evaluates factors in addition to cost, such as the need to protect the environment and the public health, the feasibility of other alternatives, and to need comply with the USEPA requirements. In the present rulemaking, all of those factors are in favor of the adopted architectural coatings rules.

99. COMMENT: The Department has not analyzed the cost-effectiveness of any reasonably available alternatives to the proposed rules. (4)

RESPONSE: As discussed in the Responses to Comments 92 and 121, the Department and the OTC determined, after a thorough review, that the architectural coatings rules and four other rules were the most appropriate means of achieving VOC reductions based on an analysis of VOC emissions, potential reductions and timeframe of implementation. It is estimated that emission reductions from this category will be 25 tpd, which is a significant reduction. No other options were identified that could provide 25 tpd of VOC emission reductions necessary to meet the USEPA emission shortfall requirement.

The Department is not required to present a cost analysis for alternatives to the rulemaking in the rule proposal. The Department is required to be reasonable in its rulemaking.

100. COMMENT: Costs for heated trucks and warehouses were not included in the rulemaking. Also, the costs for additional energy consumption were not included. (1)

RESPONSE: Such costs, if incurred, will not be attributable to this rulemaking. As discussed above in the Response to Comment 10, the Department believes the freeze-thaw issue is not a new issue for manufacturers, distributors, retailers or consumers. Product data sheets and container labels for existing products recommend product storage above freezing temperatures, for existing products with VOC contents that comply with the newly adopted rule and for existing products with VOC contents higher than the newly adopted rule. Therefore, manufacturers, distributors, retailers and consumers are already addressing this issue.

101. COMMENT: The model formulas used to estimate potential materials costs are too simplistic. There are fundamental problems with the use of model formulas to estimate potential material costs. The approach carries the inherent assumption that only one coating technology (resin technology) will be used to meet the lower VOC content limits. Said another way, the approach implies that one technology will meet all the requirements of a category. This is unlikely and therefore the approach will not accurately estimate associated reformulation costs. (1)

RESPONSE: The commenter incorrectly interprets the purpose of the CARB's model formulas. Contrary to the commenter's suggestion, the model formulas are not intended to reflect any inherent assumption that only one coating technology will be used to meet the VOC content limits. For additional details see CARB's response to this comment in the June 9, 2000 CARB Final Program EIR Appendix I, which is shown as reference number 3 in this documents list of references.

102. COMMENT: Latex primers could peel off the wall, resulting in recoating and causing an economic hardship for the contractor, coating manufacturer and building owner. (1)

RESPONSE: As discussed in the Response to Comments 48 and 49, quality complying coatings exist with similar performance standards as higher VOC coatings.

103. COMMENT: Water costs a great deal less than solvent. (1)

104. COMMENT: Water-based coatings cost more than solvent-based. The commenter, a national trade association, attached to its comments, and incorporated by reference, an undated letter to it from one of its members, that expressed the same concerns regarding the OTC's architectural coating model rule. (1, 5)

RESPONSE TO COMMENTS 103 AND 104: The Department has received contradictory comments from the same and different commenters regarding whether it is more cost effective to produce water-based coatings or solvent-based coatings. As discussed in the Response to Comments 97 and 98, the estimated cost-effectiveness of the architectural coatings rules is similar to the consumer products rules and other rules adopted previously by the Department and the estimated cost increases per product for the average homeowner are not anticipated to be significant.

STATE SPECIFIC ANALYSIS

105. COMMENT: The Department did not conduct a New Jersey specific analysis. Analyses that have nothing to do with New Jersey are offered in support of a preordained result. One of the commenters, a national trade association, attached to its comments, and incorporated by reference, an undated and unaddressed letter from one of its members that expressed the same concerns regarding the DNREC architectural coating rule. (1, 4)

106. COMMENT: The reliance on outside consultants and agencies in other jurisdictions may constitute an illegal delegation of authority. Each agency unquestionably has adopted the flawed work of other agencies, thus compounding the errors and the arbitrariness of the proposed rulemaking. The CARB SCM are suggested control measures, not mandatory. (4)

107. COMMENT: Blind acceptance of the OTC model rule, use of California record to justify it and locating a few low VOC coatings in a broad coatings category to bolster its conclusion that the proposed limits are technologically feasible and cost effective for New Jersey is arbitrary and capricious and will be subject to challenge in court. None of the real world consequences mentioned are examined in the New Jersey rulemaking. Instead they are ignored or are assumed away largely on the basis of an uncritical adoption of California's rule, a state with much more benign weather than New Jersey. (1)

108. COMMENT: The regulation depends too much on California, a state that cannot manage its own budget, a state that is losing manufacturing jobs at a rapid rate, and a state sharply divided by districts that write their own rules. (7)

RESPONSE TO COMMENTS 105 THROUGH 108: The adopted New Jersey rules are based on an OTC model rule. The USEPA in its December 16, 1999 USEPA Federal Register notice (64 Fed. Reg. 70380) indicated that it was appropriate for states in the OTR to develop regional strategies to meet the need for additional emission reductions. The OTC was established pursuant to the 1990 Amendments to the Federal Clean Air Act (CAA), and is comprised of representatives from 12 states, including New Jersey, and Washington D.C. The OTC's mission, in part, is to undertake the development of control measures, which can be applied within the region to make progress toward attaining the NAAQS for various air contaminants including ozone.

The OTC model rule is based on the CARB SCM, which was based on years of extensive research by the SCAQMD and the CARB that would not be practical to duplicate. California regulates architectural coatings by air district; accordingly, the CARB SCM was developed to bring uniformity to the air district rules. Previous attempts to regulate architectural coatings uniformly in California were disrupted by individual lawsuits against the air districts.

It is appropriate for states to work together to conserve resources, to avoid duplication of effort and to encourage uniformity. For the same reasons, it is appropriate to rely on the USEPA, the CARB or any state that takes a leadership role on a subject. The Department has not unquestionably adopted the CARB SCM. On the contrary, the Department took an active part in the OTC model rule development process. The Department participated closely in the model rule development to assure that it was in the State's best interest. In some cases where the OTC workgroup thought it was appropriate, minor changes were made to the CARB SCM. The OTC workgroup conducted evaluations for the Northeast by contracting E.H. Pechan to perform a Northeast specific survey, reviewing existing product data sheets, reviewing the MPI approved products lists and conducting interviews with coating manufacturers. No information was obtained from industry, however, sufficient to demonstrate that the Department or the OTC should deviate significantly from the CARB SCM.

109. COMMENT: The Department has not established that the relevant product markets are sufficiently similar in the two states to justify wholesale adoption of the California analyses. No New Jersey specific market research was performed, despite the obvious differences between the states, in particular, the weather. The commenter's product, Low Temp 35, is not marketed in California, and products dedicated to wood porches would not be marketed in southern California. (4)

RESPONSE: The National survey (Final Draft Consolidated Report, Architectural and Industrial Maintenance Surface Coatings VOC Emissions Inventory Survey dated February 6, 1995, conducted by Industry Insights for the NPCA in Cooperation with the AIM Reg-Neg Industry Caucus), the CARB surveys and E.H. Pechan Northeast survey indicate that similar products are sold and used nationwide. The markets do not have to be identical in order to utilize the years of research and studies conducted by the CARB. The CARB has researched the categories of products, which are sold in the Northeast. As discussed in more detail in the Response to Comments 6 through 9, similar climate conditions can be found in California and the Northeast that can affect coating application and durability, and that the commenters did not sufficiently support their claims that coatings, which are compliant with the adopted New Jersey rules, will be less durable than higher VOC coatings due to climate conditions.

Regarding Low Temp 35 and wood porch coatings, the Department has demonstrated that complying coatings exist that perform the same function as these products as discussed in the Response to Comments 21, 22, 37 and 38.

110. COMMENT: Delaware lost in court on a previous rule, *Delmarva Power & Light Co. v. Tulou*, 729 A.2d 868 (Del Super. 1998), in which the court vacated a nitrogen oxides (NO_x) emissions regulation because it lacked a reasonable basis in the record. The appellants argued that DNREC had illegally delegated its rulemaking authority to a non-state entity by entering a memorandum of understanding (MOU) with the OTC. The court stated "the record contains what appears to be substantial scientific evidence to support the industry's contentions that the regulations are too ambitious because the technologies are unproven, the deadlines are unrealistic, and there is no safety valve to provide protection against failure notwithstanding a good faith effort...DNREC has failed to provide sufficient fact-finding and analysis of evidence to permit this court to conclude that the Department could not, in a fully developed record, reach the same conclusions. What is lacking here is a detailed independent scientific examination." The court also criticized DNREC's response to various suggestions submitted by industry, noting

that the agency's response to each suggestion is largely based on the fact that such a change would represent a deviation from the model rule. (1)

RESPONSE: As discussed throughout this document, the abundance of existing products that comply with the limits of the adopted New Jersey rules shows that these rules are not based on unproven technologies, and that the rules have a reasonable basis. Reliance on a model rule is appropriate, as discussed in the Response to Comments 105 through 108. Also, regional uniformity is very important because this rule affects the sale of a product in the State, not the manufacture of a product in a State, and therefore affects regional and national manufacturers located outside the State.

A rule in Delaware, similar to the New Jersey rules, and also based on the OTC model rule, has been challenged in court in Delaware. On February 26, 2004, the Delaware Superior Court in *National Paint and Coatings Association, et al. v. Delaware Department of Natural Resources, et al.*, C.A. No. 03A-06-003 HDR (February 27, 2004) (Judge Ridgely) upheld the Environmental Appeals Board decision to uphold the rule. Judge Ridgely said, "[b]ecause the decision of the Environmental Appeals Board to affirm the promulgation of Regulation 41 is supported by substantial evidence and is free from legal error, the decision of the Board is Affirmed." In his opinion, the judge made numerous references to the quality of the testimony of Delaware's witnesses including Jim Nyarady of the CARB, Rob Sliwinski, David Fuhr of Fuhr Labs International and Gene Pettingil of the DNREC. He was unimpressed by the opposition testimony. Specific theories advanced by the opposition and rejected by the judge based upon evidence Delaware's witnesses presented were climate differences that prevent applying California data to Delaware, low coating quality from low VOC coatings that leads to more coats and more frequent repainting, and panelization resulting from low VOC coatings. The judge also pointed out that DNREC had assembled substantial evidence in the record showing the following assertions should be rejected: stains, varnishes and sanding sealers with low VOCs have substandard performance; and DNREC ignored freeze-thaw substandard performance for non-flats, exterior flats and high gloss paints.

111. COMMENT: The rules are arbitrary and capricious due to using California's data to support New Jersey rules and not doing a full cost-effectiveness analysis of all of the coating categories, and because the record supporting the rules is shockingly deficient and because the State has ignored the facts and data presented. (4)

RESPONSE: A discussion on the use of California data is included in the Response to Comments 105 through 108 and a discussion on the cost effectiveness analysis is included in the Response to Comment 97 and 98. The CARB research and reports are incorporated into the rulemaking by reference. The data presented to the Department were not ignored, but rather were evaluated. No data were presented to the Department to support changing the adopted rules significantly.

TECHNOLOGY ASSESSMENTS

112. COMMENT: The Department should add a technology assessment to the rules to confirm technologic feasibility of the proposed limits. Relying on California experience in the next 3 years will not allow the Department time to change its rules or give the Department authority from USEPA once the rules are in place in the New Jersey SIP. (1, 3, 6)

113. COMMENT: The CARB has committed to performing technology assessments and has staff dedicated specifically to architectural coatings. If the CARB determines that a product category limit can not be met, what will the Department do? Are there personnel available to amend any adopted rules? Will there be time to amend such rules? How many staff will the states (OTC states) have available for these rules? (4)

RESPONSE TO COMMENTS 112 AND 113: The SCAQMD and the CARB do technology assessments. The Department does not have the staff or the resources to duplicate such a program in its entirety; however, the Department will evaluate the research and conclusions of the SCAQMD and the CARB. Assistance from the SCAQMD and the CARB will not impede progress in New Jersey. Instead, if changes are deemed necessary the assistance will help expedite changes. If a change is made to the CARB SCM or to the air district rules, the Department will evaluate it for merit in New Jersey and consider making the change if the Department determines that the change is appropriate.

EMISSION REDUCTION CALCULATIONS

114. COMMENT: The commenter attached to its comments, and incorporated by reference a letter dated January 11, 2001 to the Department, regarding the OTC architectural coatings model rule. The letter comments that the State and Territorial Air Pollution Program Administrators/Association of Local Air Pollution Control Officials (STAPPA/ALAPCO) estimated a 20 percent reduction and that any state adopting the STAPPA/ALAPCO proposed limits would achieve emission reductions significantly greater than 20 percent. Page 14 of the CARB Staff Report states that emission reduction is estimated at 10 tons per day (tpd) excluding the SCAQMD, not 19 tpd as stated by STAPPA/ALAPCO.

The commenter's October 15, 2003 letter comments that the Department is not obligated to adopt the OTC model rule without any real change in order to satisfy the conditions of the USEPA approval of the 1998 one-hour ozone attainment demonstration for New Jersey. Instead, the commenter says that the Department can modify the OTC rules because the emission reductions of the OTC rules are significantly greater than estimated by Pechan. The commenter has calculated emission reductions of 51 percent, not 31 percent as calculated by the Department. The CARB Survey is more statistically reliable than the voluntary National survey, which was used by the Department in its calculations. The CARB Survey shows that the final emission factor should be 2.65 pounds per person per year (in its October 15, 2002 letter and 2.05 pounds per capita in its September 5, 2003 letter), not 3.7 pounds per person per year as assumed by the Department, resulting in higher emission reductions than anticipated. The voluntary National survey was mostly larger companies, which produce lower VOC products, thus biasing the results to show lower VOCs emitted from existing products than actually occurs.

In addition, the spreadsheet used by the Department, has errors and flaws in it and is incomplete based on the VOC emissions shown in the spreadsheet. Emissions from more frequent re-applications have not been accounted for. (4)

RESPONSE: Regarding the commenter's January 11, 2001 letter, the commenter feels that the preliminary estimate of a VOC emission reduction of 20 percent as a result of the adopted rules is too small. The VOC emission reduction of 20 percent was a preliminary estimate calculated by the OTC. The final estimate, as shown in the rule proposal at 35 N.J.R. 2991, is a VOC emission reduction of 31 percent. As pointed out by the commenter, the CARB calculated a 10

tpd VOC emission reduction for California, excluding the SCAQMD, for an area larger than New Jersey, from a California baseline, which is lower than New Jersey's baseline. The Department estimated a 25 tpd VOC emission reduction for New Jersey. The Department does not feel this is underestimated, relative to California.

