SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

Final Staff Report for Proposed Amended Rule 1171 - Solvent Cleaning Operations

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EXECUTIVE SUMMARY

Proposed Amended Rule (PAR) 1171 – Solvent Cleaning Operations will delay by ~~one year~~ 18 months the implementation of the 100 gram per liter VOC limit scheduled for July 1, 2006 for the cleaning of ink application equipment used in screen printing, lithographic/letterpress printing (except newsprint), and clean-up of ink application equipment using ultraviolet or electron beam (UV/EB) inks. The technology assessments to support the limits for these cleaning applications are still on-going. Although field testing of potential alternative cleaning materials has been completed, additional time is necessary for AQMD and the industry to evaluate the results of the technology assessment. Furthermore, the ~~one year~~ 18-month delay will allow extra time for further testing and industry transition to the new cleaning materials.

Additionally, PAR 1171 will extend by ~~one year~~18 months the limited exemption for the cleaning of metering rollers, dampening rollers and printing plates. The on-going technology assessment includes testing of alternative cleaners for these press components. Staff is also proposing to raise the VOC limit for solvents used in automatic roller and blanket clean up systems from 500 to 650 grams per liter until ~~June 30~~December 31, 2007. The VOC limit of 100 grams per liter effective ~~July~~January 1, 200~~7~~8 remains the same.

For ink application equipment used for lithographic printing on newsprint (i.e. newspaper), staff proposes to implement the 100 gram per liter VOC limit for clean-up solvents starting July 1, 2006. The expected net emission reduction in 2006 is about 0.04 tons per day.

The proposed amendments to Rule 1171 will delay by ~~one year~~18 months the emission reduction of 2.48 tons per day expected in 2006 from lithographic/letterpress printing (except newsprint), screen printing, and UV/EB inks. This emission reduction is the remainder of the Tier II reductions of 9 tons per day originally projected during the 1999 rule amendment. The rule amendments in August 2002 and May 2005 achieved most of the Tier II emission reductions with the completion of several technology assessments. Other proposed amendments include:

- addition of clarifying language to the exemption for aerosol products;
- establishing a new completion date for the technology assessments; and
- removal of outdated rule requirements.

BACKGROUND

Rule 1171 – Solvent Cleaning Operations, a key component of South Coast Air Quality Management District's (AQMD) ozone reduction strategy, was adopted on August 2, 1991 to reduce VOC emissions from the use of solvents and solvent wastes generated during the production, repair, maintenance, or servicing of products, tools, machinery, and general work areas. Subsequent rule amendments expanded the scope of the rule to cover all solvent cleaning activities at all facilities.

In October 1999, Rule 1171 established a two-tiered approach in lowering the VOC content limits for all solvent cleaning activities. Tier I was implemented on December 1, 2001 and reduced VOC emissions from solvent cleaning activities by 6 tons per day. The Tier II VOC limits had an original implementation date of July 1, 2005, but subject to completion of

technology assessments to determine feasibility of such limits. The projected VOC emission reduction for Tier II limits was 9 tons per day.

During the past few years, AQMD implemented most of the Tier II VOC limits in Rule 1171. In August 2002, Rule 1171 was amended to accelerate the reduction of 1.94 tons per day of VOC emissions from general solvent cleaning activities by two and one-half years starting in 2003. During that time, many available low-VOC cleaning materials were already meeting the Tier II VOC limit of 25 grams per liter for general cleaning applications. As a result, the compliance date for the Tier II VOC limit for this cleaning application was advanced to January 1, 2003.

In August 2003, the technology assessments for several cleaning categories affected by Tier II limits had been completed. These cleaning categories included the cleaning of electrical apparatus/electronic components and coating/adhesive application equipment. The study concluded that new and existing low-VOC cleaning technologies that meet the Tier II limits could be used for these cleaning applications. Based on this information, AQMD implemented the Tier II limits for cleaning of electrical apparatus/electronic components and coating/adhesive application equipment.

With the implementation of most of the Tier II limits, the only remaining VOC limits are those established for the cleaning of ink application equipment used for lithography/letterpress, screen printing, and UV/EB inks. The May 2005 amendment of Rule 1171 extended to July 1, 2006 the compliance date for the Tier II VOC limits for these remaining cleaning applications. Extended field testing was needed to determine any compatibility problems associated with the use of alternative cleaners over an extended time period.

