

**AIR POLLUTION CONTROL DISTRICT
COUNTY OF SAN DIEGO**

**PROPOSED AMENDMENTS TO RULE 67.16 –
GRAPHIC ARTS OPERATIONS AND RELATED CHANGES TO
RULE 11 – EXEMPTIONS FROM RULE 10 PERMIT REQUIREMENTS**

WORKSHOP REPORT

A workshop notice was mailed to facilities conducting graphic arts operations, and manufacturers, suppliers, and distributors of printing inks and other graphic arts materials in San Diego County that may be subject to proposed amended Rule 67.16 – Graphic Arts Operations. The corresponding proposed revisions to Rule 11 – Exemptions from Rule 10 Permit Requirements, were also mailed to the entities mentioned above. Notices were also mailed to the U.S. Environmental Protection Agency (EPA), the California Air Resources Board (ARB), all Economic Development Corporations and Chambers of Commerce in San Diego County, and other interested parties.

The workshop was held on January 13, 2011, and was attended by 11 people. Written comments were also received after the workshop. The workshop comments and San Diego County Air Pollution Control (District) responses are as follows:

Rule 67.16 – Graphic Arts Operations

1. WRITTEN COMMENT

Proposed amended Rule 67.16 should include an exemption for the cleaning of UV lamps and reflectors or electron beam processors. The lamps and reflectors are extremely sensitive and require special cleaning materials.

DISTRICT RESPONSE

The District agrees. The proposed amended rule has been revised as suggested.

2. WRITTEN COMMENT

An exemption should be provided for cleaning materials used for the stripping of cured inks, coatings and adhesives.

DISTRICT RESPONSE

The District agrees. The proposed amended rule has been revised as suggested.

3. WRITTEN COMMENT

The definition of "digital printing operation" should list specific technologies that are presently used in the digital printing industry.

DISTRICT RESPONSE

The District disagrees. The term "digital printing operation" is broadly defined to encompass all digital printing technologies that exist now or could exist in the future.

4. WRITTEN COMMENT

Screen printing inks with a VOC content limit of 450 g/liter should be included in the proposed rule as a separate ink category.

DISTRICT RESPONSE

A screen printing ink category is not warranted at this time. According to District information there are no screen printing facilities in San Diego County that have VOC emissions exceeding the permit exemption threshold of Rule 11 (less than 15 lbs per day) which is the same as an applicability threshold of Rule 67.16. The District intends to amend Rule 11 in the near future and require smaller size facilities to obtain permits to operate. This will provide necessary information regarding the magnitude of VOC emissions from screen printing operations in the county.

5. WRITTEN COMMENT

Rule 67.16 should have a separate category for adhesives used in graphic arts industry.

DISTRICT RESPONSE

The District agrees. The proposed amended rule has been revised to establish a VOC content limit of 150 grams/liter for adhesives, which is consistent with requirements of several California air districts.

6. WRITTEN COMMENT

The VOC content limit for fountain solutions should be 80 g/liter. The rule also should include a separate VOC content limit of 100 g/liter if a refrigerated chiller is used.

DISTRICT RESPONSE

The proposed VOC content limits for fountain solutions have been revised to more fully align with EPA's Control Techniques Guidelines (CTG) for lithographic and letterpress printing. Specifically, the District proposes allowing fountain solutions containing up to 5% VOC by volume (alcohols or alcohol substitutes) or up to 8.5% VOC (alcohol or alcohol substitute), provided the fountain solution is refrigerated to below 60°F (15.5°C). These percentage limits equate to approximately 50 g/liter and 85 g/liter, respectively.

7. WRITTEN COMMENT

Rule 67.16 should include an exemption for digital printing equipment used in research and development operations.

DISTRICT RESPONSE

The District agrees that research and development operations should be exempt and has revised the proposed amended rule accordingly. This exemption includes both conventional and digital graphic arts operations conducted for purposes of research and development. The definition of research and development is provided in existing District Rule 11.

8. WRITTEN COMMENT

Rule 67.16 should include an exemption for materials used for cleaning of precision electro-optical components used in digital printing operations.

DISTRICT RESPONSE

The District agrees. The proposed amended rule has been revised to include a definition of precision electro-optical components and an exemption for materials used to clean them.