The Department agrees that it was not specifically required by the USEPA to adopt the CARB SCM. As discussed in the proposal at 35 N.J.R. 2984, on December 16, 1999, the USEPA published a notice in the Federal Register at 64 Fed. Reg. 70380 proposing approval of New Jersey's SIP submittal, contingent upon New Jersey's committing to adopt and submit additional measures necessary to secure additional VOC emission reductions. The USEPA had found that a number of other states, including Connecticut, Delaware, Maryland, New York and Pennsylvania, had shortfalls in their plans to demonstrate attainment of the one hour ozone standard. The December 16, 1999 USEPA Federal Register notice indicated that it was appropriate for states in the OTR to develop regional strategies to meet the need for additional emission reductions. The architectural coatings rule and five other rules were determined to be the most appropriate means of achieving VOC reductions based on an evaluation of VOC emissions, potential reductions and timeframe of implementation. No other options were identified that could provide 25 tpd of VOC emission reductions.

The Department does not agree that the estimated emission reductions are significantly underestimated or that they are based on an inappropriate baseline. The Department's calculations are based on the same methodology used by the USEPA for the Federal architectural coatings rule. The data were calculated using a spreadsheet developed by Industry Insights for the National Paint and Coatings Association (NPCA) and for the USEPA during its regulation development process. It is the spreadsheet that the USEPA used to calculate a 20 percent VOC emission reduction for the Federal rule. The spreadsheet utilizes estimated 1990 VOC emission data provided by an Industry Insights survey for NPCA. The adopted VOC content limits were input into the spreadsheet and a reduction percentage from the 1990 base emissions was calculated. The reduction percentage was adjusted to account for the Federal rule emission reduction of 20 percent already in place. The actual emissions in the spreadsheet were not used to calculate tons per day. Rather, they were used relatively, to obtain a percent reduction. The Department applied the estimated percent reduction to its State-specific calculated emissions from the New Jersey inventories. The inventory emissions were calculated using USEPA methodology and emission factors.

The Department does agree that California has been regulating coatings for years at a stricter level. It has also been regulating by individual air district for years with varying limits. This is why the OTC and the Department find that the national survey, which was used by the USEPA, is more appropriate for the Northeast for emission reduction calculations.

The commenter used the California final emission factor from the CARB 2001 Survey with the USEPA initial emission factor to calculate a 51 percent emission reduction. The Department does not agree with this approach. The Department used consistent methodology for the calculations, the USEPA emission factors, the USEPA 1990 baseline and the USEPA emission reduction spreadsheet. The commenter mixed USEPA data with California data, which was inappropriate. The Department did not use the California 1990 baseline because the California baseline would be different than the New Jersey baseline, due to varying air district architectural coating regulations prior to 1990. In addition, the USEPA emission factor used by the commenter is based on the same information, the national survey and information used in the

USEPA regulation negotiation proceedings, that the commenter is disputing as not as accurate. The 1990 survey is referenced in the USEPA Emission Inventory Improvement Program (EIIP), Volume III, Chapter 3, page 5-1.

The commenter states that the California survey is mandatory, and therefore more accurate than the National 1990 survey; however, the commenter also states with regard to recordkeeping that the California survey is voluntary. This appears to be contradictory.

As discussed in the Response to Comment 5, more frequent reapplication will not necessarily occur as a result of the adopted rules; therefore, emission reductions would not be impacted.

The Department does not agree that the estimated emission reductions are significantly underestimated, however, even if they were, additional emission reductions will be needed beyond those needed for attainment of the one-hour ozone standard. On April 15, 2004, the USEPA designated all of New Jersey as a moderate eight-hour ozone non-attainment area. Previous modeling, conducted in support of the one-hour ozone attainment demonstration, showed that additional emission reductions would be needed to meet the eight-hour ozone standard. Therefore, emission reductions resulting from these rules will also aid the State in meeting meet the eight-hour ozone standard.

Based on this discussion, the Department does not agree that the estimated VOC emission reductions are underestimated or that the proposed rule should be changed as a result of the commenters emission reduction calculations.

115. COMMENT: There is a problem with the column H of the spreadsheet in the database used by Pechan to determine the emission reductions, because it produces negative emission reductions in some of the columns which is not possible. (4)

RESPONSE: The Department does not agree that the negative numbers in the spreadsheet represent a problem with the spreadsheet. The spreadsheet, which was developed by Industry Insights for NPCA and the USEPA, shows potential VOC reductions based on VOC content limit ranges, in columns F, G, H and I, based on the survey results. It shows potential emission reductions if the limit chosen is below the VOC content limit of the currently available products and it shows potential emission increases, if the VOC content limit chosen is above the currently available products. This assumes a case where the regulatory limit chosen is higher than the currently available products, so industry increases the VOC content of their coatings. While the Department agrees this is unlikely, it is not impossible mathematically. Columns K, L, M and N, show the estimated VOC reductions based on the adopted limits entered into the spreadsheet. As discussed in the Department's report titled "Estimated VOC Emission Reductions and Economic Impact Analysis for Proposed Amendments to Architectural Coatings," the calculations are based on a constant solids basis, assuming the coatings will be manufactured at the new limits. This corresponds to column M in the spreadsheet. As shown in cell M422, any potential emission increases (negative numbers) from columns F, G, H and I are shown as zero in columns K, L, M and N, which agrees with the commenter's inference that it is unlikely that the VOC content will be raised.

116. COMMENT: The Pechan data and analysis do not meet the USEPA standards for data quality, as determined by its statistical expert, Douglas Splitstone, who has been a consultant to the USEPA Science Advisory Board, and has served on the SAB's Environmental Engineering

Committee's Air Toxic Monitoring, Quality Management and Secondary Data Use Subcommittees, among others. The data cannot meet quality guidelines because they are not reproducible in part because the source data (Insights Survey data) are not available and persons knowledgeable with regard to the details of the survey data cannot be found. In addition, the Pechan analysis lacks transparency because the methods used to estimate emission reductions from the survey data are not fully documented, if documented at all. On the other hand, Splitstone concludes that the CARB Survey data are both reproducible and transparent, and would be more reliable to predict actual emission reductions. (4)

RESPONSE: The emission reduction calculations are documented in the Department's proposal under Environmental Impact (35 N.J.R. 2990) and in the Department's technical report, titled "Estimated VOC Emission Reductions and Economic Impact Analysis for Proposed Amendments to Architectural Coatings," which is referenced in the proposal prepared by the Department. The Department's rule proposal also references the report prepared by E.H. Pechan and Associates titled "Control Measure Development Support Analysis of Ozone Transport Commission Model Rules." The Pechan Report is not the sole or primary source of explanation of the emission reduction calculations. It is meant to be used in conjunction with the rule proposal, which was prepared by the Department.

The analysis does meet the USEPA standards for data quality because it is the same methodology used by the USEPA for its rulemaking and was approved by the USEPA in the February 4, 2002 SIP approval. The survey data are available from the USEPA in a report entitled Final Draft Consolidated Report, Architectural and Industrial Maintenance Surface Coatings VOC Emissions Inventory Survey dated February 6, 1995, conducted by Industry Insights for the NPCA in Cooperation with the AIM Reg-Neg Industry Caucus. The 1990 survey is also referenced in the USEPA EIIP, Volume III, Chapter 3, page 5-1.

117. COMMENT: The commenter claims he has yet to see data presented that will disclose the amount of emissions to be reduced by these proposed regulations and what the impact is on the New Jersey environment from the use of architectural coatings and how those emissions compare to other sources of emissions, such as the automotive engine. (7)

RESPONSE: The information requested by the commenter regarding architectural coatings is discussed in the Department rule proposal under Environmental Impact at 35 N.J.R. 2991 and in the Department's technical report, which is referenced in the proposal titled "Estimated VOC Emission Reductions and Economic Impact Analysis for Proposed Amendments to Architectural Coatings" prepared by the Department and posted on the website at <http://www.nj.gov/dep/aqm/curformp.htm>. The information requested by the commenter regarding a comparison to other sources of emissions is discussed in the Response to Comment 121.

118. COMMENT: The commenter estimates that its recommended VOC limits (discussed throughout this document in each of the individual coating categories) would secure in excess of 70 percent of the emissions purportedly secured by the New Jersey rules even under the assumptions used by New Jersey. But in doing so its suggested table of standards minimizes trade offs while securing additional VOC emission reductions beyond those achieved by the Federal architectural coatings VOC rule. (1)

RESPONSE: The Department cannot accept a proposal that provides 70 percent of the anticipated emission reductions. The Department's attainment of its goal to reduce ozone and the USEPA SIP approval dated February 4, 2002 rely on the full effect of the adopted rules. In addition, overall consistency with the CARB is important in the implementation of these rules, since the framework for the rules is based on the CARB research and manufacturers' desire consistency from state to state for ease of implementation.

119. COMMENT: The commenter attached to its comments, and incorporated by reference, a letter dated August 30, 2001 that it sent to the DNREC regarding the DNREC rule. The letter comments that the analysis that has been conducted by the OTC coatings workgroup concerning VOC emission reductions has understated any such reductions because of reliance on the California coatings survey data. The coatings sold in California have lower VOC contents than those sold in the Northeast due to regulatory controls that have been in place much longer than in the northeast.

The commenter states in a subsequent letter dated October 14, 2003 to the Department that it agrees with the calculations performed by Sherwin-Williams, which state that the CARB data should be used instead of the National data. (1)

RESPONSE: The Department does not agree that the VOC emission reductions are understated, as discussed above in the Response to Comment 114. Also, the emission reduction calculations are not based on the California baseline as discussed above in the Response to Comment 114 and in the Department's technical report, titled "Estimated VOC Emission Reductions and Economic Impact Analysis for Proposed Amendments to Architectural Coatings," which is referenced in the proposal at 35 N.J.R. 2991.

120. COMMENT: The commenter, a national trade association, attached to its comments and incorporated by reference a letter from one of its members dated August 28, 2001, to DNREC regarding its architectural coating rule. The member company commented that based on California sales data for sanding sealers, stains and varnishes, Delaware will not receive the calculated emission reductions based on an overly optimistic VOC content limit. (1)

RESPONSE: This comment contradicts the member company's statement in Comment 114 that the emission reduction calculations underestimate the reductions. Also, the commenter is inferring, as discussed in Comments 56, 60 and 75, that industry has not complied with the limits in place in California previously and continued to sell products in violation of existing rules. As discussed in the Responses to Comments 56, 60 and 75, the California survey information quoted by the commenter includes products sold in containers of one liter or less, which are exempt from the rule. In addition, not all districts had the rule VOC content limits in place for several years as implied by the commenter. As discussed throughout this document, sanding sealers, stains and varnishes exist with VOC content limits that comply with the adopted rules.

CONTROL OF OTHER SOURCES OF POLLUTION

121. COMMENT: Nine percent of the air pollution problem comes from architectural coatings. Nine percent is not enough to justify regulating architectural coatings, instead of a larger source of the pollution. Buses and trains are two pitifully large sources of pollution and the State has within its power to control pollution from all the State transportation buses and the trains. If the Department were to eliminate the pollution or cut it by 50 percent from those two

sources, the Department would not need to worry about what kinds of paint is being applied on the roads. The Department is forcing change, which is not scientifically there, while it allows these large problems to exist.

The two largest sources of air pollution are out of State transport into the State and mobile source emissions. Look at the large number of cars with poor gas mileage. Benefits from cleaner car technology are higher than from architectural coatings. The vast majority of power generated by all generation stations in the State of New Jersey is from coal fire generation. If one takes all of the air pollution emissions from one PSE&G facility, it dwarfs all emissions from all others in the State of New Jersey, primarily because of the coal problems. (2)

RESPONSE: As discussed in the rule proposal at 35 N.J.R. 2991, calculations made by the Department show that emissions from architectural coatings represent approximately nine percent of the total man-made VOC emissions in the 1996 inventory. This is a significant amount, because VOC emissions come from hundreds of sources. Nine percent from one specific category is a significant amount, which is why this category was chosen for regulation. In the New Jersey 1996 Emission Inventory, VOC emissions from architectural coatings were estimated to be approximately 87 tpd, on a typical summer day. These VOC emissions were projected to be 91 tpd in 2002. Architectural coatings are the second largest source of VOC emissions in the inventory, after light duty gasoline vehicles. Buses, trains and power plants are not in the top 15 sources of VOC emissions in the New Jersey 1996 Emission Inventory. Heavy duty diesel vehicles, which include buses, were estimated to be approximately seven tpd of VOC emissions in the New Jersey 1996 Inventory and were projected to be six tpd in 2002. Trains were estimated to be approximately 0.82 tpd of VOC emissions in the New Jersey 1996 Inventory and the projected 2002 inventory. VOC emissions from all in-state electric generating units, including PSE&G, are estimated at four tpd in 2002.

The top three sources of VOC emissions in the New Jersey 1996 Inventory are light duty gasoline vehicles and trucks (270 tpd VOC), architectural coatings (87 tpd VOC) and consumer products (80 tpd). These emissions were projected to be 189 tpd of VOC for light duty gasoline vehicles and trucks, 91 tpd of VOC for architectural coatings and 81 tpd of VOC for consumer products in 2002. Regarding light duty gasoline vehicles, the emission benefits from the USEPA Tier2/Gasoline sulfur final rulemaking were incorporated in the State's one-hour ozone SIP, but the USEPA found that additional emission reductions were necessary to attain the standards. It is also important to note that the emission benefits from regulations related to mobile sources take a long time to be fully realized because one has to wait for fleet turnover.

The Ozone Transport Assessment Group (OTAG) concluded that VOC emissions are more of a local issue, than a regional one, in its Executive Report dated 1997. The USEPA anticipates that out of state transport of NOx emissions will be addressed from the Federal NOx Budget Program. In state NOx emissions from power plants will also be reduced due to the Federal NOx Budget Program. In addition, the Department has entered into a consent decree with PSE&G to address SO₂, direct particle and NOx emissions. Contrary to the commenter's statement regarding coal fire generation, approximately 16 percent of the electricity generated by utility companies in the State of New Jersey is from coal fired generation, approximately 73 percent is from nuclear, approximately nine percent is from natural gas and approximately two percent from petroleum.

The architectural coatings rules and four other rules were determined to be the most appropriate means of achieving VOC reductions based on an analysis of VOC emissions, potential reductions and timeframe of implementation. It is estimated that emission reductions from this category will be 25 tpd, which is a significant reduction. No other options were identified that could provide 25 tpd of VOC emission reductions, including adopting the California car program.