In addition to extending the compliance date, the May 2005 amendment established an interim VOC limit of 500 grams per liter beginning July 1, 2005 for cleaning of lithographic/letterpress, screen printing, and UV/EB ink application equipment. As a result, the amount of delayed emission reductions was limited to 2.52 tons per day. However, one should note that the transition to the 500 grams per liter limit was not challenge-free. During the first few months following the implementation of the interim VOC limit, the printing industry reported difficulties in finding compliant solvents that would meet their cleaning requirements. This was a surprise, especially since the printing industry and solvent formulators gave the AQMD assurance that compliant products were available at the time the interim limits were established in May 2005. Additionally, the printing industry did not anticipate performance problems with the use of cleaning materials that were meeting the 500 gram per liter VOC limit.

In coordination with the industry's association, Printing Industries of California (PIC), AQMD staff visited 21 facilities to investigate the reported problems associated with the use of the 500 gram per liter cleaning materials. (An additional 5 facilities that were involved in the technology assessment were also visited to assess the performance of potential low-VOC cleaning materials that meet the future VOC limit of 100 grams per liter.) Staff's extensive field evaluations and contacts with individual press operators revealed serious performance issues associated with the first generation of reformulated products (500 g/l or less VOC) made available immediately after the July 1, 2005 effective date. Some of the printers' complaints included: inability of the press to ink up mainly due to the oily residue left on rollers and blankets since the new cleaners (mostly soy-based) do not evaporate as fast as the high-VOC cleaners; significantly longer cleaning times; and print quality problems due to residue build-up

and the contamination of fountain solution over a period of time. However, new cleaner formulations have progressively improved and printers now have a better feel of the cleaning materials that meet the 500 gram per liter VOC limit. Currently, the printers' remaining concerns center on the oily residue and longer cleaning times as a result of using the reformulated solvents. In addition, facilities continue to test other products to find the one that works best for their process.

As discussed earlier, implementation of the Tier II VOC limits for the cleaning of ink application equipment used for lithographic/letterpress, screen printing, and UV/EB inks is dependent on the completion of a technology assessment. During the May 2005 amendment, staff anticipated that the study would be completed by November 2005. Unforeseen circumstances caused a delay in the completion of the technology assessments. As of today, field testing (including extended testing) of potential alternative cleaning materials has been completed. A draft report presenting the results of the testing program has recently been submitted for staff review. Because of the delay in the completion of the technology assessment, staff believes that implementing the Tier II VOC limits beginning July 1, 2006 is not feasible since the technology to support these VOC limits will likely not be reasonably available by the compliance date. Extending the Tier II compliance date for ~~another year~~18 months is appropriate in order to give AQMD and industry additional time to evaluate the results of the technology assessment. In addition, the ~~one year~~18-month delay will allow sufficient time for industry to further test and transition to the new cleaning materials.

For lithographic printing on newsprint (i.e., newspaper), staff is proposing to implement the 100 gram per liter VOC limit for roller wash, blanket wash, and on-press components beginning July 1, 2006. Test results at newspaper facilities that participated in the technology assessment indicate that the 100 gram per liter limit for clean-up solvent is feasible. Currently, many of these facilities have successfully converted to alternative cleaning materials that meet the 100 gram per liter VOC limit. Furthermore, another contractor involved in the technology assessment reported that one of the benchmark materials currently used by printers for lithographic printing on newsprint already meets the Tier II limit of 100 grams per liter for clean-up solvents. The successful use of these low-VOC solvents indicates that these cleaning materials are already technically and economically feasible for this printing application.

LEGISLATIVE AUTHORITY

The California Legislature created the South Coast Air Quality Management District (AQMD) in 1977 (The Lewis-Presley Air Quality Management Act, Health and Safety Code Section 40400 et seq.) as the agency responsible for developing and enforcing air pollution control rules and regulations in the South Coast Air Basin (Basin). By statute, the AQMD is required to adopt an Air Quality Management Plan (AQMP) demonstrating compliance with all state and federal ambient air quality standards for the Basin [California Health and Safety Code Section 40460(a)]. Furthermore, the AQMD must adopt rules and regulations that carry out the AQMP [California Health and Safety Code Section 40440(a)].

RULE PROPOSAL

The following summarizes the proposed amendments to Rule 1171:

1. Delay the VOC compliance date for cleaning of certain ink application equipment, clauses (c)(1)(D)(iv) thru (c)(1)(D)(vi)

Staff is proposing to delay by ~~one year~~18 months the compliance date for the use of solvents with VOC content of 100 grams per liter or less for cleaning ink application equipment used in lithographic/letterpress printing (except newsprint), screen printing, and UV/EB inks. The new compliance date is ~~July~~January 1, 200~~7~~8.