9. WRITTEN COMMENT

The definition of a "large digital printing operation" needs clarification. This definition should state that the specified print capacity thresholds apply to each individual printer, not to the entire operation.

DISTRICT RESPONSE

The District agrees and has revised the definition accordingly. Specifically, a "large digital printing operation" is defined as an operation where the print capacity of any individual printer using solvent-based inks is 1,000 ft²/hr or higher; or an operation where the print capacity of any

individual printer using water-based or UV inks is 10,000 ft²/hr or higher. Such an operation is subject only to the record keeping requirements of Section (f), whereas smaller digital printing operations are completely exempt from the rule.

10. WORKSHOP COMMENT

Do water-based inks also include soy based inks?

DISTRICT RESPONSE

No. Soy based inks do not contain any water. In addition to soybean oil, they may also contain pigments, resins and waxes.

11. WORKSHOP COMMENT

Does the exemption for digital printing operations refer to a single equipment unit, or the entire operation?

DISTRICT RESPONSE

The exemption for digital printing operations is based on a printing capacity of a single equipment unit (i.e. individual printer). If a facility has several digital printing lines the records required by the Subsection (b)(2) need to be kept only for the printing line that includes a printer using solvent based inks with a capacity of 1000 ft²/hr or higher, or a printer using water-based or UV inks with a capacity of 10,000 ft²/hr or higher.

12. WORKSHOP COMMENT

Current Rule 67.16, Subsection b(1), exempts graphic arts operations emitting less than an average 15 lbs of VOCs per day. Does this exemption apply to digital printing operations with an equipment print capacity of 10,000 ft²/hr or more if it emits less than 15 lbs VOC per day?

DISTRICT RESPONSE

No, because the magnitude of VOC emissions from digital printing operations is not known at this time. The exemption in Subsection (b)(1) applies only to conventional (analog) graphic arts operations, such as lithography, flexography, rotogravure, etc. Digital printing on a commercial scale is a comparatively new technology and there currently are not enough data to estimate emissions from these operations. This is the reason why digital printing is treated separately in proposed amended Rule 67.16. Therefore, the District is proposing that the largest digital printing operations, as defined, will be exempt from the rule provided that the records specified in Section (f) are kept. Such stipulation would allow the District to estimate whether VOC

emissions from digital printing operations are significant enough to justify any emission control requirements.

13. WORKSHOP COMMENT

If a digital equipment has a print capacity specified in the definition of a "large digital printing operation", does this mean that the facility is exempt from the rule and the only requirement is to keep records as described in Subsection (f)(4) of the rule?

DISTRICT RESPONSE

Yes, although strictly speaking a large digital printing operation is not exempt from Rule 67.16. Rather, it is exempt from the emission standards and some other specified provisions of the rule, but is still subject to the record keeping requirements specified in Subsection (f)(4).

14. WORKSHOP COMMENT

If adhesives are used in a large digital printing operation, would such use affect the operation exemption status?

DISTRICT RESPONSE

No. Large digital printing operations are exempt from the rule's emission standards, regardless of whether adhesives are used. Such operations are only subject to the record keeping requirements of Subsection (f)(4). These records must be kept for all VOC-containing materials, including adhesives.

15. WORKSHOP COMMENT

Would Rule 67.21 (Adhesives and Sealants Application Operations) apply to printing operations?

DISTRICT RESPONSE

No. Rule 67.21, Subsection (a)(4), specifically exempts adhesive application operations that are subject to Rule 67.16.

16. WORKSHOP COMMENT

Would the exemption from Rule 67.16, provided by Subsection (b)(1) for stationary sources that emit less than an average 15 lbs/day of operation for each calendar month, remain in the rule?

DISTRICT RESPONSE

Yes. At this time the exemption will remain as it complies with federal requirements specified in EPA's Control Technique Guidelines for lithographic, letterpress and flexible package printing operations. Please also see District Response to Comment 36, regarding planned future consideration of lowering the exemption threshold.

17. WORKSHOP COMMENT

Would it be possible to provide the exemption in Subsection (b)(1) in terms of monthly rather than daily VOC emissions? Sometimes, production may vary from day to day, and it is difficult to estimate average daily emissions.

DISTRICT RESPONSE

The exemption in Subsection (b)(1) is based on average daily VOC emissions per each calendar month. Emission calculations for each individual day are not required under this provision. The average daily emissions may be determined by dividing monthly emissions by the number of operating days in a calendar month.