MISCELLANEOUS GENERAL COMMENTS

122. COMMENT: The commenter has addressed concerns about five subcategories and limits (stains-clear and semi-transparent, sanding sealers, varnishes, floor coatings and primers-exterior wood), but also requests alternate VOC content limits, based on its own emission reduction calculations that show more emission reductions than the Department's calculations for the following categories: flats, exterior(150 g/l); nonflats (200 g/l); nonflat-high gloss (380 g/l); lacquers (680 g/l); quick-dry enamels (380 g/l); quick dry primers, sealers and undercoaters (350 g/l); stains-opaque (350 g/l). (4)

RESPONSE: The VOC content limits requested by the commenter have been addressed under each of the respective categories.

123. COMMENT: Alkyd gloss enamels will be eliminated by the rule and no other types of products where emissions have been a problem have been forced into discontinuance. The commenter, a national trade association, attached to its comments and incorporated by reference an undated letter to it from one of its members, that expressed the same concerns regarding the OTC's architectural coating model rule. (1)

124. COMMENT: The Department has proposed the rulemaking in reliance upon the assumption that compliant coatings are available for all architectural coating products covered under the proposed rule. This assumption is wrong and unfounded.

The proposed limits are not technologically feasible. Some product lines will be abandoned in order to comply (solvent-based floor coatings, stains, sanding sealers, varnishes and exterior primers). The Department has proposed the rulemaking in reliance upon the assumption that compliant coatings are available for all architectural coating products covered under the proposed rule. This assumption is wrong and unfounded. The OTC limits will prohibit the sale or use in New Jersey of commercial quantities of these products that are not water-based.

The de facto banning of certain products for certain applications by the adoption of the model rule may be an ultra vires act and beyond the Department's express legislative authority. The de facto ban may constitute unlawful interference with interstate commerce. (4)

RESPONSE TO COMMENTS 123 AND 124: The Department acknowledges that the rules ban the sale of certain existing products that do not comply with the adopted VOC content limits in containers larger than one liter. As a result, some manufacturers may elect to discontinue certain solvent-based formulas. These products are, however, being replaced with currently-available lower VOC and water-based counterparts. In taking this action, the Department is acting under its explicit authority to adopt rules to control and/or prohibit air pollution, including its implicit authority to ban the sale of certain formulations that may result in such air pollution, in order to effectuate the legislative intent to protect the public health and welfare. Further, as

these sales limitations are facially nondiscriminatory and any incidental burden in relation to the benefits to the citizens of the State would not be excessive, any unlawful interference with interstate commerce would be purely illusory.

125. COMMENT: All New Jersey State residents will be directly or indirectly effected by the change in quality, cost and availability of our products mandated by this rule. (6)

126. COMMENT: One commenter stated that it has significant concerns with a number of aspects of the proposed rulemaking, especially the proposed standards for stains, varnishes, sealers, exterior wood primers and floor coatings. (4)

RESPONSE TO COMMENTS 125 AND 126: As discussed throughout this document, quality complying products exist in the marketplace. As discussed in the Department's rule proposal, significant cost increases are not anticipated for the average homeowner. In addition, the Department believes that higher quality coatings will continue to be developed with lower VOCs. Of great importance to health, safety and welfare, New Jersey residents will benefit from cleaner air.

127. COMMENT: The Pechan survey is not a comprehensive survey. It is not based on sales data in the Northeast, it is based on product data sheets. (1)

RESPONSE: As discussed in the Response to Comment 15, Pechan requested sales data from manufacturers. No sales data were submitted to Pechan by the manufacturers. The Department agrees that the Pechan survey is not as comprehensive as the years of research, surveys and data generated in California. That is why the Department has also utilized the expertise of the SCAQMD and the CARB. However, the Pechan survey adds to the research by identifying complying products. Product data sheets are useful to identify complying products and it is appropriate to use them. In meetings with industry representatives, including the commenter, the Department asked for Northeast specific sales data from industry. The industry representatives were not opposed to the idea; however, the information was never supplied to the Department.

128. COMMENT: The OTC has recognized temperature and humidity as factors affecting application and performance for industrial maintenance coatings, therefore, the same should be done for the five subcategories of wood products for which Sherwin-Williams has proposed rule changes: stains, varnishes, sealers, exterior wood primers and floor coatings. (4)

RESPONSE: The OTC recognized temperature and humidity in a way that was consistent with the CARB SCM. In the CARB SCM, the industrial maintenance coating limit of 340 g/l is offered as a variance option to the 250 g/l limit based on temperature and humidity conditions. In the OTC model rule, the limit of 340 g/l was used as the only limit, based on temperature and humidity conditions in the Northeast. As discussed throughout the document, quality complying products exist for the categories referenced by the commenter. The Department anticipates that higher quality coatings will continue to be developed with lower VOCs. In addition, three of the five categories referenced by the commenter are coatings primarily for use indoors, where temperature and humidity can be controlled.

129. COMMENT: The Department contends that it provides flexibility for specialty coatings under the small container exemption. This is based on false premise that specialty coatings are typically sold in small containers. (4)

RESPONSE: The Department states in its proposal at 35 N.J.R. 2993 that it provides flexibility for any architectural coating that is sold in a container with a volume of one liter or less. The term “specialty coatings” is not a defined term in the rules. The Department is aware that not all specialty coatings are sold in small containers, depending on how one defines specialty. The small container exemption, along with the category classifications, are part of the Department’s effort to create a comprehensive package that exempts certain specialty coatings. However, the small container exemption is not intended to jeopardize the rule emission reductions.

130. COMMENT: Not all of the states and areas in the OTC states have the same conditions, including differences among the ozone non-attainment areas that may require different approaches and differences in the model rule between non-attainment jurisdictions. The Department failed to consider options for the rule's applicability that would focus the rule more closely on the non-attainment area and season that give rise to the need to obtain further emission reduction. (4)

RESPONSE: As discussed in more detail in the Response to Comments 6 through 9, similar climate conditions can be found in California and the Northeast that can affect coating application and durability, and that the commenters did not sufficiently support their claims that coatings, which are compliant with the adopted New Jersey rules, will be less durable than higher VOC coatings due to climate conditions. A great effort had been undertaken by the OTC states to maintain uniformity within the OTR in order to help manufacturers avoid the difficulty of producing different products for different states, regions or seasons. Climate differences or their effects on coating durability among the states in the OTR are not significant enough to compromise uniformity. Seasonal coatings are not practical, as they would be too resource intensive for manufacturers, distributors, retailers and the Department. Regulating by non-attainment area would also be impractical and resource intensive for manufacturers, distributors, retailers and the Department. The three counties within New Jersey that are not designated as severe ozone non-attainment can still be used to help demonstrate attainment of the ozone standards because they are within 100 kilometers of a severe non-attainment area.

131. COMMENT: The violation schedule is unreasonable. This is the only jurisdiction in America, including California, that has a violation schedule. (2)

RESPONSE: The Department does not agree that the violation schedule is unreasonable. The Department has violation schedules for all of its rules, in order to enforce the rules. Monetary penalties are needed as a deterrent to violating the rules. Other states such as New York, Pennsylvania, Delaware and California do enforce their architectural coatings rules with monetary penalties. The enforcement rules and penalties are not included within the architectural rules, they are located elsewhere in the state's rules, such as sections 71-2101, 71-2115 and 71-2103 of New York's Environmental Conservation Law and Section 9 of the Pennsylvania Air Pollution Control Act. Pennsylvania can assess penalties up to \$25,000 per can per day and Delaware can assess penalties of \$10,000 per can per day. The California air district penalties are contained within the California Health and Safety Code.

132. COMMENT: Only 18 of the 35 air districts have adopted the CARB SCM in California. Of the 18, there are significant modifications and revisions, typically in the VOC content limits for one or more architectural coating categories. Many that have not adopted are in regions with climate similar to New Jersey. (4)

RESPONSE: The 18 air districts that have adopted the CARB SCM represent over 95 percent of the population in California. As discussed in the Response to Comment 6 through 9, there are portions of air districts in California that have adopted the CARB SCM and that experience climate similar to New Jersey. The districts that have not adopted the CARB SCM are not required to do so, due to their air quality attainment status, but are considering adoption of the SCM. According to the CARB, no significant changes have been made by air districts adopting the CARB SCM.

133. COMMENT: It has been suggested that since the California limits are in effect, if problems surface there is time to make changes to the rule in the OTC states. This is not true. Performance problems the commenter is addressing take more than two years to manifest themselves. (1)

RESPONSE: The Department agrees that new coating performance may take several years to determine. That is why the Department has relied on the years of research and testing conducted in California. In addition, the operative date of the limits in the CARB SCM is two years prior to the New Jersey rules, providing two years of lead-time for evaluation. Accordingly, it has been one year and four months since the effective date of the CARB SCM VOC limits (January 1, 2003) and CARB has not proposed any changes to the VOC content limits in the SCM. It is a benefit to the OTC states to be able to work with the CARB and review their evaluations. In addition, many of the adopted limits have been in place in some California air districts for several years. The CARB developed the SCM to bring uniformity to the individual air district rules.

134. COMMENT: There should be an exemption for manufacturers who employ solvents that are considered non-photchemically reactive; that is, solvents containing less than eight percent hydrocarbons. The Department should consider the nature of the emissions as much, if not more than, the volume of the emissions. (7)

RESPONSE: The USEPA has exempted certain compounds from VOC rules, through the definition of VOC, due to low reactivity such as methane, ethane and methylene chloride. The Department uses the USEPA definition of VOC in its air rules. The full list of exempt compounds can be found in the definition of VOC at N.J.A.C. 7:27-23.2, and 40 CFR 51.100. The Department's position is that it is not feasible to move ahead of the USEPA any further regarding reactivity. Reactivity-based rules are very complicated. The USEPA has a workgroup evaluating the feasibility of reactivity based rules. The CARB has one rule for aerosol coatings that is based on reactivity that is being used as a test pilot. These types of rules are complex to implement and could require a multitude of changes to existing rules. Further, reactivity-based rules may not be appropriate where transport of precursors to ozone occur over multi-day episodes.

135. COMMENT: The CARB staff should reconsider its decision to exclude the other categories in the Federal rule that are not in the CARB SCM. (1)

RESPONSE: As discussed previously, the OTC added six of the categories the commenter is referring to into the OTC model rule. These categories are conversion varnishes, thermoplastic rubber coatings and mastics, calcimine recoaters, nuclear coatings, concrete surface retarders, and impacted immersion coatings. Two additional categories have been addressed above based

on comments: anti-graffiti coatings and concrete protective coatings. The remaining eight categories have not been addressed because the commenter's more recently dated comments no longer propose addition of those eight categories. The above comment was made in a letter attached by the commenter, incorporated by reference, dated April 7, 2000 to the CARB. In the commenter's Item 2, Table of Recommended Changes to the New Jersey AIM Rule, the commenter recommends elimination of those categories. For additional details on why CARB did not include the referenced categories in the CARB SCM, see the CARB Staff Report.

136. COMMENT: One commenter requested an extension of the compliance dates. (1)

RESPONSE: This comment was made to the CARB in the commenters April 7, 2000 letter, attached to its comments and incorporated by reference. This comment was not addressed to the Department and is not relevant to the Department, because the operative date of the Department's adopted limits are two years after the CARB SCM.

137. COMMENT: The commenter, a national trade association, attached to its comments and incorporated by reference a letter from one of its members dated July 31, 2000 to it regarding the OTC's architectural coatings model rule. The member company commented that the USEPA owes the member company a study showing the effects of the implementation of the 1999 USEPA VOC reduction (from architectural coatings). AIM emissions are known to contribute only two percent of the total emissions. (1)

RESPONSE: As discussed in the Response to Comment 121, calculations made by the Department show that emissions from architectural coatings represent approximately nine percent of the total man-made VOC emissions in the New Jersey inventory. Nine percent from a single specific category is significant, because VOC emissions come from hundreds of sources in many categories. The potential to achieve substantial reductions in VOC emissions by regulating a single category is one of the reasons architectural coatings were chosen for regulation. In the New Jersey 1996 Emission Inventory, VOC emissions from architectural coatings were estimated to be approximately 87 tons per day, on a typical summer day. These VOC emissions were projected to be 91 tpd in 2002. Architectural coatings are the second highest source of VOC emissions in the inventory, after light duty gasoline vehicles. The previously existing New Jersey rule has been in place since 1990, prior to the Federal rule. The VOC emission reductions for the previously existing New Jersey rule are approximately equivalent to the Federal rule. The Department estimates that the previously existing New Jersey rules will reduce VOC emission reductions by approximately 18 tpd in 2005. The Department estimates that emission reductions from the new adopted architectural rules will be an additional 25 tons per day, beyond the previously existing New Jersey rules (and the Federal rule).

138. COMMENT: The commenter, a national trade association, attached to its comments and incorporated by reference an undated letter to it from one of its members regarding the OTC's architectural coatings model rule. The member company commented that it supplies its recommendations to the regulators and is ignored. (1)

RESPONSE: The Department has not ignored any information provided to it. All information has been evaluated as discussed throughout this document.

139. COMMENT: One commenter included a letter from it to the USEPA dated August 15, 2001 requesting assistance from the USEPA to change the Department's rule proposal. (1)

RESPONSE: The Department acknowledges the letter. No request was received from the USEPA to the Department to change the rule proposal.

140. COMMENT: Low VOC coatings would be produced as long as they do not compromise coating performance. Consumers prefer low VOC paints, because of low odor and ease of clean up. The commenter, a national trade association, attached to its comments and incorporated by reference an undated letter to it from one of its members regarding the OTC's architectural coatings model rule, that expressed the same concern. (1)

RESPONSE: The Department acknowledges that coatings have moved towards water-based over the years due to consumer demand. However, more can be done, that will not be done voluntarily. There are still business reasons to produce high VOC coatings, that are contrary to environmental benefit and safety.

141. COMMENT: Nowhere in the record is there any examination of why such products (high VOC) are still used and demanded if, in fact, the coatings at the lower VOC levels meet all performance requirements. (1)

RESPONSE: The Department agrees that if the high VOC products are offered, consumers may purchase them. People are reluctant to change old habits, unless the options are changed.

142. COMMENT: The people that have joined us, the PECA, Finishing Contractors of America and another group as well, have stated that they have problems associated with this rulemaking. (1)

RESPONSE: The Department has received no comments from the organizations mentioned by the commenter. In addition, the commenter did not provide any additional details on the problems. Therefore, the Department cannot respond further to this comment.

143. COMMENT: At a meeting with the head of secretary from Septak, they were told that Holland, Sweden and Denmark, countries that really pushed water-based coatings, are now backing away from it. They have seen the impact upon their homes. (1)

RESPONSE: The commenter did not provide any additional details or data on the problems referenced or did not inform the Department who the head of secretary of Septak is. Therefore, the Department cannot respond further to this comment.