The technology assessments to support the limits for these cleaning applications are still on-going. Although field testing (including extended testing) of potential alternative cleaning materials has been completed, additional time is necessary for AQMD and the industry to evaluate the results of the technology assessment. Furthermore, the ~~one-year~~ 18-month delay will allow sufficient time for industry to further test and transition to the new cleaning materials.

For lithographic printing on newsprint, staff is proposing to implement the 100 gram per liter VOC limit for roller wash, blanket wash, and on-press components. Many facilities have successfully converted to alternative cleaning materials that meet the 100 gram per liter VOC limit.

The proposed VOC limits for the affected solvent cleaning activities are shown in Table 1. Staff has combined the categories Roller Wash - Step 1 and Roller Wash – Step 2 into one category (Roller Wash) since both roller washes now have the same VOC limits. Furthermore, separate subcategories for newsprint and "other substrates" are being added to reflect the appropriate VOC limits.

Table 1 - Proposed VOC Content Limits for Rule 1171

Solvent Cleaning Activity	Current VOC Limits (grams/liter)	July 1, 2006 VOC Limits (grams/liter)	~~July 1, 2007~~ January 1, 2008 VOC Limits (grams/liter)
(iv) Litho/Letterpress			
(A) Roller/Blanket Wash & On-Press Comp			
(I) Newsprint	500	100	100
(II) Other Substrates	500	500	100
(v) Screen Printing	500	500	100
(vi) Ultraviolet/Electron Beam Inks	500	500	100

2. Amend the definition section, subdivision (b)

Staff's proposal will add a definition for newsprint to clarify rule intent.

3. Establish new completion date for technology assessment, subdivision (d)

Staff is proposing a new date of September 1, 2006 for the completion of technology assessments for the clean-up of lithographic/letterpress printing, screen printing, and UV/EB ink application equipment.

4. Clarify the exemption for aerosol products, paragraph (h)(4)

During the review of Rule 1171 as amended in May 2005, CARB expressed concern that the exemption provided in Rule 1171 for the use of non-compliant aerosol products may be misinterpreted to include those products that do not meet CARB regulations. In order to address this concern, staff is proposing to add language to clarify that the aerosol products under the exemption are still subject to CARB regulations, and the use of such products must comply with the appropriate CARB regulations.

5. Extend the exemption for the cleaning of metering rollers, dampening rollers and printing plates, paragraph (h)(7)

Staff is proposing to extend by ~~one year~~18 months the limited exemption for cleaning of metering rollers, dampening rollers and printing plates. The on-going technology assessment includes testing of alternative cleaners for these press components.

6. Add a limited exemption for automatic roller and blanket cleaning systems, paragraph (h)(8)

In response to comments received during the public workshop, staff is proposing to exempt from certain VOC requirements of the rule those solvents used in automatic roller and blanket clean up systems provided the clean-up solvent used for such cleaning contains no more than 650 grams of VOC per liter of material. This limited exemption applies only to lithographic/letterpress printing (except newsprint) and UV/EB inks, and expires after ~~June 30~~December 31, 2007. The VOC limit for clean up solvents used in manual (hand wipe) cleaning of rollers and blankets remains at 500 g/l.

7. Remove outdated rule requirements

Staff's proposal will remove outdated exemption language pertaining to the following:

a. Cleaning of architectural coating application equipment, subparagraph (h)(2)(H)
b. Cleaning of electrostatic coating application equipment, subparagraph (h)(5)(C)
c. Cleaning of ink application equipment for inkjet printing, paragraph (h)(7)

EMISSIONS INVENTORY AND REDUCTIONS

Staff used the emissions data presented in the staff report for the May 2005 amendment to Rule 1171 in evaluating the emissions impact of PAR 1171. The emissions inventory analysis in this section is based on year 2004 currency; therefore, no growth factors are included in the emissions inventory data.

Staff does not anticipate any significant change in the emissions inventory as a result of PAR 1171 from those presented during the May 2005 amendment. Staff's proposal mainly delays by

~~one year~~18 months the VOC emissions reductions from clean-up solvents used in lithographic/letterpress printing, screen printing, and UV/EB ink application equipment. Such reductions will occur beginning ~~July~~January 1, 200~~7~~8.