18. WORKSHOP COMMENT

Does the rule apply to color or black-and-white digital equipment?

DISTRICT RESPONSE

The rule and the proposed exemptions apply to both types of digital equipment.

19. WORKSHOP COMMENT

VOC content limits for cleaning materials may be too stringent, specifically in the case of the high speed web application equipment. Water-based solvents that meet these limits also require applying water as a rinsing agent to remove paper residue. If a low-grade paper is used with high speed web equipment, the equipment can be down for a long period of time due to flying or loose material. In this case, the use of a water-based solvent will result in significant problems. Because jobs are run for days at a time and there is no opportunity to stop and rinse rubber components, the loose material remains on these components and causes rubber swelling, which leads to major equipment failures.

DISTRICT RESPONSE

Proposed amended Rule 67.16 does not mandate the use of water-based cleaning materials. It allows the use of VOC-containing cleaning materials with a VOC vapor pressure of 5 mm Hg at 20°C or less. These materials are available in the market place and are already being used in some graphic arts operations in San Diego County.

20. WORKSHOP COMMENT

Proposed Rule 67.16 prohibits the use of alcohols in fountain solutions. There are no air districts in California that have such provision. The federal CTG offers three different approaches to reduce emissions from fountain solutions. One of them prohibits the use of alcohols. It seems that this is the most extreme approach.

DISTRICT RESPONSE

The proposed amended rule has been revised to allow limited use of alcohols in fountain solutions (pursuant to federal guidelines), as described in District Response to Comment 6.

21. WORKSHOP COMMENT

Alcohol substitutes are also VOCs and are toxic.

DISTRICT RESPONSE

The District acknowledges that alcohol substitutes are VOCs and are toxic in some cases. However, pursuant to federal guidelines, the proposed amended rule limits the concentration of alcohol or alcohol substitutes in fountain solutions to 5% or less (or up to 8.5% if refrigerated). Their use is allowed because many alcohol substitutes, such as ethylene glycol ethers, have a high boiling point and evaporate much slower than conventional additives such as isopropyl alcohol.

In addition, if a facility uses materials containing toxic air contaminants, it may become subject to a toxic air contaminant risk assessment analysis pursuant to District Rule 1200 (Toxic Air Contaminants – New Source Review). If the result of this analysis shows that a level of toxic air contaminant emissions is higher than the specified threshold, the facility must reduce its emissions according to Rule 1200 requirements.

22. WORKSHOP COMMENT

Is it possible to allow an alcohol to be used in small amounts if a fountain solution is chilled? Some printing jobs require a small amount of alcohol to be present in fountain solution.

DISTRICT RESPONSE

Yes. The proposed amended rule has been revised to allow the use of fountain solutions with 8.5% of alcohols or less if the fountain solution is refrigerated to below 60° F (15.5°C).

23. WORKSHOP COMMENT

Would the District consider an exemption for the UV ink application equipment cleaning?

DISTRICT RESPONSE

No, this exemption is not necessary. Materials for UV ink application equipment cleaning that comply with the vapor pressure limits in the proposed amended rule (Subsection (d)(2)(ii)) are presently available.

24. WORKSHOP COMMENT

Subsection (e)(1)(ii) specifies that an "emission collection system which captures and transports emissions generated by graphic arts *operations...*". Can this provision be clarified to mean that it would be a control device for a particular unit rather than an entire operation?

DISTRICT RESPONSE

Subsection (e)(1)(ii) has been clarified to state that the emission collection system may be installed to capture emissions from an "applicable" graphic arts operation. This operation may include any equipment or materials in use, such as printing presses, inks, etc.

25. WORKSHOP COMMENT

In the original definition of "graphic arts operations", the terms "process" and "operation" seem to be interchangeable. Using the word "process" to define a graphic arts operation will make the definition clearer.

DISTRICT RESPONSE

The District agrees. The definition has been revised as suggested.

26. WORKSHOP COMMENT

Some facilities use 60 different inks per month, making emissions calculations difficult. Would the District approve using the highest VOC content of the ink used to calculate emissions from all inks? The Printing Industry Association has a video that addresses every potential case of record keeping for VOC-containing graphic arts materials and all the necessary calculations.