144. COMMENT: There are issues with exempt solvents. Acetone is a fire hazard, oxsol 100 will cause a significant cost increase, and t-butyl acetate has not yet been listed as an exempt solvent and also has an unacceptable odor. (4)

RESPONSE: Not all solvent-based coatings will be able to be reformulated to remain solvent-based formulas. Some solvent-based coatings will be replaced with water-based counterparts. The CARB did not base the SCM on the availability of exempt solvents. The CARB believes the limits are feasible without the use of exempt solvents. However, the CARB also believes the use of exempt solvents is a feasible alternative. Regarding the fire hazard of using acetone, many solvents used in solvent-based coatings are also flammable and must be handled with care. Acetone's flash point, flammability classification and lower explosive limit are similar to other

solvents found in solvent-based coatings such as methyl ethyl ketone toluene and xylenes. Proper guidelines for working with flammable coatings must be followed in order to avoid creating dangerous conditions or fire hazard.

145. COMMENT: The commenter, a national trade association, attached to its comments and incorporated by reference an undated letter and unaddressed letter from one of its members regarding the DNREC architectural coatings rule. The member company commented that the Delaware rules are not uniform with the Federal rule. It appears that there is no adequate basis for the deviation. (1)

RESPONSE: The Department agrees the rules are not uniform with the Federal rule. The basis for exceeding the Federal standards was discussed in the rulemaking proposal, in the Response to Comment 92 and in the Federal Standards analysis below.

146. COMMENT: We would like to see a uniform rule, but not a uniformly bad one. (1)

RESPONSE: The Department agrees with the commenter.

REFERENCES:

1. Staff Report for the Proposed Suggested Control Measure for Architectural Coatings, California Environmental Protection Agency, Air Resources Board, June 2000.
2. The Clean Air Act, 42 U.S.C. §§7401-7671q, As amended by the Clean Air Act Amendments of 1990, Pub. L. 101-549, Nov. 15, 1990, 104 Stat. 2399.
3. Final Program Environmental Impact Report Suggested Control Measure for Architectural Coatings, SCH No. 99062093, California Environmental Protection Agency, Air Resources Board, June 2000.
4. 1998 Architectural Coatings Survey Results Final Report, California Environmental Protection Agency, Air Resources Board, September 1999.
5. 2001 Architectural Coatings Survey Final Report, California Environmental Protection Agency, Air Resources Board, October 2003.
6. Regulating Air Emissions From Paint: A Model Rule for State & Local Air Agencies, State and Territorial Air Pollution Program Administrators/Association of Local Air Pollution Control Officials, 444 North Capital Street, NW, Suite 307, Washington, DC 20001, October 2000.
7. Model Rule Preamble: Architectural and Industrial Maintenance Coatings, Ozone Transport Commission, 444 N. Capital Street, N.W., Suite 638, Washington, DC 20001, February 26, 2002.
8. Control Measure Development Support Analysis of Ozone Transport Commission Model Rules, E.H. Pechan & Associates, Inc., 5528-B Hempstead Way, Springfield, VA 22151, March 31, 2001.

9. Regulation 41, Section 1, Architectural & Industrial Maintenance Coatings Rule Public Hearing Response Document, State of Delaware, Department of Natural Resources and Environmental Control, Division of Air & Waste Management, 715 Grantham Lane, New Castle, Delaware 19720, January 14, 2002, including Delaware Air Quality Management's Compliance Coatings Data, and transcripts from the State of Delaware Department of Natural Resources and Environmental Control Environmental Appeals Board Hearing.

10. Status Report Architectural Coatings Suggested Control Measure, California Environmental Protection Agency, Air Resources Board, June 2001.

11. Status Report Architectural Coatings Suggested Control Measure, California Environmental Protection Agency, Air Resources Board, December 2002.

12. Annual Status Report on Rule 1113 - Architectural Coatings, South Coast Air Quality Management District, 2000.

13. Annual Status Report on Rule 1113 - Architectural Coatings, South Coast Air Quality Management District, 2001.

14. Annual Status Report on Rule 1113 - Architectural Coatings, South Coast Air Quality Management District, July 12, 2002.

15. Annual Status Report on Rule 1113 - Architectural Coatings, South Coast Air Quality Management District, 2003.

16. Stakeholder meetings on architectural coatings:

July 11, 2000 OTC meeting with industry

November 8, 2000 OTC meeting with industry

January 18, 2001 OTC meeting with industry: Sherwin-Williams, NPCA

February 8, 2001 NJDEP meeting with industry: NJPC, Benjamin Moore, NPCA, Zinsser & Co.

June 12, 2001 Industry meeting at Rohm and Haas

August 27, 2001 NJDEP meeting with Sherwin-Williams

September 2002 and May 15, 2003 NJPC meetings with industry

September 4, 2003 NJDEP meeting with Sherwin-Williams

September 9, 2003 Public Hearing

17. Master Painter's Institute website: <http://www.paintinfo.com/mpii/>

18. Product Data Sheets found on the internet

Summary of Agency Initiated Changes:

In addition to the changes in the Response to Comments discussed above, the Department is making changes to the rules as described below.

The Department is adding language to N.J.A.C. 7:27-23.1(f) to list the states with architectural coatings rules that have VOC content limits identical to or more stringent than the

VOC content limits set forth at adopted N.J.A.C.7:27-23. The Department has added Pennsylvania, Maryland and New York because they have recently promulgated rules that meet the requirements.

The Department is adding a new subsection, N.J.A.C. 7:27-23.4(i), which identifies the methods by which retailers of architectural coatings in New Jersey may demonstrate compliance with the rules. As proposed, the rule allowed the Department to hold retailers accountable for the sale of non-compliant products. However, the intent of the rules is to prohibit someone from knowingly selling a non-compliant product. Products that do not meet the new VOC content limits may be sold after January 1, 2005 only if the products were manufactured prior to January 1, 2005. However, because a date-code representing the date of manufacture, instead of the actual date of manufacture, may be printed on the product label, retailers might not be able to readily determine if a product complies with the rules. After the proposal was published, the Department published a notice seeking input on the mechanisms by which retailers could demonstrate compliance. See 35 N.J.R. 4241(a); September 15, 2003. The Department received no comments related to this notice. On adoption, the Department has determined that it is appropriate to include in the rule the methods by which retailers would be able to demonstrate that they complied with the rules, should that question arise in specific cases or circumstances.

Federal Standards Analysis

Executive Order No. 27 (1994) and N.J.S.A. 52:14B-1 et seq. (P.L. 1995, c. 65) require State agencies that adopt, readopt or amend State regulations which exceed any Federal standards or requirements to include in the rulemaking document a Federal Standard Analysis.

The Department has performed a comparison of the adopted amendments to N.J.A.C. 7:27-23, Prevention of Air Pollution from Architectural Coatings and Consumer Products, to analogous Federal regulations, namely, 40 CFR §§59.100 to 59.413, National Volatile Organic Compound Emission Standards for Consumer and Commercial Products. These Federal regulations have been promulgated pursuant to the Federal Clean Air Act and set forth the substantive Federal standards. Based on its review of these Federal regulations, the Department has determined that the adopted amendments are more stringent than these Federal Standards.

Policy Discussion

The new rules and amendments are needed to fulfill a requirement, imposed by USEPA pursuant to the Federal Clean Air Act, 42 U.S.C. §§7401 et seq., that New Jersey adopt sufficient control measures to address additional VOC (ozone precursor) emission reductions identified by USEPA as being needed for New Jersey to attain the one-hour ozone standard by the mandated attainment dates of 2005 for the New Jersey portion of the Philadelphia non-attainment area and 2007 for the New Jersey portion of the New York non-attainment area. Therefore, adoption of these new rules and amendments is necessary for the State to comply with Federal requirements.

One of the options that the USEPA offered New Jersey, and several other states, in addressing the additional emission reductions was that the State work through the Ozone Transport Region (OTR) to develop a regional strategy regarding the measures necessary to meet the additional reductions identified. Certain OTR states were required to submit a State Implementation Plan (SIP) revision, which identified the control measures to be adopted to address the emission reduction shortfall by October 31, 2001. New Jersey complied with this requirement.

New Jersey worked with the Ozone Transport Commission (OTC) and other jurisdictions in the OTR to develop a set of control measures to meet the additional emission reduction requirements by the mandated attainment dates. The architectural coatings rules are one of the control measures identified by the OTC group. The control measures were selected based on their inventory emissions, potential emission reductions, technological feasibility of the proposal and timeliness of potential implementation. No other measures were found by the OTC that could substitute for those identified above and still meet the emission shortfall requirement. The VOC emission reductions from the architectural coating rules are the largest of the five VOC OTC rules, with approximately 41 percent of the total VOC emission reductions expected from the five VOC rules.

Cost Benefit Analysis

The amendments for architectural coatings would primarily impact manufacturers of architectural coatings including any person who hires another person to manufacture a coating for them. In order to comply with the rule, manufacturers may have to reformulate some of their products to meet the rule requirements or refrain from selling them in New Jersey for use in New Jersey. Distributors and suppliers will need to ensure proper distribution of products to the appropriate states. Also potentially affected are businesses that supply ingredients and equipment to these manufacturers, retailers, painting contractors and consumers.

As discussed in more detail in the Economic Impact statement in the rule proposal, the estimated producer (manufacturer) cost increase per gallon, based on the adopted New Jersey amendments, ranges from no cost to \$6.02 per reformulated gallon, with an average of about \$1.02 per gallon. The economic analysis concluded that most manufacturers of architectural coatings would be able to absorb the cost of the adopted amendments with no significant adverse economic impacts. The manufacturer may or may not choose to pass these costs on to the consumer. Based on an assumed multiplier of four (that is, the distributor doubles the purchase price from the manufacturer, and the retailer doubles the purchase price from the distributor), this translates to approximately a \$4.08 per gallon retail price increase, on average, if the costs were passed on to the consumer. With an average retail price ranging from about \$18.50 to about \$50.00 per gallon of non-compliant coating, the estimated average potential cost increase could equate to an eight percent to 22 percent retail price increase for reformulated coatings.

Companies that supply raw materials for existing non-compliant paints and coatings may experience a decline in demand for their products. On the other hand, those companies which supply resins, solvents, other chemicals and equipment for use in reformulating architectural coatings could potentially benefit from the adopted amendments as they experience an increase in demand for their products.

Distributors will need to ensure proper distribution of products to the appropriate states. The Department does not anticipate any significant adverse economic impacts for distributors. Persons who apply coatings for compensation, or painting contractors, must not purchase coatings from another state which has VOC content limits that exceed the adopted New Jersey VOC content limits, and then apply them in New Jersey. In addition, they must follow the thinning instructions on the label, so as not to exceed the adopted VOC content limits, and must keep containers closed when not in use. The Department does not anticipate any significant adverse economic impacts for painting contractors. Potential additional costs of the coatings used by contractors would be similar to the potential additional costs a consumer would

experience. As discussed above, the estimated potential average cost per gallon increase is \$4.08 per gallon of coating, retail. In addition, the potential consumer impact analysis concluded that prices for general use flat and non-flat paints (eggshell, satin, semi-gloss, gloss), which account for about 60 percent of the sales volume of architectural coatings, are not expected to change significantly as a result of the adopted amendments.

The Department anticipates the benefits of the adopted rule to be an increase in the quality of life and protection of human health, the environment and agriculture. The Department expects the adopted amendments to have a significant and positive environmental impact. The primary environmental benefit will be a reduction in the emission of VOCs, which are precursor emissions that lead to the formation of tropospheric (ground level) ozone. As discussed earlier, ground level ozone is breathed by people and animals and comes into contact with crops and other vegetation, as well as man-made structures and surfaces. This exposure can cause a variety of adverse effects. The rules are also expected to reduce emissions of hazardous air pollutants and toxic substances. In addition, the rule will reduce particulate matter of 2.5 microns or less equivalent aerodynamic diameter, some of which is created from VOC emissions. It is estimated that the adopted amendments will achieve a 31 percent reduction of the architectural coatings VOC emissions inventory, or approximately 25 tons per day in New Jersey in 2005.

As discussed in the proposal's Economic Impact statement, the estimated cost effectiveness of the adopted amendments for each product category ranges from no cost (net savings) to approximately \$7.65 per pound of VOC reduced, with an average for all of the categories analyzed of \$2.79 per pound of VOC reduced or \$5,580 per ton of VOC reduced.

In addition to the environmental and health benefits, economic benefits, which are difficult to quantify, may also be realized. Owners and employees of businesses will enjoy the environmental, health, and other social benefits of the new amendments. A reduction in air pollution will lead to healthier and more productive workers. The Department is proposing this rule to meet USEPA requirements. Failure to achieve these reductions could subject New Jersey to economic sanctions, which would adversely affect all businesses and taxpayers in the State.

Conclusion

In adopting these amendments, the Department has balanced the need to protect the environment and the public health and to comply with the USEPA requirements, against any economic impacts of the rule. Based on the research and surveys done by the CARB, the Department has determined that these amendments are achievable under current technology and are cost effective. The Department has determined that establishing these adopted amendments, even though more stringent than the Federal rule, is essential in order to meet the ozone precursor emission reduction requirements by the required attainment dates, and to protect the environment and the public health.