Based on the May 2005 Staff Report for Rule 1171, the emissions from the use of clean-up solvents for rollers, blankets and on-press components in lithographic/letterpress printing (including newsprint) was estimated at 2.33 tons per day for year 2005. Staff's proposal to implement the 100 gram per liter VOC limit for cleaning rollers, blankets and on-press components used in lithographic printing on newsprint, beginning July 1, 2006, will have a minimal impact on the total emissions from lithographic/letterpress printing. Based on staff's preliminary estimate, clean-up solvent emissions from lithographic printing on newsprint are small and account for no more than 5 percent of the total lithographic/letterpress solvent cleaning emissions. Staff estimated the breakdown of the emissions inventory for lithographic/letterpress printing as follows:

Total Lithographic/Letterpress Clean-up Solvent Emissions = 2.33 tons per day

Clean-up Solvent Emissions from Newsprint = 2.33 tons per day x 5%
= 0.12 tons per day

Because of the small clean-up solvent emissions from lithographic printing on newsprint, the emission reduction as a result of implementing the 100 gram per liter VOC limit starting July 1, 2006 for this category is minimal.

2006 Emission Reduction from Newsprint = 0.12 tons per day x [1-(100/500)]
= 0.10 tons per day

Staff's proposal to raise the VOC limit for automatic roller and blanket clean up systems in lithographic/letterpress printing (except newsprint) and UV/EB inks will result in a slight increase in VOC emissions from these solvent cleaning activities. Based on industry input, the VOC emissions from the use of automatic roller and blanket clean up systems represent about 10% of the total clean-up solvent emissions (excluding newsprint). The increase in VOC emissions as a result of raising the VOC limit from 500 to 650 grams per liter for automatic roller and blanket clean up systems is estimated as follows:

For Litho/Letterpress Printing on Other Substrates

2005 Clean-up Solvent Emissions = 2.33 tons per day – 0.12 tons per day
= 2.21 tons per day

Emissions from Automatic Cleaning Systems = 2.21 x 10% = 0.22 tons per day

Current VOC Limit = 500 grams per liter (4.2 lbs/gal)

Equivalent Solvent Volume = (0.22 tons per day x 2000 lbs/ton)/4.2 lbs/gal
= 104.8 gallons per day

Using the 650 gram per liter (5.4 lbs/gal) VOC limit, the equivalent VOC emissions are:

(104.8 gallons per day x 5.4 lbs/gal)/(2000 lbs/ton) = 0.28 tons per day

VOC Emission Increase = 0.28 tons per day – 0.22 tons per day = 0.06 tons per day

For UV/EB Inks

2005 Clean-up Solvent Emissions = 0.10 tons per day (May 2005 Staff Report)

Emissions from Automatic Cleaning Systems = 0.10 tons per day x 10% = 0.01 tons per day

Current VOC Limit = 500 grams per liter (4.2 lbs/gal)

Equivalent Solvent Volume = (0.01 tons per day x 2000 lbs/ton)/4.2 lbs/gal
= 4.8 gallons per day

Using the 650 gram per liter (5.4 lbs/gal) VOC limit, the equivalent VOC emissions are:

(4.8 gallons per day x 5.4 lbs/gal)/(2000 lbs/ton) = 0.01 tons per day

VOC Emission Increase = 0.01 tons per day – 0.01 tons per day = 0 tons per day

The total increase in VOC emissions as a result of raising the VOC limit from 500 to 650 grams per liter for automatic roller and blanket clean up systems is:

Total VOC Emission Increase = 0.06 tons per day + 0 tons per day = 0.06 tons per day.

Including the emission reduction of 0.10 tons per day from implementing the 100 gram per liter VOC limit for newsprint, the net VOC emission reduction beginning July 1, 2006 is:

Net Emission Reduction = 0.10 tons per day – 0.06 tons per day = 0.04 tons per day

2006 Emissions Inventory

The breakdown of the remaining 2006 emissions inventory for cleaning categories affected by PAR 1171 is as follows:

Newsprint

VOC Emissions = (0.12 tons per day – 0.10 tons per day) = 0.02 tons per day

Lithographic Printing on Other Substrates

Manual Cleaning = (2.21 tons per day x 90%) = 1.99 tons per day
Automatic Cleaning System = 0.22 tons per day + 0.06 tons per day = 0.28 tons per day
Litho Printing Emissions from Other Substrates = 1.99 tons per day + 0.28 tons per day
= 2.27 tons per day

UV/EB Inks

Manual Cleaning = (0.10 tons per day x 90%) = 0.09 tons per day
Automatic Cleaning System = 0.01 tons per day
Total UV/EB Inks = 0.09 tons per day + 0.01 tons per day = 0.10 tons per day

Screen Printing

VOC Emissions = 0.71 tons per day (May 2005 Staff Report)