DISTRICT RESPONSE

The District has reviewed the information provided in the video and agrees that the highest VOC content of inks may be used to calculate VOC emissions. However, this methodology overestimates the actual emissions from the facility. In addition, there may be cases when a facility has a permit condition with daily emission limits pursuant to New Source Review rules, such as 10 lbs of VOC per day. In this situation, it would be advisable to use an itemized method of calculations, which is also discussed in the video.

27. WORKSHOP COMMENT

It is difficult sometimes to calculate the actual usage of inks or other materials, especially in cases where small amounts of them are used for each operation. Would purchase records be acceptable to the District?

DISTRICT RESPONSE

Yes. However, using purchase records may result in an overestimate (significant in some cases) of VOC emissions from a facility. Therefore, it is advisable also to keep dispensing and/or inventory records, and the records of inks and other materials recycled or sent to disposal services in the end of each month or each year. These records will help the facility determine the amount of VOC-containing materials used, and therefore the facility's emissions.

28. WORKSHOP COMMENT

Would there be a way to correlate material usage using other operational parameters, without having to actually weigh or track a small amount of material?

DISTRICT RESPONSE

Yes. Please see the District Response to the previous comment.

29. WORKSHOP COMMENT

Existing Subsection (f)(2) requires a facility to maintain "daily or monthly" records of material usage. Is this a choice of the facility? Does the District generally require monthly records?

DISTRICT RESPONSE

A facility may choose whether to keep monthly or daily records, unless daily records are required pursuant to conditions on the facility's permit. For example, if the facility is subject to New Source Review requirements, it may be limited to a certain amount of VOC emissions per day. Accordingly, the Permit to Operate may have a condition to keep daily usage records of VOC-containing materials. In this case, the more stringent requirement will apply, and the facility must keep daily records.

30. WORKSHOP COMMENT

What is the intent of Subsection (f)(3)(ii)? Is this for compliance with capture efficiency requirements? If so, how would one keep daily records of capture efficiency?

DISTRICT RESPONSE

Subsection (f)(3)(ii) does not require keeping daily records of capture efficiency. The intent of this subsection is to ensure that add-on emission control equipment operates properly at all times when VOC-emitting activities take place. Therefore, a facility has to keep daily records of "key system operating parameters" such as "temperature, pressure and/or flow rate" for an entire system, i.e., for both the emissions collection and control equipment. If the key operating parameters do not deviate from those specified in the District-approved Operation and Maintenance plan as required by the rule or as specified in a Permit to Operate, then the entire emission control system (including its capture efficiency) operates properly.

31. WORKSHOP COMMENT

Why is South Coast Air Quality Management District (SCAQMD) Test Method 304 included in Subsection (g)(1)?

DISTRICT RESPONSE

Subsection (g)(1) lists the test methods that must be used to determine the VOC content of various graphic arts materials. SCAQMD Test 304 may be used for graphic arts materials such as thinners, where EPA Test Method 24 is not applicable.

32. WORKSHOP COMMENT

Would the EPA Test Method 24 be used for determining the VOC content of cleaning materials?

DISTRICT RESPONSE

No. EPA Method 24 is not applicable for determining the VOC content of cleaning materials. Currently, there are other test methods developed by the SCAQMD or other air districts and approved by EPA that use gas chromatography often combined with mass-spectrometry.

33. WORKSHOP COMMENT

Are SCAQMD Test Methods 313 and 308 nationally approved?

DISTRICT RESPONSE

Yes, these methods are approved by EPA. They are listed on EPA's and SCAQMD's websites.

34. WORKSHOP COMMENT

Does the District have a contact at EPA regarding the Test Methods?

DISTRICT RESPONSE

EPA's Emission Measurement Center (EMC) in North Carolina is responsible for Test Methods. EMC's staff directory is available at www.epa.gov/ttn/emc/staffdir.html, and contacts are Candace Sorrell at (919) 541-1064 or Ray Merrill at (919) 541-5225.

35. WORKSHOP COMMENT

Some facilities use preservative oils sprayed from aerosol containers on press rollers when the equipment is turned off for an extended period of time to prevent the ink hardening during non-operating periods. The amount of oils used is very low, about a few ounces per day. Can such operations be exempt from the rule?

DISTRICT RESPONSE

Yes. This exemption has been added to the proposed rule amendments.