Full text of the adoption follows (additions to proposal indicated in boldface with asterisks ***thus***; deletions from proposal indicated in brackets with asterisks *[thus]*):

CHAPTER 27 AIR POLLUTION CONTROL

SUBCHAPTER 23. PREVENTION OF AIR POLLUTION FROM ARCHITECTURAL COATINGS

7:27-23.1 Applicability

- (a) This subchapter prescribes the rules of the Department for limiting the VOC content of, and using, architectural coatings.
- (b) As set forth at N.J.A.C. 7:27-17.4(c), this subchapter's requirements for the implementation of control measures, including, but not limited to, requirements for the installation and use of control apparatus, or the use of compliant coatings, shall apply with full force to Group II Toxic Substances (TXS).
- (c) Except as provided in (d) and (e) below, this subchapter is applicable to any person who:
 - 1. Manufactures, blends, repackages, supplies or distributes an architectural coating for sale within the State of New Jersey;
 - 2. Sells or offers for sale an architectural coating within the State of New Jersey; and
 - 3. Applies an architectural coating for compensation within the State of New Jersey.
- (d) The provisions of this subchapter shall not apply to:
 - 1. An architectural coating that is sold or manufactured for use outside of the State of New Jersey or for shipment to other manufacturers for reformulation or repackaging, provided that documentation indicating the final destination of such architectural coating shall be made available to representatives of the Department upon request;
 - 2. An aerosol coating product; or
 - 3. An architectural coating that is sold in a container with a volume of one liter (1.057 quart) or less.
- (e) The provisions of N.J.A.C. 7:27-23.3(a) shall not apply to any person who applies an architectural coating for compensation within the State of New Jersey provided that either (e)1 or (e) 2 below is met:
 - 1. The architectural coating was purchased from a location within the State of New Jersey or within a state, as identified at (f) below, that has an architectural coating rule with maximum allowable VOC content limits identical with or more stringent than New Jersey; or
 - 2. The coating was purchased and delivered by the manufacturer or distributor to a location in the State of New Jersey or to a state, as identified at (f) below, that has an architectural coating rule with maximum allowable VOC content limits identical with or more stringent than New Jersey. For a coating sold in this manner, it is the responsibility of the seller to ensure compliance with these rules.
- (f) The Department shall publish in the New Jersey Register a notice of administrative change revising the list of states below when any state promulgates maximum allowable

VOC content limits for architectural coatings that are identical with or more stringent than the VOC content limits set forth in this subchapter. This list is for informational purposes only. The most current list of states can be obtained from the Department's Office of Air Quality Management at 401 East State Street, 7th floor, P.O. Box 418, Trenton, New Jersey 08625-0418:

1. Delaware***[.]**;**
2. **Pennsylvania;**
3. **New York; and**
4. **Maryland.***

7:27-23.2 Definitions

The following words and terms, when used in this subchapter, have the following meanings, unless the context clearly indicates otherwise.

"All other architectural coatings" means any architectural coating which does not meet any of the other architectural coating definitions contained within this section.

"Adhesive" means a chemical substance that is applied for the purpose of bonding two surfaces together other than by mechanical means.

"Aerosol coating product" means a pressurized coating product containing pigments or resins that dispenses product ingredients by means of a propellant, and is packaged in a disposable can for hand-held application, or for use in specialized equipment for ground traffic/marketing applications.

"Antenna coating" means a coating formulated and recommended exclusively for application to equipment and associated structural appurtenances that are used to receive or transmit electromagnetic signals.

"Antifouling coating" means a coating formulated and recommended for application to submerged stationary structures and their appurtenances to prevent or reduce the attachment of marine or freshwater biological organisms. To qualify as an antifouling coating, the coating must be registered as an antifouling coating under the Federal Insecticide, Fungicide and Rodenticide Act, 7 U.S.C. § § 136 et seq.

"Appurtenance" means an accessory to a stationary structure coated at the site of installation, whether installed or detached, including but not limited to: bathroom and kitchen fixtures; cabinets; concrete forms; doors; elevators; fences; hand railings; heating equipment, air conditioning equipment, and other fixed mechanical equipment or stationary tools; lampposts; partitions pipes and piping systems; rain gutters and downspouts; stairways; fixed ladders; catwalks and fire escapes; and window screens.

"Architectural coating" means a coating to be applied at the site of installation to the following: stationary structures or their appurtenances, portable buildings, pavements, or curbs. This term does not include adhesives and coatings applied in shop applications or to non-stationary structures such as airplanes, ships, boats, railcars, and automobiles.

...

“BAAQMD” means the Bay Area Air Quality Management District, one of 35 air pollution control agencies in California, which regulate air quality in California by jurisdiction of the district, and are overseen by the California Air Resources Board (CARB).

“Bitumens” means black or brown materials including, but not limited to, asphalt, tar, pitch, and asphaltite that are soluble in carbon disulfide, consist mainly of hydrocarbons, and are obtained from natural deposits or as residues from the distillation of crude petroleum or coal.

"Bituminous coating" or "bituminous sealer" means a coating material, consisting mainly of hydrocarbons and soluble in carbon disulfide, that is obtained from natural deposits or as residue from the distillation of crude petroleum oils or of low grades of coal.

“Bituminous roof coating” means a coating that incorporates bitumens and that is formulated and recommended exclusively for roofing.

“Bituminous roof primer” means a primer that incorporates bitumens and that is formulated and recommended exclusively for roofing.

"Bond breaker" means a coating that is formulated and recommended for application between layers of concrete to prevent a freshly poured top layer of concrete from bonding to the layer over which it is poured.

“CARB” means the California Air Resources Board, which oversees all air pollution control efforts in California, including the activities of 35 independent local air districts. California state law vests CARB with direct authority to regulate pollution from motor vehicles, fuels, and consumer products.

“CARB SCM” means the California Air Resources Board Suggested Control Measure for Architectural Coatings, adopted June 22, 2000.

“CARB survey” means the California Air Resources Board’s 1998 Architectural Coatings Survey Results Final Report, dated September 1999, or any subsequent CARB survey, which is incorporated by reference herein. A copy of this survey can be found on the CARB website at <http://www.arb.ca.gov>.

“Calcimine recoater” means a flat solvent-borne coating formulated and recommended on its label specifically for recoating calcimine painted ceilings and other calcimine painted substrates.

“Coating” means a material applied onto or impregnated into a substrate for protective, decorative, or functional purposes. Such materials include, but are not limited to, paints, varnishes, sealers, and stains.

“Colorant” means a concentrated pigment dispersion in water, solvent, and/or binder that is added to an architectural coating after packaging in sale units to produce the desired color.

"Concrete curing compound" means a coating formulated and recommended for application to freshly poured concrete to retard the evaporation of water.

"Concrete surface retarder" means a mixture of retarding ingredients such as extender pigments, primary pigments, resin, and solvent that interact chemically with the cement to prevent hardening on the surface where the retarder is applied, allowing the retarded mix of cement and sand at the surface to be washed away to create an exposed aggregate finish.

"Conversion varnish" means a clear acid curing coating with an alkyd or other resin blended with amino resins and supplied as a single component or two-component product. Conversion varnishes produce a hard, durable, clear finish designed for professional application to wood flooring. The film formation is the result of an acid-catalyzed condensation reaction, affecting a transesterification at the reactive ethers of the amino resins.

...

"Distributor" means a person to whom a product is sold or supplied for the purpose of resale or distribution in commerce, except that manufacturers, retailers, and consumers are not distributors.

"Dry fog coating" means a coating formulated and recommended only for spray application such that overspray droplets dry before subsequent contact with incidental surfaces in the vicinity of the surface coating activity.

...

"Exempt compound" means a compound excluded under the definition of volatile organic compound (VOC) within this subchapter.

"Faux finishing coating" means a coating formulated and recommended as a stain or a glaze to create artistic effects including, but not limited to, dirt, old age, smoke damage, and simulated marble and wood grain.

"Fire-resistive coating" means an opaque coating formulated and recommended to protect the structural integrity, by increasing the fire endurance of interior or exterior steel and other structural materials, that has been fire tested and rated by a testing agency and approved by building code officials for use in bringing assemblies of structural materials into compliance with Federal, state, and local building code requirements. The fire-resistive coating and the testing agency must be approved by building code officials. The fire-resistive coating shall be tested in accordance with ASTM Designation E 119-00a, including any subsequent revisions, which is incorporated by reference at N.J.A.C. 7:27-23.4(e)2.

"Fire retardant coating" means a coating labeled and formulated to retard ignition and flame spread, that has been fire tested and rated by a testing agency and approved by building code officials for use in bringing building and construction materials into compliance with federal, state, and local building code requirements. The fire-retardant coating and the testing agency must be approved by building code officials. The fire-retardant coating shall be tested in accordance with ASTM Designation E 84-01, including any subsequent revisions, which is incorporated by reference at N.J.A.C. 7:27-23.4(e)1.

"Flat coating" means a coating that is not defined under any other definition in this subchapter and that registers a gloss of 15 or less on a glossmeter held at an 85 degree angle to the coated surface or less than five on a glossmeter held at a 60 degree angle, according to ASTM Designation D 523-89 (1999), including any subsequent revisions, which is incorporated by reference at N.J.A.C. 7:27-23.4(e)3.

"Floor coating" means an opaque coating that is formulated and recommended for application to flooring, including, but not limited to, decks, porches, steps, and other horizontal surfaces, that may be subjected to foot traffic.

"Flow coating" means a coating that is used by electric power companies or their subcontractors to maintain the protective coating systems present on utility transformer units.

"Form-release compound" means a coating formulated and recommended for application to a concrete form to prevent the freshly poured concrete from bonding to the form. The form may consist of wood, metal, or some material other than concrete.

"Formulation data" means a list of the materials used to create a coating based on information from the coating manufacturer, rather than on information from a coating test method used after the product is manufactured. Manufacturer's formulation data may include, but is not limited to, information on density, VOC content, and coating solids content.

...

"High temperature coating" means a high performance coating formulated and recommended for application to substrates exposed continuously or intermittently to temperatures above 204 degrees Centigrade (400 degrees Fahrenheit).

"Impacted immersion coating" means a high performance maintenance coating formulated and recommended for application to steel structures subject to immersion in turbulent, debris-laden water. These coatings are specifically resistant to high energy impact damage caused by floating ice or debris.

"Industrial maintenance coating" means a high performance architectural coating, including primers, sealers, undercoaters, intermediate coats, and topcoats, formulated for application to substrates exposed to one or more of the following extreme environmental conditions and labeled as specified in N.J.A.C. 7:27-23.5(b)3:

1. Immersion in water, wastewater, or chemical solutions (aqueous and non-aqueous solutions), or chronic exposures of interior surfaces to moisture condensation;
2. Acute or chronic exposure to corrosive, caustic, or acidic agents, or to chemicals, chemical fumes, or chemical mixtures or solutions;
3. Repeated exposure to temperatures above 121 degrees Centigrade (250 degrees Fahrenheit);

4. Repeated (frequent) heavy abrasion, including mechanical wear and repeated (frequent) scrubbing with industrial solvents, cleansers, or scouring agents; and/or
5. Exterior exposure of metal structures and structural components.

"Label" means anything functioning as a means of identification, such as any paper, plastic or printed inscription, placed on the container of a product.

"Lacquer" means a clear or opaque wood coating, including clear lacquer sanding sealers, formulated with cellulosic or synthetic resins to dry by evaporation without chemical reaction and to provide a solid, protective film.

"Lacquer, clear brushing" means a clear wood finish, excluding clear lacquer sanding sealers, that is formulated with nitrocellulose or synthetic resins to dry by solvent evaporation without chemical reaction and to provide a solid, protective film; intended exclusively for application by brush; and labeled as specified in N.J.A.C. 7:27-23.5(b)4.

"Low solids coating" means a coating containing 0.12 kilogram or less of solids per liter (one pound or less of solids per gallon) of coating material.

"Magnesite cement coating" means a coating formulated and recommended for application to magnesite cement decking to protect the magnesite cement substrate from erosion by water.

"Manufacturer" means a person who manufactures, imports, assembles, processes, produces, packages, repackages, or relabels a product. Manufacturer also includes any person for whom the product is manufactured, or by whom the product is distributed, if that person is identified as such on the product label. Manufacturer also includes any person that hires another person to manufacture a product for compensation.

"Manufacturers maximum recommendation" means the maximum recommendation for thinning that is indicated on the label or lid of the coating container.

"Mastic texture coating" means a coating, except waterproof mastic coatings, that is formulated and recommended to cover holes and minor cracks and to conceal surface irregularities, and is applied in a single coat of at least 10 mils (0.010 inch) dry film thickness.

"Metallic pigmented coating" means a coating containing at least 48 grams ***per liter (0.4 pounds per gallon) as applied*** of elemental metallic pigment ***[per liter of coating as applied (0.4 pounds per gallon)]****, **mica particles or any combination of metallic pigments and mica particles***, when tested in accordance with SCAQMD Method 318-95, including any subsequent revisions, which is incorporated by reference at N.J.A.C. 7:27-23.4(d)4.

"Multicolored coating" means a coating that exhibits more than one color when applied in a single coat and that is packaged in a single container.

"Non-flat coating" means a coating that is not defined under any other definition in this subchapter that registers a gloss of 15 or greater on a glossmeter held at an 85 degree angle to the coated surface or five or greater on a glossmeter held at a 60 degree angle, according to ASTM

Designation D 523-89 (1999), including any subsequent revisions, which is incorporated by reference at N.J.A.C. 7:27-23.4(d)3.

“Non-flat high gloss coating” means a non-flat coating that registers a gloss of 70 or above on a 60 degree meter according to ASTM Designation D 523-89 (1999), including any subsequent revisions, which is incorporated by reference at N.J.A.C. 7:27-24.4(e)3.

“Non-industrial use” means any use of architectural coatings except in the construction or maintenance of any of the following: facilities used in the manufacturing of goods and commodities; transportation infrastructure, including highways, bridges, airports and railroads; facilities used in mining activities, including petroleum extraction; and utilities infrastructure, including power generation and distribution systems, and water treatment and distribution systems.

“Nuclear coating” means a protective coating formulated and recommended to seal porous surfaces such as steel (or concrete) that otherwise would be subject to intrusion by radioactive materials. These coatings must be resistant to long-term (service life) cumulative radiation exposure (ASTM Method D 4082-02, Standard Test Method for Effects of Gamma Radiation on Coatings for Use in Light-Water Nuclear Power Plants, including any subsequent revisions, which is incorporated by reference at N.J.A.C. 7:27-23.4(e)8); relatively easy to decontaminate; and resistant to various chemicals to which the coatings are likely to be exposed (ASTM Method D 3912-95 (2001), Standard Test Method for Chemical Resistance of Coatings Used in Light-Water Nuclear Power Plants, including any subsequent revisions, which is incorporated by reference at N.J.A.C. 7:27-23.4(e)9).

...

“Post-consumer coating” means a finished coating that would have been disposed of, having completed its usefulness to a consumer, and does not include manufacturing wastes.

“Pre-treatment wash primer” means a primer that contains a minimum of 0.5 percent acid, by weight, when tested in accordance with ASTM Designation D 1613-02, including any subsequent revisions, which is incorporated by reference at N.J.A.C. 7:27-23.4(e)5, that is formulated and recommended for application directly to bare metal surfaces to provide corrosion resistance and to promote adhesion of subsequent topcoats.

“Primer” means a coating formulated and recommended for application to a substrate to provide a firm bond between the substrate and subsequent coats.