200~~7~~8 Emissions Inventory

The expected (delayed) emission reductions beginning ~~July~~January 1, 200~~7~~8 are as follows:

Lithographic Printing on Other Substrates

Emission Reduction (manual cleaning) = 1.99 tons per day x [1-(100/500)]
= 1.59 tons per day
Emission Reduction (automatic cleaning) = 0.28 tons per day x [1-(100/650)]
= 0.24 tons per day
Total Emission Reduction = 1.59 tons per day + 0.24 tons per day
= 1.83 tons per day

Remaining Inventory after Reduction = 2.27 tons per day – 1.83 tons per day
= 0.44 tons per day

UV/EB Inks

Emission Reduction (manual cleaning) = 0.09 tons per day x [1-(100/500)]
= 0.07 tons per day
Emission Reduction (automatic cleaning) = 0.01 tons per day x [1-(100/650)]
= 0.01 tons per day
Total Emission Reduction = 0.07 tons per day + 0.01 tons per day
= 0.08 tons per day
Remaining Inventory after Reduction = 0.10 tons per day – 0.08 tons per day
= 0.02 tons per day

Screen Printing

Emission Reduction = 0.57 tons per day (May 2005 Staff Report)

Remaining Inventory after Reduction = 0.71 tons per day – 0.57 tons per day
= 0.14 tons per day

Total Emission Reductions Delayed to 200~~7~~8 = 1.83 tons per day + 0.08 tons per day +
0.57 tons per day
= 2.48 tons per day

Based on the above estimates, the 2005 VOC emissions inventory of 8.02 tons per day for Rule 1171 (as reported in the May 2005 staff report) is slightly reduced to 7.98 tons per day in 2006 due to the net effect of the reduced emissions from newsprint and the increase in emissions from automatic roller and blanket cleaning systems. Additionally, the projected 200~~7~~8 total inventory for Rule 1171 is 5.50 tons per day. Table 2 shows the breakdown of the emissions inventory for Rule 1171 from years 2005, 2006, ~~thru~~ and 200~~7~~8. Emissions from solvent cleaning activities affected by PAR 1171 are shown in bold letters. Other cleaning activities not affected by the proposed amendments are shown in Table 2 for information purposes only.

Table 2 – Rule 1171 VOC Emissions Inventory (tons/day)

Cleaning Activity	2005 Emissions Inventory (tons/day)	2006* Emissions Inventory (tons/day)	2007~~8~~* Emissions Inventory (tons/day)
(A) Product Cleaning & Surface Preparation			
(i) General	1.37	1.37	1.37
(ii) Electrical/Electronic Apparatus & Comp	0.10	0.10	0.10
(iii) Medical Devices &Pharmaceuticals	0.74	0.74	0.74
(B) Repair & Maintenance			
(i) General	0.21	0.21	0.21
(ii) Electrical/Electronic Apparatus & Comp	0.01	0.01	0.01
(iii) Medical Devices & Pharmaceuticals			
(A) Tools, Machinery & Equipment	0.40	0.40	0.40
(B) General Work Surfaces	0.31	0.31	0.31
(C) Coating/Adhesive Application Equipment			
(i) Excluding Architectural Coating Equipment	0.14	0.14	0.14
(ii) Architectural Coating Equipment	1.19	1.19	1.19
(D) Ink Application Equipment			
(i) General	0.05	0.05	0.05
(ii) Flexo or Gravure	0.26	0.26	0.26
(iii) Litho/Letterpress			
(A) Roller Wash/Blanket Wash & On-Press Components			
(I) Newsprint	**0.12**	**0.02**	**0.02**
(II) Other Substrates	**2.21**	**2.27**	**0.44**
(B) Removable Press Components	0.03	0.03	0.03
(iv) Screen Printing	**0.71**	**0.71**	**0.14**
(v) UV/EB Inks	**0.10**	**0.10**	**0.02**
(vi) Specialty Flexo	0.02	0.02	0.02
(E) Polyester Resin Application Equipment	0.05	0.05	0.05
TOTAL	**8.02**	**7.98**	**5.50**

**** Reflects Inventory after Reductions***

COST

Staff's proposal to delay the implementation of the 100 gram per liter VOC limit for cleaning of lithographic/letterpress printing (except newsprint), screen printing, and UV/EB ink application equipment is a relaxation of an existing requirement in Rule 1171 and, therefore, does not impose additional cost to the affected industry. The staff report for the 1999 amendment of Rule 1171 provides a detailed cost-effectiveness analysis, including an incremental cost analysis, for the 100 gram per liter VOC limit for these cleaning applications.