“Quick-dry enamel” means a non-flat coating that is labeled as specified in N.J.A.C. 7:27-23.5(b)7 and that is formulated to have the following characteristics:

1. It is capable of being applied directly from the container under normal conditions with ambient temperatures between 16 and 27 degrees Centigrade (60 and 80 degrees Fahrenheit);
2. When tested in accordance with ASTM Designation D 1640-95 (1999), including any subsequent revisions, which is incorporated by reference at N.J.A.C. 7:27-

23.4(e)6, it sets to touch in two hours or less, is tack free in four hours or less, and dries hard in eight hours or less by the mechanical test method; and

3. Has a dried film gloss of 70 or above on a 60 degree meter, in accordance with ASTM Designation D 523-89(1999), including any subsequent revisions, which is incorporated by reference at N.J.A.C. 7:27-23.4(e)3.

"Quick-dry primer, sealer, and undercoater" means a primer, sealer, or undercoater that is dry to the touch in 30 minutes and can be re-coated in two hours when tested in accordance with ASTM Designation D 1640-95 (1999), including any subsequent revisions, which is incorporated by reference at N.J.A.C. 7:27-23.4(e)6.

"Recommended" means, for coatings manufactured before January 1, 2005, recommended by the manufacturer either on the container label, in literature describing the product or on the manufacturer's website, and for coatings manufactured on or after January 1, 2005, recommended by the manufacturer on the coating container's label only.

"Recycled coating" means an architectural coating formulated such that not less than 50 percent of the total weight consists of secondary and post-consumer coating, with not less than 10 percent of the total weight consisting of post-consumer coating.

"Residence" means an area where people reside, dwell or lodge, including, but not limited to, single and multiple family dwellings, condominiums, townhomes, mobile homes, apartment complexes, motels, and hotels.

"Retailer" means any person who owns, leases, operates, controls, or supervises a retail outlet.

"Retail outlet" means any establishment at which products are sold, supplied, or offered for sale directly to consumers.

"Roof coating" means a non-bituminous coating formulated and recommended exclusively for application to roofs for the primary purpose of preventing penetration of the substrate by water or reflecting heat and ultraviolet radiation. Metallic pigmented roof coatings, that meet the definition of metallic pigmented coatings, shall not be considered roof coatings, but shall be considered metallic pigmented coatings.

"Rust preventive coating" means a coating formulated exclusively for non-industrial use to prevent the corrosion of metal surfaces and labeled as specified in N.J.A.C. 7:27-23.5(b)5. The coating may be used for industrial use, if the coating complies with the industrial maintenance coating VOC limit specified at N.J.A.C. 7:27-23.3(i) Table 1.

"Sanding sealer" means a clear or semi-transparent wood coating formulated and recommended for application to bare wood to seal the wood and to provide a coat that can be abraded to create a smooth surface for subsequent applications of coatings. A sanding sealer that also meets the definition of a lacquer, shall not be considered a sanding sealer, but shall be considered a lacquer.

“SCAQMD” means the South Coast Air Quality Management District, one of 35 air pollution control agencies in California, which regulate air quality in California by jurisdiction of the district, and are overseen by the California Air Resources Board (CARB).

“Sealer” means a coating formulated and recommended for application to a substrate for one or more of the following purposes: to prevent subsequent coatings from being absorbed by the substrate, or to prevent harm to subsequent coatings by materials in the substrate.

“Secondary coating (rework)” means a finished coating or a fragment of a finished coating from a manufacturing process that cannot be sold for the intended purpose and would otherwise be disposed of as a manufacturing waste.

"Shellac" means a clear or pigmented coating formulated solely with the resinous secretions of the lac beetle (*laccifer lacca*), thinned with alcohol, and dried by evaporation without a chemical reaction.

“Shop application” means application of a coating to a product or a component of a product in or on the premises of a factory or a shop as part of a manufacturing, production, or repairing process (for example, original equipment manufacturing coatings).

"Sign paint or graphic arts coating" means a coating formulated and recommended for hand-application by artists, using brush or roller techniques, to indoor and outdoor signs (excluding structural components) and murals including letter enamels, poster colors, copy blockers, and bulletin enamels.

“Specialty primer, sealer, and undercoater” means a coating that is formulated for application to a substrate to seal fire, smoke or water damage; to condition excessively chalky surfaces; or to block stains, and is labeled as specified in N.J.A.C. 7:27-23.5(b)6. An excessively chalky surface is one that is defined as having a chalk rating of four or less as determined by ASTM Designation D 4214-98, including any subsequent revisions, which is incorporated by reference at N.J.A.C. 7:27-23.4(d)7.

“Stain” means a clear, semi-transparent, or opaque coating formulated to change the color of a surface, but not conceal the grain pattern or texture.

"Substrate" means a material to which an architectural coating is applied.

"Swimming pool coating" means a coating formulated and recommended to coat the interior of swimming pools and to resist swimming pool chemicals.

“Swimming pool repair and maintenance coating” means a rubber-based coating formulated and recommended to be used over existing rubber-based coatings for the repair and maintenance of swimming pools.

“Temperature-indicator safety coating” means a coating formulated and recommended as a color-changing indicator coating for the purpose of monitoring the temperature and safety of a substrate, underlying piping, or underlying equipment, and for application to substrates exposed continuously or intermittently to temperatures above 204 degrees Centigrade (400 degrees Fahrenheit).

“Thermoplastic rubber coating and mastic” means a coating or mastic formulated and recommended for application to roofing or other structural surfaces, and that incorporates no less than 40 percent by weight of thermoplastic rubbers in the total resin solids and may also contain other ingredients including, but not limited to, fillers, pigments, and modifying resins.

"Tile-like glaze coating" means a coating that is formulated to provide a tough, extra durable coating system, applied as a continuous (seamless) high-build film, and that cures to a hard glaze finish.

“Tint base” means an architectural coating to which colorant is added after packaging in sale units to produce a desired color.

"Toxic substance" or "TXS" means a substance listed in Table 1 of N.J.A.C. 7:27-17.

"Traffic marking coating" means a coating formulated and recommended for marking and striping streets, highways, or other surfaces, including, but not limited to, curbs, berms, driveways, sidewalks, airport runways and parking lots.

“Undercoater” means a coating formulated and recommended to provide a smooth surface for subsequent coatings.

"Varnish" means a clear or semi-transparent wood coating, excluding lacquers and shellacs, formulated to dry, by chemical reaction, on exposure to air. Varnishes may contain small amounts of pigment to color a surface, or to control the final sheen or gloss of the finish.

...

“VOC content” means the weight of VOC per volume of coating, calculated according to the procedures specified in N.J.A.C. 7:27-23.4.

"Waterproof mastic coating" means a weatherproof or waterproof coating formulated to cover holes and minor cracks and to conceal surface irregularities that is applied in thicknesses of at least 15 mils.

“Waterproofing concrete/masonry sealer” means a clear or pigmented film-forming coating that is formulated and recommended for sealing concrete and masonry to provide resistance against water, alkalis, acids, ultraviolet light, and staining.

"Waterproofing sealer" means a coating formulated and recommended for application to a porous substrate for the primary purpose of preventing the penetration of water.

"Wood preservative coating" means a coating formulated and recommended to protect exposed wood from decay or insect attack, that is registered under the Federal Insecticide, Fungicide, and Rodenticide Act, 7 U.S.C. § 136 et seq.

7:27-23.3 Standards

- (a) Except as provided in N.J.A.C. 7:27-23.1(d) and (e) and (b), (c) and (h) below, no person shall manufacture, blend, repackage, supply or distribute for sale within the State of New Jersey; sell or offer for sale within the State of New Jersey; or apply for compensation within the State of New Jersey, any architectural coating manufactured after the operative date in (i) Table 1 below, and containing a VOC content in excess of the corresponding limit specified in (i) Table 1, below.
- (b) If anywhere on the container of an architectural coating, or on any label or sticker affixed to the container, or in any sales, advertising, or technical literature supplied by a manufacturer or anyone acting on their behalf, any representation is made that indicates that the coating meets the definition of or is recommended for use for more than one of the coating categories listed in (i) Table 1 below, then the most restrictive applicable VOC content limit shall apply. This provision does not apply to the following coating categories:
1. Antenna coating;
 2. Antifouling coating;
 3. Bituminous roof primer;
 4. Calcimine recoater;
 5. Concrete surface retarder;
 6. Conversion varnish;
 7. Fire-retardant coating;
 8. Flow coating;
 9. High-temperature coating;
 10. Impacted Immersion coating;
 11. Industrial maintenance coating;
 12. Lacquer coating (including lacquer sanding sealer);
 13. Low-solids coating;
 14. Metallic pigmented coating;
 15. Nuclear coating;
 16. Pretreatment wash primer;
 17. Shellac;
 18. Specialty primer, sealer, and undercoater;
 19. Temperature-indicator safety coating;
 20. Thermoplastic rubber coating and mastic ; and
 21. Wood preservative coating.
- (c) With the exception of any coating that does not display on its label the date of manufacture or date code as required by N.J.A.C. 7:27-23.5(a), any coating manufactured prior to the operative date of the VOC limit specified for that coating in (i) Table 1 below, that complied with the VOC content limits in effect at the time of its manufacture, may be:
1. Sold, supplied, or offered for sale before or after that specified operative date; or
 2. Applied at any time before or after that specified operative date.
- (d) All containers used in the direct application of an architectural coating by pouring, siphoning, brushing, rolling, padding, ragging, or other means, shall be closed when not

in use. These containers shall include, but are not limited to, drums, buckets, cans, pails or trays. Containers of VOC-containing materials used for thinning and cleanup shall also be closed when not in use.

- (e) No person, who applies an architectural coating for compensation, shall apply an architectural coating that has been thinned to the extent that it exceeds the applicable VOC limit specified in (i) Table 1 below.
- (f) No person, who applies an architectural coating for compensation, shall apply a rust preventive coating for industrial use, unless such rust preventive coating complies with the industrial maintenance coating VOC limit specified in (i) Table 1, below, regardless of the date of manufacture.
- (g) For any coating that cannot be classified under any of the specialty coating categories listed in (i) Table 1 below, the VOC content limit shall be determined by classifying the coating as a flat coating or a non-flat coating, based on its gloss, as defined in N.J.A.C. 7:27-23.2. The corresponding VOC content limit shall then apply.
- (h) Notwithstanding the provisions of (a) above, a person may add up to 10 percent by volume of VOC to a lacquer and then apply that lacquer, to avoid blushing of the finish, provided that:
 - 1. The relative humidity at the time of application is greater than 70 percent;
 - 2. The temperature at the time of application is below 65 degrees Fahrenheit;
 - 3. The coating contains acetone; and
 - 4. The coating contains no more than 550 grams of VOC per liter of coating, less water and exempt compounds, prior to the addition of VOC.
- (i) Table 1 contains the VOC content limits for architectural coatings:

Table 1			
VOC Content Limits for Architectural Coatings			
Coating Category	VOC Content ¹		
	State Limit Operative Date 2/28/90-12/31/04 ²		State Limit Operative Date 1/1/05
	Pounds VOC per gallon ³	Grams VOC per liter	Grams VOC per liter
Antenna coating			530
Anti-fouling coating			400
Bituminous pavement sealer	0.8	100	100
Bituminous roof coating			300
Bituminous roof primer			350
Bond breaker	5.0	600	350
Calcimine recoater			475
Concrete curing compounds	2.9	350	350
Concrete surface retarder			780
Conversion varnish			725
Dry fog coating	3.3	400	400
Faux finishing coating			350

NOTE: THIS IS A COURTESY COPY OF THIS RULE ADOPTION. THE OFFICIAL VERSION WAS PUBLISHED IN THE JUNE 21, 2004 NEW JERSEY REGISTER. SHOULD THERE BE ANY DISCREPANCIES BETWEEN THIS TEXT AND THE OFFICIAL VERSION OF THE ADOPTION, THE OFFICIAL VERSION WILL GOVERN.

Table 1			
VOC Content Limits for Architectural Coatings			
Coating Category	VOC Content ¹		
	State Limit Operative Date 2/28/90-12/31/04 ²		State Limit Operative Date 1/1/05
	Pounds VOC per gallon ³	Grams VOC per liter	Grams VOC per liter
Fire-resistive coating			350
Fire-retardant coating			
clear			650
opaque	4.2	500	350
all others	7.1	850	NA1
Flat coating	2.1	250	100
Floor coating			250
Flow coating			420
Form release compound			250
High temperature coating	5.4	650	420
Impacted immersion coating			780
Industrial maintenance coating	3.8	450	340
Lacquer, clear brushing	5.7	680	680
Lacquer (including lacquer sanding sealer)			550
Low solids coating			120
Magnesite cement coating			450
Mastic texture coatings	1.7	200	300
Metallic pigmented coatings	4.2	500	500
Multi-colored coating	5.0	600	250
Nonflat coating:	3.2	380	150
Nonflat high gloss coating			250
Nuclear coating			450
Pretreatment wash primer			420
Primer, Sealer, and Undercoater	2.9	350	200
Quick-dry enamel			250
Quick-dry Primer, Sealer, Undercoater	4.2	500	200
Recycled Coating			250
Roof coating	2.5	300	250
Rust preventative coating			400
Sanding sealer (other than lacquer sanding sealer)			350
Shellac			
clear	6.1	730	730
opaque	4.6	550	550
Sign paint (Graphic arts coating)	3.8	450	500
Specialty Primer, Sealer, and Undercoater			350
Stain			250
semitransparent	4.6	550	NA2
opaque	2.9	350	NA2
Swimming pool coating	5.0	600	340
Swimming pool repair and maintenance coating			340
Temperature-indicator safety coating			550
Thermoplastic rubber coating and mastic			550
Tile-like glaze coating	4.6	550	550
Traffic marking coating	2.1	250	150
Varnish	3.8	450	350

Table 1 VOC Content Limits for Architectural Coatings			
Coating Category	VOC Content ¹		
	State Limit Operative Date 2/28/90-12/31/04 ²		State Limit Operative Date 1/1/05
	Pounds VOC per gallon ³	Grams VOC per liter	Grams VOC per liter
Waterproofing sealer	5.0	600	250
Waterproofing concrete/masonry sealer			400
Waterproof mastic coating	2.5	300	NA3
Wood preservative coating	4.6	550	350
All other architectural coatings	2.1	250	NA4
Notes:			
1.	Limits are expressed in grams of VOC per liter or pounds of VOC per gallon of coating thinned to the manufacturer's maximum recommendation, excluding the volume of water, exempt compounds, or colorant added to tint bases. "Manufacturers maximum recommendation" means the maximum recommendation for thinning that is indicated on the label or lid of the coating container.		
2.	On or after January 1, 2005, the state limits operative February 28, 1990 will no longer be applicable.		
3.	Conversion factor: one pound VOC per gallon (U.S.) = 119.95 grams per liter.		
NA1.	The fire retardant "all others" category shall be "not applicable" and is being replaced with the "clear" category.		
NA2.	The "semi-transparent" and "opaque" stain categories shall be "not applicable" and are being replaced with one category "Stains."		
NA3.	The "Waterproof mastic coating" category shall be "not applicable" and is being replaced with the "Mastic texture coating" category.		
NA4.	The "All other architectural coating" category shall be "not applicable" and is being replaced with N.J.A.C. 7:27- 23.3(g).		

***(j) The provisions of (a) above shall not apply to an architectural coating if the coating and/or manufacturer has been granted a limited timeframe variance or exemption by another state or one of the California air quality management districts that has promulgated a rule substantially equivalent to, and that has product categories and VOC content limits identical to, N.J.A.C. 7:27-23. The variance or exemption shall be used in New Jersey to comply with this subchapter only if:**

- 1. The variance or exemption is in effect (the Department shall consider a variance to be in effect if the issuing agency deems the variance to be in effect);**
- 2. The product for which the variance or exemption is being used to comply with this subchapter meets the following:**
 - i. The product belongs to a category that is subject to a VOC content limit set in Table 1 in (i) above; and**

- ii. The VOC content limit promulgated for this product by the agency that issued the variance or exemption, is equal to the most stringent applicable VOC content limit in Table 1 in (i) above;**
- 3. Prior to relying on a variance or exemption for compliance with this subchapter, the manufacturer submits to the Department, at the address in (k) below, the following:**
 - i. A statement that, for a specified product that it manufactures, it intends to comply with this subchapter under a variance or exemption rather than meet the applicable VOC content standards in Table 1 in (i) above;**
 - ii. The brand name of the product, and the specific category in Table 1 in (i) above to which the product belongs;**
 - iii. A copy of the document(s) setting forth the variance or exemption; the issuing agency's approval; the issuing agency's conditions of its approval; and any documents from the issuing agency that subsequently modify or terminate its conditions of approval; documentation demonstrating compliance with the variance or exemption;**
 - iv. The number of gallons sold, in containers greater than 1 liter, annually, in New Jersey; and**
 - v. The VOC content of the coating; and**
- 4. The manufacturer includes in its electronic registration, submitted pursuant to N.J.A.C. 7:27-24.6(c), an indication that, for the specified product, it is complying with this subchapter under a variance or exemption.**
- (k) Information required to be submitted to the Department pursuant to (j)3 above shall be submitted to the following address:**

**Attn: Architectural Coating Variance
Bureau of Air Quality Planning
Department of Environmental Protection
P.O. Box 418
401 East State Street
Trenton, New Jersey 08625-0418***

7:27-23.4 Compliance provisions and test methods

- (a) For the purpose of determining compliance with the VOC content limits contained in N.J.A.C. 7:27-23.3(i) Table 1, the VOC content of a coating shall be determined by using the following procedures. The VOC content of a tint base shall be determined prior to the addition of any colorant which is added after packaging in sale units by a person other than the manufacturer.

1. For all coatings, with the exception of low solids coatings, the VOC content in grams of VOC per liter of coating, thinned to the manufacturer's maximum recommendation, excluding the volume of water and exempt compounds, shall be determined as follows:

$$\text{VOC Content} = (W_s - W_w - W_{ec}) / (V_m - V_w - V_{ec})$$

Where:

VOC content	= grams of VOC per liter of coating
W_s	= weight of volatiles, in grams
W_w	= weight of water, in grams
W_{ec}	= weight of exempt compounds, in grams
V_m	= volume of coating, in liters
V_w	= volume of water, in liters
V_{ec}	= volume of exempt compounds, in liters

2. For low solids (LS) coatings, the VOC content in units of grams of VOC per liter of coating, thinned to the manufacturer's maximum recommendation, including the volume of water and exempt compounds, shall be determined as follows:

$$\text{VOC Content (LS)} = (W_s - W_w - W_{ec}) / V_m$$

Where:

VOC Content (LS)	= grams of VOC per liter of low solids coating
W_s	= weight of volatile, in grams
W_w	= weight of water, in grams
W_{ec}	= weight of exempt compounds, in grams
V_m	= volume of coating, in liters

- (b) Except as provided at (c) and (d) below, the test methods at (b)1 through 5 below and the information specified at (b)6 below, shall, as applicable, be used to determine the physical properties of a coating in order to perform the calculations in (a) above:

1. The VOC content shall be determined using either:
 - i. The EPA Method 24, as set forth in Appendix A of 40 Code of Federal Regulations (CFR) Part 60, "Determination of Volatile Matter Content, Water Content, Density, Volume Solids, and Weight Solids of Surface Coatings," including any subsequent revisions thereto, which are incorporated herein by reference; or
 - ii. The SCAQMD Method 304-91 (Revised February 1996), "Determination of Volatile Organic Compounds (VOC) in Various Materials," SCAQMD "Laboratory Methods of Analysis for Enforcement Samples," including any subsequent revisions thereto, which are incorporated herein by reference;

2. The exempt compounds content shall be determined using SCAQMD Method 303-91 (Revised August 1996), "Determination of Exempt Compounds," SCAQMD "Laboratory Methods of Analysis for Enforcement Samples," including any subsequent revisions thereto, which are incorporated herein by reference (see N.J.A.C. 7:27-23.2, the definition for volatile organic compound for a list of the exempt (excluded) compounds to be used in the test method);
 3. The exempt compound content of compounds that are cyclic, branched, or linear completely methylated siloxanes shall be determined using BAAQMD Method 43, "Determination of Volatile Methylsiloxanes in Solvent-Based Coatings, Inks, and Related Materials," BAAQMD Manual of Procedures, Volume III, adopted November 6, 1996, including any subsequent revisions thereto, which are incorporated herein by reference (see N.J.A.C. 7:27-23.2, the definition for volatile organic compound for a list of the exempt (excluded) compounds to be used in the test method);
 4. The exempt compound content of parachlorobenzotrifluoride shall be determined using BAAQMD Method 41, "Determination of Volatile Organic Compounds in Solvent-Based Coatings and Related Materials Containing Parachlorobenzotrifluoride," BAAQMD Manual of Procedures, Volume III, adopted December 20, 1995, including any subsequent revisions thereto, which are incorporated herein by reference (see N.J.A.C. 7:27-23.2, the definition for volatile organic compound for a list of the exempt compounds to be used in the test method);
 5. Analysis of methacrylate multi-component coatings used as traffic marking coatings shall be conducted according to a modification of EPA Method 24, 40 CFR 59, subpart D, Appendix A "Determination of Volatile Matter Content of Methacrylate Multi component Coatings Used as Traffic Marking Coatings," (September 11, 1998), including any subsequent revisions thereto, which are incorporated herein by reference. This method shall not be used for methacrylate multi component coatings used for purposes other than as traffic marking coatings or for other classes of multi component coatings; or
 6. In addition to or instead of any of the test methods at (b)1 through 5 above, formulation data or any other reasonable means for predicting that the coating has been formulated as intended (for example, quality assurance checks, recordkeeping).
- (c) In addition to the test methods provided in (b) above, other test methods which have been demonstrated to the Department's satisfaction to provide results that are acceptable for purposes of determining compliance may be used upon receipt of written approval from the Department, after the Department has obtained approval from the EPA.
- (d) If there are any inconsistencies between the results of an EPA Method 24 test and any other means for determining VOC content, the EPA Method 24 results will govern, except when an alternative method is approved as specified in (c) above.

- (e) The following test methods shall be used to test a coating, subject to the provisions of this subchapter, to determine its applicable coating category pursuant to the definitions in N.J.A.C. 7:27-23.2:
1. The flame spread index of a fire-retardant coating shall be determined using the ASTM Designation E 84-01, "Standard Test Method for Surface Burning Characteristics of Building Materials," including any subsequent revisions thereto, which are incorporated herein by reference (see N.J.A.C. 7:27-23.2, the definition of fire-retardant coating);
 2. The fire-resistance rating of a fire-resistive coating shall be determined by ASTM designation E 119-00a, "Standard Test Methods for Fire Tests of Building Construction Materials," including any subsequent revisions thereto, which are incorporated herein by reference (see N.J.A.C. 7:27-23.2, the definition of fire-resistive coating);
 3. The gloss of a coating shall be determined using ASTM Designation D 523-89 (1999), "Standard Test Method for Specular Gloss," including any subsequent revisions thereto, which are incorporated herein by reference (see N.J.A.C. 7:27-23.2, the definitions of flat coating, non-flat coating, non-flat - high-gloss coating, and quick dry enamel);
 4. The metallic content of a coating shall be determined using SCAQMD Method 318-95, "Determination of Weight Percent Elemental Metal in Coatings by X-Ray Diffraction," SCAQMD "Laboratory Methods of Analysis for Enforcement Samples," including any subsequent revisions thereto, which are incorporated herein by reference (see N.J.A.C. 7:27-23.2, the definition of metallic pigmented coating);
 5. The acid content of a coating shall be determined using ASTM Designation D 1613-02, "Standard Test Method for Acidity in Volatile Solvents and Chemical Intermediates Used in Paint, Varnish, Lacquer and Related Products," including any subsequent revisions thereto, which are incorporated herein by reference (see N.J.A.C. 7:27-23.2, the definition of pre-treatment wash primer);
 6. The set-to-touch, dry-hard, dry-to-touch and dry-to-recoat times of a coating shall be determined using ASTM Designation D 1640-95 (1999), "Standard Methods for Drying, Curing, or Film Formation of Organic Coatings at Room Temperature," including any subsequent revisions thereto, which are incorporated herein by reference. The tack free time of a quick-dry enamel coating shall be determined using the Mechanical Test Method of ASTM Designation D 1640-95 (1999) (see N.J.A.C. 7:27-23.2, the definitions of quick dry enamel and quick-dry primer, sealer, and undercoater).
 7. The chalkiness of a surface shall be determined using ASTM Designation D 4214-98, "Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films," including any subsequent revisions thereto, which are incorporated herein by reference (see N.J.A.C. 7:27-23.2, the definition of specialty primer, sealer, and undercoater);

8. The resistance to long-term cumulative radiation exposure of a coating shall be determined using ASTM Designation D-4082-02, "Standard Test Method for Effects of Gamma Radiation on Coatings for Use in Light-Water Nuclear Power Plants," including any subsequent revisions thereto, which are incorporated herein by reference (see N.J.A.C. 7:27-23.2, the definition of nuclear coating); and
 9. The resistance to various chemicals to which the coatings are likely to be exposed in nuclear power plants shall be determined using ASTM Method D 3912-95 (2001), "Standard Test Method for Chemical Resistance of Coatings Used in Light-Water Nuclear Power Plants," including any subsequent revisions thereto, which are incorporated herein by reference (see N.J.A.C. 7:27-23.2, the definition of nuclear coating).
- (f) Upon the request of the Department, any manufacturer of a coating that is subject to the requirements of this subchapter shall test any of its coatings that are sold, offered for sale, held for sale, distributed, supplied, or manufactured for sale in New Jersey to determine the VOC content of the coating. Such testing shall be performed utilizing the methods in N.J.A.C. 7:27-23.4.
- (g) Upon the request of the Department, any manufacturer of a coating that is subject to the requirements of this subchapter shall provide to the Department product samples that are duplicates of samples tested in accordance with (f) above.
- (h) Test methods can be obtained as follows:
1. ASTM test methods can be purchased from American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, Pennsylvania 19428-2959. Telephone (610) 832-9585. Fax (610) 832-9555 or can be purchased from the ASTM website at [http:// www.ASTM.org](http://www.ASTM.org).
 2. SCAQMD test methods can be purchased from the South Coast Air Quality Management District, 21865 East Copley Drive, Diamond Bar, California 91765-0934. Telephone (909) 396-2162;
 3. BAAQMD test methods described can be purchased from the Bay Area Air Quality Management District, 939 Ellis Street, San Francisco, California 94109. Telephone (415) 749-4900; and
 4. EPA Test Method 24, which is located in 40 CFR, Chapter I, Part 60, Appendix A-7, can be downloaded from the following website:
http://www.access.gpo.gov/nara/cfr/cfrhtml_00/Title_40/40cfr60a_00.html.
- *(i) A retailer who sells or offers for sale in New Jersey an architectural coating that violates the VOC content limits at N.J.A.C. 7:27-23.3(a) may provide to the Department any of the following types of documentation with respect to its purchase of the coating product in question in order to demonstrate compliance with this subchapter:**

1. **Written communication between the retailer and the manufacturer(s) and distributor(s) that the retailer will accept only products for sale in New Jersey that comply with N.J.A.C. 7:27-23;**
2. **Written agreement(s) between the retailer and the manufacturer(s) and distributor(s) in which the manufacturer(s) and distributor(s) commit to supply to the retailer only products that comply with N.J.A.C. 7:27-23; or**
3. **Invoices, purchase orders and/or other contractual and billing documents that specify that the retailer will accept only products that comply with N.J.A.C. 7:27-23.***

7:27-23.5 Labeling requirements

- (a) The manufacturer of an architectural coating subject to this subchapter shall display on the coating container's label, bottom or lid, the date the coating was manufactured, or a date code representing the date of manufacture. If the manufacturer uses a date code for any coating, the manufacturer shall file an explanation of each code in accordance with N.J.A.C. 7:27-23.6(c).
- (b) The manufacturer of an architectural coating subject to this subchapter shall display the following information on the coating container label or lid:
 1. A statement of the manufacturer's recommendation regarding thinning of the coating, except that:
 - i. This requirement does not apply to the thinning of architectural coatings with water; and
 - ii. If thinning of the coating prior to use is not necessary, the recommendation must specify that the coating is to be applied without thinning;
 2. The maximum or the actual VOC content of the coating in accordance with N.J.A.C. 7:27-23.4, which includes the manufacturer's maximum recommendation for thinning, shall be provided as follows:
 - i. For a coating manufactured prior to January 1, 2005, the VOC content shall be displayed in grams of VOC per liter of coating or pounds of VOC per gallon of coating; and
 - ii. For a coating manufactured on or after January 1, 2005, the VOC content shall be displayed in grams of VOC per liter of coating;
 3. For an industrial maintenance coating, one or more of the following statements:
 - i. "For industrial use only";
 - ii. "For professional use only"; and/or

- iii. "Not for residential use" or "Not intended for residential use";
 4. For clear brushing lacquers manufactured on and after January 1, 2005, the statements "For brush application only" and "This product must not be thinned or sprayed" shall be prominently displayed;
 5. For rust preventative coatings manufactured on and after January 1, 2005, the statement "For metal substrates only" shall be prominently displayed;
 6. For a specialty primer, sealer, or undercoater manufactured on and after January 1, 2005, one or more of the following statements shall be prominently displayed:
 - i. "For blocking stains";
 - ii. "For fire-damaged substrates";
 - iii. "For smoke-damaged substrates";
 - iv. "For water-damaged substrates"; and/or
 - v. "For excessively chalky substrates";
 7. For a quick dry enamel manufactured on or after January 1, 2005, the following:
 - i. The statement "Quick dry" shall be prominently displayed; and
 - ii. A statement of the time it takes for the enamel to dry hard; and
 8. For a non-flat high gloss coating manufactured on or after January 1, 2005, the statement "High gloss" shall be prominently displayed.
- (c) For a coating manufactured on or after January 1, 2005, the manufacturer of an architectural coating, that is "formulated and recommended" for a specific use as specified in the definition of the particular architectural coating in N.J.A.C.7:27-23.2, shall display such recommended use on the coating container's label.
- (d) Prior to January 1, 2005 only, the provisions of this subchapter shall not apply to any architectural coating registered under the Federal Insecticide, Fungicide, and Rodenticide Act, 7 U.S.C. § § 136 et seq., provided that:
1. The manufacturer has filed an application for any registration amendment necessary for compliance with this subchapter with EPA;
 2. A copy of this application was submitted by the manufacturer to the Assistant Director, Enforcement Element, Division of Environmental Quality, PO Box 027, Trenton, New Jersey 08625-0027 by August 31, 1990;

3. Within 30 calendar days of receipt of notice of EPA action on an amendment request, a copy of that notice was supplied to the Assistant Director, Enforcement Element, at the address specified above; and
4. Within 180 calendar days of the receipt of an approval of any necessary change, the manufacturer began use of the complying product or label.