SOCIOECONOMIC IMPACTS

The proposed amendments to Rule 1171 (PAR 1171) would delay by ~~one year~~18 months (until ~~July~~January 1, 200~~7~~8) the compliance date for solvents with VOC content of 100 grams per liter or less used in lithographic (except newsprint), screen printing, and UV/EB inks for cleaning ink application equipment. The cost associated with using the low-VOC solvent would thus be delayed by ~~one year~~18 months.

In addition, PAR 1171 would temporarily (until ~~June 30~~December 31, 2007) allow an increase in VOC from 500 to 650 grams per liter for automatic roller and blanket clean up systems used in lithographic printing operations (except newsprint). There is no additional cost resulting from this temporary suspension. Instead, the provision will provide flexibility to the printing operations as they gain experience in using products with lower VOC content.

In conclusion, PAR 1171 does not have any cost impact and would thus have no adverse socioeconomic impacts.

There are three CEQA alternatives to the proposed amendments. Alternative A—No Project—is the existing Rule 1171. There is no additional cost associated with Alternative A. The other two alternatives are less stringent than the proposed amendments and would thus result in no cost and/or socioeconomic impacts.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) ANALYSIS

The SCAQMD, as lead agency, has prepared a Draft Subsequent Environmental Assessment (SEA) pursuant to CEQA Guidelines §15162 and §15252 for the proposed amendments to Rule 1171 because the proposed project constitutes a modification of a previously approved project that was analyzed in a Final EA that was certified by the SCAQMD Governing Board in October 1999. The proposed project will delay compliance for three solvent cleaning categories, temporarily increase the VOC content limit for automatic roller and blanket clean up systems, establish a new subcategory for newsprint, and extend an exemption from the rule requirements for the cleaning of metering rollers, dampening rollers and printing plate applications. The analysis concluded that the delay in VOC emission reductions, along with the extended exemptions, will result in significant adverse air quality impacts. No significant adverse impacts were identified for any other environmental topics. The Draft SEA was circulated for a 45-day public review period on April 5, 2006. No public comment letters were received on the Draft SEA, and minor modifications were made to the Draft SEA so it is now a Final SEA. Changes to the project description are minor and do not change the conclusions made in the Draft SEA or worsen the environmental impact analyzed in the Draft SEA. Pursuant to CEQA Guidelines §15073.5(c)(2), recirculation is not necessary since the

information provided does not result in new avoidable significant effects.

COMPARATIVE ANALYSIS

The only federal requirement applicable to similar sources is the National Emission Standards for Hazardous Air Pollutants (NESHAP) requirement for handwipe cleaning in the aerospace industry. The requirements of Rule 1171, however, do not apply to handwipe cleaning in the aerospace industry; therefore, Rule 1171 is not in conflict with any federal requirement. Additionally, AQMD Rule 1401 - New Source Review of Toxic Air Contaminants and Rule 1402 - Control of Toxic Air Contaminants from Existing Sources, control the emissions of solvent containing toxic or hazardous air pollutants. Rule 1401 limits emissions from new and modified permitted sources exceeding certain thresholds, and Rule 1402 limits emissions from existing sources.

FINDINGS UNDER THE CALIFORNIA HEALTH AND SAFETY CODE

Before adopting, amending, or repealing a rule, the California Health and Safety Code requires the AQMD to adopt written findings of necessity, authority, clarity, consistency, non-duplication, and reference, as defined in Section 40727. The findings are as follows:

Necessity – The AQMD Governing Board has determined that a need exists to amend Rule 1171 – Solvent Cleaning Operations, in order to delay the compliance date of VOC limits that are infeasible at this time for certain cleaning applications.

Authority – The AQMD Governing Board obtains its authority to adopt, amend, or repeal rules and regulations from the California Health and Safety Code sections 39002, 40000, 40001, 40440, 40441, 40702, 41508, and 41700.

Clarity – The AQMD Governing Board has determined that the proposed amendment to Rule 1171 is written or displayed so that its meaning can be easily understood by persons directly affected by it.

Consistency – The AQMD Governing Board has determined that Proposed Amended Rule 1171 is in harmony with, and not in conflict with or contradictory to, existing statutes, court decisions, federal or state regulations.

Non-Duplication – The AQMD Governing Board has determined that the proposed amendment to Rule 1171 does not impose the same requirements as any existing state or federal regulations, and the proposed amended rule is necessary and proper to execute the powers and duties granted to, and imposed upon, the AQMD.

Reference – In adopting this regulation, the AQMD Governing Board references the following statutes which the AQMD hereby implements, interprets or makes specific: California Health and Safety Code sections 40001, 40440, and 40702.

PUBLIC COMMENTS AND RESPONSES

This section summarizes the comments received as result of the Public Workshop conducted on March 28, 2006.

Comment: The printing industry has experienced various problems, such as residue build up, increased clean up time, and poor print quality, with the reformulated cleaners meeting the current VOC limit of 500 g/l. The low-VOC solvents recommended by the AQMD contractor to meet the 100 g/l future limit are the same solvents used in these reformulated cleaners. Industry needs an 18-month moratorium, instead of one year as proposed by AQMD, to resolve issues related to the use of these low-VOC solvents. This will allow sufficient time for printers to work with the new formulations as necessary and transition over.

Response: The AQMD recognizes industry's concerns associated with the use of cleaners (500 g/l or less VOC) reformulated with low-VOC solvents, particularly soy-based products. As discussed earlier in this staff report, while there were initial difficulties in transitioning to the 500 g/l solvents, better compliant products are now available that minimize the problems experienced during the early part of the transition period. Staff's recent visits to lithographic printers indicated that the current cleaners meeting the 500 g/l limit perform satisfactorily. Based on staff's visits to many printers, staff has concluded that printers have learned to adapt to the new cleaning materials and have successfully minimized residue build-up.

The technology assessments for lithographic printing, screen printing, and UV/EB inks have now been completed. While it is true that the technology assessments focused on potential cleaning materials with the same low-VOC solvents used in the 500 g/l reformulated cleaners, the AQMD staff has not completed its review of the draft reports recently submitted by its contractors. Once the evaluation process is completed, the results and recommendations of the technology assessments will be presented to the Rule 1171 technical panel, formed three and a half years ago, to assist the AQMD in determining the final VOC limits for the printing industry.

Upon re-evaluation of the most recent draft reports submitted and industry comments received, staff has reconsidered its earlier proposal and is now proposing an 18-month extension. The extension in the compliance date allows sufficient time for industry to formulate, test and transition to the new cleaning materials that would meet the future VOC limit. It also provides adequate time for AQMD and the industry to evaluate available data and determine if the target VOC limit is achievable.

Comment: Automatic cleaning systems present unique problems in meeting VOC limit in Rule 1171. Low-VOC solvents (500 g/l or less VOC) have made it difficult or impossible to utilize automatic roller and blanket wash systems. Many printers have had to dismantle or shut-off these systems and clean by hand because the existing cleaners do not work well with automatic cleaning systems. AQMD needs to raise the VOC limit to 650 g/l in automatic roller and blanket wash systems.

Response: AQMD agrees that the current cleaners (500 g/l or less VOC) do not work well

at the present time on most presses equipped with automatic cleaning systems. However, some printers have made progress in being able to use low-VOC solvents on automatic blanket wash systems, although still with some difficulty. To provide additional time in addressing these difficulties, staff is proposing to temporarily raise the current VOC limit for this cleaning application to 650 g/l effective date of adoption of PAR 1171. The target VOC limit of 100 g/l in 200~~7~~8 remains the same.

Comment: The AQMD should allow the use of cleaners with 800 g/l VOC for clean-up of rollers and blankets because of the many problems associated with the use of cleaners which meet the 500 g/l limit. The VOC reduced is not worth the effort required.

Response: Staff disagrees. AQMD's recent visits to lithographic printers revealed that better compliant products are currently available. While these products may not be as convenient to use as the high-VOC solvents previously allowed, printers have indicated that these products clean satisfactorily. Since VOC emissions from this source category are close to 3 tons per day, every effort to minimize such emissions should be pursued.

Comment: We are requesting that AQMD allows VOC averaging for UV/EB operations to give operators who have adopted processes that reduce emissions above and beyond AQMD rule requirements flexibility to use higher VOC cleaning materials.

Response: Allowing VOC averaging in Rule 1171 is not a viable option as it would involve other AQMD rules (Rule1130–Graphic Arts and Rule 1130.1-Screen Printing Operations) to implement. Staff believes that establishing the lowest possible VOC limit in Rule 1171 is the best way of controlling VOC emissions from clean-up operations. Furthermore, staff's preliminary evaluations of technology assessments have shown that UV/EB ink application equipment do not pose obstacles, to using the low-VOC materials, that cannot be overcome with further testing.

Comment: We are concerned about the expiration of the exemption in (h)(5)(E) for the clean-up of UV/EB adhesive application equipment and the 25 g/l VOC requirement after the exemption expires on June 30, 2006. UV/EB adhesives are used in the manufacture of medical devices which are regulated by the FDA. The 25 g/l requirement would not allow for the use of IPA and may cause non-compliance with FDA regulations.