7:27-23.6 Administrative and reporting requirements

- (a) Each manufacturer and distributor of an architectural coating subject to N.J.A.C. 7:27-23.3 shall include on the invoice, bill of lading, or other shipping document provided to the distributor or retailer receiving the product in New Jersey a statement indicating that the architectural coatings included on that shipping document and subject to N.J.A.C. 7:27-23.3, shipped by that manufacturer or distributor for sale in New Jersey, are in compliance with this subchapter. These documents shall be maintained by the manufacturer, distributor and/or retailer for no less than five years and shall be made available by the document recipient to the Department or its representatives upon request.
- (b) For a coating that is sold or manufactured in New Jersey for use outside of New Jersey, or for shipment to other manufacturers for reformulation or repackaging, documentation indicating the final destination of the coating shall be made available to the Department or its representatives upon request. These documents shall be maintained by the manufacturer, distributor and/or retailer for no less than *[five]* **three** years and shall be made available by the document recipient to the Department or its representatives upon request.
- (c) A manufacturer who uses a date code on the coating container, in lieu of using the date of manufacture on the container, ***or a manufacturer who is complying with this subchapter with the use of a limited timeframe variance or exemption in accordance with N.J.A.C. 7:27-23.3(j),*** shall submit a registration with the Department as follows:
 1. The information shall be submitted electronically, unless:
 - i. Electronic submission would impose hardship on the manufacturer; and
 - ii. The Department approves a request from the manufacturer to submit the information on paper pursuant to (c)7 below;
 2. The registration shall be submitted to the Department in accordance with guidance on the Department's website at <http://www.state.nj.us/dep/baqp>.
 3. The registration shall be submitted in accordance with the following schedule:
 - i. For a coating sold in New Jersey prior to January 1, 2005, the registration shall be submitted on or after *[the effective date of this rule]* **July 20, 2004** and prior to January 1, 2005; and

- ii. For a coating sold in New Jersey on or after January 1, 2005, that was not sold in New Jersey prior to January 1, 2005, the registration shall be submitted prior to selling the coating in New Jersey;
4. A manufacturer who, after the submission of its registration, begins to manufacture a coating for sale in New Jersey which changes the original registration information, or if any of the information provided in the registration changes, shall submit a revised registration including the new information within 90 days of the change.
5. The information shall include the following:
 - i. The name of the manufacturer;
 - ii. The full mailing address of the manufacturer;
 - iii. The name, telephone number and email address of a contact person;
[and]
 - iv. date code explanation for each coating*.[.]* **and**
 - v. If the manufacturer is, for any product, complying with the requirements of this subchapter through a variance or exemption, the following:**
 - (1) The product brand name;**
 - (2) The category in N.J.A.C. 7:27-23.3(i) Table 1 to which the product belongs; and**
 - (3) The state or California air quality management district that approved the variance or exemption and the approval date;***
6. Notwithstanding (i) below, any information submitted as part of the registration pursuant to this subsection shall not be claimed to be confidential, including under the procedures set forth at N.J.A.C. 7:27-1.6 through 1.29; and
7. A manufacturer who claims that electronic submission of its registration will impose a hardship shall submit a request to the Department to submit its registration on paper, rather than electronically, as follows:
 - i. The request shall include an explanation of the hardship that electronic submission would impose on the manufacturer;
 - ii. The Department shall not approve a manufacturer's request to submit its registration on paper unless the Department is satisfied that electronic submission would impose hardship on the manufacturer.

- iii. The manufacturer shall submit the request to the Department at the following address:

Attn: Architectural Coating Registration
Bureau of Air Quality Planning
Department of Environmental Protection
P.O. Box 418
401 East State Street
Trenton, New Jersey 08625-0418

- (d) Upon request, a manufacturer of an architectural coating shall submit to the Department a report concerning the coatings it sold in New Jersey which are subject to this subchapter. Such report shall be submitted within 90 days of the request. The request may include any or all of the following:

- 1. The name of the manufacturer;
- 2. The full mailing address of the manufacturer;
- 3. The name and telephone number of a contact person;
- 4. The name of each coating as described on its label;
- 5.. The category of each coating sold;
- 6. Whether the coating is marketed for interior or exterior purposes;
- 7. The color category of each coating (such as white, pastel, medium or deep base for flat and non-flat coatings, and clear, semi-transparent or opaque for stains and varnishes);
- 8. The number of gallons sold in containers greater than 1 liter;
- 9. The number of gallons sold in containers less than or equal to 1 liter;
- 10. A list of VOC's used in each coating;
- 11. A list of exempt compounds used in the coating; and
- 12. The following information (as defined in the CARB 1998 Architectural Coatings Survey Results Final Report, September 1999, or subsequent CARB surveys, which is incorporated by reference herein and which can be found by accessing the CARB website):

- i. The actual and regulatory VOC content (as defined in the CARB survey) in grams per liter. If products less than or equal to one liter have a different VOC content, list them separately;
- ii. The actual and regulatory VOC content in grams per liter after recommended thinning. If products sold in containers less than or equal to one liter have a different VOC content list them separately; and
- iii. The percent by volume solids.

- (e) Records sufficient to provide the information listed in (d) above shall be maintained by each manufacturer for a minimum of *[five]* **three*** years.

- (f) Each manufacturer of a coating subject to a VOC content limit in this subchapter shall keep records demonstrating compliance with the applicable VOC content limit. Such records shall consist of the results of testing and/or calculations in accordance with N.J.A.C. 7:27-23.4. These records are required to be kept by the manufacturer for a

period of at least five years. Such records shall be made available by the manufacturer to the Department or its representatives within 30 days of the Department's request.

- (g) If the Department requests any manufacturer of an architectural coating to test any of its coatings that are sold, offered for sale, held for sale, distributed, supplied, or manufactured for sale in New Jersey to determine the VOC content of the coating, the manufacturer shall submit the test report to the Department within 30 days of the receipt of the request from the Department.
- (h) A person who holds for sale, offers for sale, or sells any coating subject to this subchapter shall, upon request, identify to the Department or its representatives, the distributor or company from whom the coating was obtained.
- (i) Except as provided at (c)6 above, any person who is required to submit information to the Department pursuant to this subchapter may assert a confidentiality claim for that information in accordance with N.J.A.C. 7:27-1.6. The Department will process and evaluate confidentiality claims and treat information claimed to be confidential in accordance with N.J.A.C. 7:27-1.6 through 1.29.

(j) Variance or exemption documentation shall be submitted to the Department in accordance with N.J.A.C. 7:27-23.3(j).

7:27-23.7 Inspections

- (a)-(b) (No change)
- (c) Owners or operators, and any employees or representatives thereof, of any distribution facility, retail outlet or any person who applies coatings for compensation shall assist and shall not hinder or delay the Department and its representatives in the performance of all aspects of any inspection. Such assistance shall include providing any equipment necessary for access to all stock to allow the obtaining of samples by the Department to determine the nature and quantity of architectural coating being provided, stored, transported, exchanged in trade, sold, or offered for sale. In cases in which sampling equipment necessary to conduct sampling at the facility or sampling facilities to determine the nature and quantity of architectural coating at the facility are available on site, these equipment or facilities shall be made available for Department use.

7:27-23.8 Penalties for failure to comply

- (a) Any person subject to this subchapter shall be responsible for ensuring compliance with all requirements of this subchapter. Failure to comply with any provision of this subchapter may subject the person to civil penalties in accordance with N.J.A.C. 7:27A-3 and applicable criminal penalties, including, but not limited to, those set forth at N.J.S.A. 26:2C-19(f)1 and 2.
- (b) If a product that is subject to this subchapter is determined to fail to comply with the applicable VOC content requirements at N.J.A.C. 7:27-23.3, the Department may issue an order including any or all of the following:

1. Requiring the product's manufacturer to:
 - i. Demonstrate to the satisfaction of the Department that the product in fact complies with the applicable VOC content requirements at N.J.A.C. 7:27-23.3;
 - ii. Demonstrate to the satisfaction of the Department that the test results or calculations for that specific unit are not representative of the entire batch, or entire product line of that unit; and/or
 - iii. Within 30 days of the submission of the test report to the Department, recall its non-complying product from all retail outlets in New Jersey;
2. Requiring any distributor or supplier of the product to assist in a recall by taking back any of the product it has supplied to a retail outlet; and/or
3. Prohibiting the sale of the product in New Jersey until the manufacturer makes a demonstration, satisfactory to the Department, that the product to be sold will meet the applicable VOC content requirements at N.J.A.C. 7:27-23.3.

**CHAPTER 27A
AIR ADMINISTRATIVE PROCEDURES AND PENALTIES**

SUBCHAPTER 3 CIVIL ADMINISTRATIVE PENALTIES AND REQUESTS FOR JUDICATORY HEARINGS

7:27A-3.10 Civil administrative penalties for violation of rules adopted pursuant to the Act

(a) - (l) (No change.)

(m) The violations of N.J.A.C. 7:27 and the civil administrative penalty amounts for each violation are as set forth in the following Civil Administrative Penalty Schedule. The numbers of the following subsections correspond to the numbers of the corresponding subchapter in N.J.A.C. 7:27. The rule summaries for the requirements set forth in the Civil Administrative Penalty Schedule in this subsection are provided for informational purposes only and have no legal effect.

CIVIL ADMINISTRATIVE PENALTY SCHEDULE

1. - 22. (No change.)

23. The violations of N.J.A.C. 7:27-23, Prevention of Air Pollution from Architectural Coatings, and the civil administrative penalty amounts for each violation are as set forth in the following table:

Citation	First Offense	Second Offense	Third Offense	Fourth and Each Subsequent Offense
N.J.A.C. 7:27-23.3(a) Standards				
CLASS: Manufacturer, Distributor, Seller, Applier for Compensation				
Per Gallon or any part thereof:				
1. Less than 25 percent over the allowable standard	\$300	\$600	\$1,500	\$4,500
2. From 25 through 50 percent over the allowable standard	\$600	\$1,200	\$3,000	\$9,000
3. Greater than 50 percent over the allowable standard	\$1,000	\$2,000	\$5,000	\$15,000

Citation	Class	First Offense	Second Offense	Third Offense	Fourth and Each Subsequent Offense
N.J.A.C. 7:27-23.3(d) Painting Practices	Applier for Compensation	\$500	\$1,000	\$2,500	\$7,500
N.J.A.C. 7:27-23.3(e) Thinning	Applier for Compensation	\$500	\$1,000	\$2,500	\$7,500
N.J.A.C. 7:27-23.3(f) Rust Preventative Coatings	Applier for Compensation	\$500	\$1,000	\$2,500	\$7,500

NOTE: THIS IS A COURTESY COPY OF THIS RULE ADOPTION. THE OFFICIAL VERSION WAS PUBLISHED IN THE JUNE 21, 2004 NEW JERSEY REGISTER. SHOULD THERE BE ANY DISCREPANCIES BETWEEN THIS TEXT AND THE OFFICIAL VERSION OF THE ADOPTION, THE OFFICIAL VERSION WILL GOVERN.

Citation	Class	First Offense	Second Offense	Third Offense	Fourth and Each Subsequent Offense
N.J.A.C. 7:27-23.4(f) Request For Analysis	Manufacturer	\$2,000	\$4,000	\$10,000	\$30,000
N.J.A.C. 7:27-23.4(g) Duplicate Samples	Manufacturer	\$2,000	\$4,000	\$10,000	\$30,000
N.J.A.C. 7:27-23.5 Labeling	Manufacturer	\$2,000	\$4,000	\$10,000	\$30,000
N.J.A.C. 7:27-23.6(a) Shipping Documentation, In State	Manufacturer, Distributor, Seller	\$4,000	\$8,000	\$20,000	\$50,000
N.J.A.C. 7:27-23.6(b) Shipping Documentation, Out of State	Manufacturer, Distributor, Seller	\$4,000	\$8,000	\$20,000	\$50,000
N.J.A.C. 7:27-23.6(c) Date Code Registration	Manufacturer	\$500	\$1,000	\$2,500	\$7,500
N.J.A.C. 7:27-23.6(d) Product Reporting	Manufacturer	\$4,000	\$8,000	\$20,000	\$50,000
N.J.A.C. 7:27-23.6(e) & (f) Records	Manufacturer	\$4,000	\$8,000	\$20,000	\$50,000
N.J.A.C. 7:27-23.6(g) Testing Reporting	Manufacturer	\$4,000	\$8,000	\$20,000	\$50,000
N.J.A.C. 7:27-23.6(h) Distributor Identification	Manufacturer, Distributor, Seller, Applier for Compensation	\$8,000	\$16,000	\$40,000	\$50,000
N.J.A.C. 7:27-23.7 Inspections	Manufacturer, Distributor, Seller, Applier for Compensation	\$10,000	\$25,000	\$50,000	\$50,000
N.J.A.C. 7:27-23.8(b) Recall	Manufacturer, Distributor, Seller	\$10,000	\$25,000	\$50,000	\$50,000

24. - 31. (No change.)
(n) - (p) (No change.)