Response: Staff disagrees. This is not a correct interpretation of Rule 1171. The exemption in (h)(5)(E) does not cover equipment used in the manufacture of medical devices. Rule 1171 currently allows the use of higher VOC solvents, i.e., IPA for cleaning of medical devices including repair and maintenance

cleaning of tools, equipment, machinery, and general work surfaces associated with the manufacture of medical devices. The VOC limits for these cleaning applications are found in section (c)(1)(A)(iii) and (c)(1)(B)(iii).

Comment: We need to go back to the 800 g/l products since the new cleaners (500 g/l) cause many problems such as oily solvent residue, longer wash up times, and higher paper waste. My business is too small for solvent manufacturers to care about and I have to buy what is available from my local supplier. Also, I do not have the resources to test numerous products.

Response: Staff disagrees with the suggestion of going back to the 800 g/l VOC limit. More compliant products are now available that perform much better than those that came out during the first few months after July 1, 2005. Staff is aware of other vendors that can supply compliant products and can readily provide that information to the commenter. However, printers still need to test these products in order to determine which solvent will work best for their cleaning requirements.

Comment: We recommend that AQMD consider a two-step approach to regulating solvent usage within the screen printing industry and establish separate subcategories for screen reclamation and ink removal with a VOC limit of 500 g/l for both subcategories until January 1, 2008. At that time, the VOC limit for screen reclamation could decrease; however, the VOC limit for ink removal would need to remain at 500 g/l.

Response: Staff's proposal to extend the 500 g/l limit for cleaning screen printing application equipment provides industry sufficient time to test and implement compliant technology. With regard to establishing separate cleaning subcategories, staff will re-evaluate this recommendation after completing the review of the technology assessment reports recently submitted by the AQMD contractors and other data generated by the industry.

Comment: PAR 1171 made no mention of tertiary butyl acetate (TBAC) as possible compliance tool. This substance has been exempted as a VOC for use in some automotive coatings and has been recently proposed as VOC-exempt for industrial maintenance coatings. Pressroom cleaning operations need VOC-exempt solvents that work. Results of testing by PIA/GATF indicate that TBAC is an effective ink remover that does not swell gasket rubber like acetone. Since the Printing Industry Association offered to conduct additional studies on low-VOC cleaners, we believe that TBAC-based cleaners should be included in these studies. We request that AQMD propose its exemption in Rule 1171 and support the printing industry's plan for additional testing of low-VOC cleaners.

Response: The AQMD does not intend to propose to exempt TBAC in Rule 1171 at this time. Although the U.S. EPA has delisted TBAC from the VOC definition due

to its low photochemical reactivity, AQMD has opted to offer only partial delisting to address potential toxic impacts from the use of the solvent. Currently, there is very limited information on TBAC's toxicity and one of its metabolites has been found to cause tumors in rats. Because of this reason, AQMD has provided limited exemption to TBAC in the past, by limiting its use only to those critical applications where the public is not exposed to undue risk. Once additional information on TBAC's toxicity becomes available, AQMD will reconsider its stance on the exemption issue. Furthermore, staff is not aware of any studies to prove that TBAC is an effective cleaner for solvent cleaning activities identified in Rule 1171 nor has received any request to that effect from the Printing Industry Association.

Comment: We have been using solvents meeting the 100 g/l limit in cleaning screen printing application equipment for the past two years. Although these low-VOC solvents take longer to work and do not clean as well, we have been able to meet our customer's needs and continue to grow as a company. Further delay in implementing the 100 g/l limit is unnecessary and gives other printers a competitive advantage.

Response: AQMD commends the efforts made by the commenter in converting to solvents that already meet the future limit of 100 g/l. It is staff's understanding that the above-mentioned solvent cleaning application specifically involves the removal of plastisol inks used in textile screen printing. While it is true that some facilities may already use cleaning materials with VOC content of 100 g/l or less for this application, the same clean-up solvents may not work for inks used in screen printing on other substrates, e.g., metal, plastics, etc. Staff is currently evaluating the draft technology assessment report recently submitted by the AQMD contractor on screen printing application. Staff's proposal to delay implementation of the 100 g/l limit will provide adequate time for the AQMD and the industry to evaluate all available data. In addition, the AQMD has been working with the Specialty Graphic Imaging Association representing the interest of the screen printing industry, in ensuring that final VOC limit for the industry are reasonable.