36. ARB COMMENT

The exemption for small operations is too broad. It allows operations emitting over 450 pounds of VOC per month to be exempt from regulation. Other air districts in California have much lower exemption levels, such as 200 pounds VOC per rolling 12-month period. ARB recommends reducing the exemption level in Rule 67.16. By lowering the exemption level, more sources will be subject to the rule and additional emission reductions will be achieved.

DISTRICT RESPONSE

The proposed amendments to Rule 67.16 address federal RACT requirements specified in EPA's CTGs for both flexographic and lithographic printing operations. The exemption level in the rule complies with EPA guidelines and is not proposed for amendment at this time.

As noted above, lower emission operations that are currently exempt from Rule 67.16 are also exempt from Rule 11 permit requirements. In the future, the District is planning to consider amending Rule 11 to reduce the exemption level for graphic arts operations, thereby requiring permits for facilities with lower VOC emissions. This will enable an assessment of presently non-permitted sources and their VOC emissions to determine whether lowering the Rule 67.16 exemption level is warranted.

It should be noted that existing Rule 67.16 exempts a stationary source that emits less than an average of 15 lbs per operating day for each calendar month. It is unrealistic to assume that the companies in San Diego County operate 30 days in a calendar month. Many of them, according to District information, operate only 2-3 days per week, i.e., about 9-14 days per month.

37. ARB COMMENT

The VOC content limit in Section (d) for all graphic arts materials is 300g/liter (less water and less exempt compounds). This limit may be high for some graphic arts materials, particularly adhesives.

DISTRICT RESPONSE

The District agrees. A VOC content limit of 150 g/liter for adhesives has been added to the rule.

38. ARB COMMENT

ARB recommends providing separate VOC content limits for screen printing operations.

DISTRICT RESPONSE

Please see District Response to Comment 4.

39. ARB COMMENT

Subsection (d)(1)(ii) indicates a VOC content limit of 5% by volume for fountain solutions, with no alcohols to be used. Per the EPA's Control Technology Guidelines for Offset Lithographic Printing and Letterpress Printing (September 2006), this limit should be 5% VOC by weight, not volume, provided no alcohol is used in the fountain solution.

DISTRICT RESPONSE

Fountain solutions come from the suppliers as liquid concentrates. It is more practical to use a volume percent to describe a VOC limit for fountain solutions because it is easier to measure the volume rather than the weight of a liquid. In addition, since fountain solutions are made by diluting a liquid concentrate with water, often using a 1:10 ratio, the final product is an aqueous solution with a low concentration of VOCs. The numerical difference between volume and weight percent concentrations in such case will be negligible.

40. ARB COMMENT

Subsections (d)(2)(i) and (d)(2)(ii) specify that cleaning material must have a VOC content of less than 100 grams per liter or a total vapor pressure of 5mm of Hg at 20°C or less. ARB recommends a VOC limit for cleaning operations of 25 g/liter, with exceptions made for certain cleaning operations based on BAAQMD Rule 8-20.

DISTRICT RESPONSE

The proposed amendments to Rule 67.16 are designed to satisfy federal requirements for implementing Reasonably Available Control Technology (RACT), as defined by EPA's Control Technique Guidelines (CTGs). (Accordingly, the amended rule will be submitted to EPA, through ARB, along with the District's pending Ozone State Implementation Plan.) The emission limits for cleaning materials provided in the proposed amended rule comply with those federal requirements.

41. ARB COMMENT

ARB recommends a ban on cleaners containing methylene chloride, as provided in other air districts' rule.

DISTRICT RESPONSE

The District disagrees. Methylene chloride is an exempt compound and therefore is not subject to Rule 67.16, which regulates emissions of ozone-forming VOCs. The District does not have the jurisdiction to prohibit the use of any exempt compounds. Since methylene chloride is a toxic air contaminant, its use and allowable emissions are regulated by National Emission Standards for Hazardous Air Pollutants (NESHAP) and by District Rule 1200 (Air Toxic Contaminants – New Source Review).

There were no EPA comments on proposed amendments to Rule 67.16.

Rules 11 – Exemptions from Rule 10 Permit Requirements

1. WORKSHOP COMMENT

Section (d)(11) of Rule 11 includes both terms - "operation" and "equipment." Is it correct to assume that the term "operation" encompasses the entire printing process?

DISTRICT RESPONSE

Yes, this assumption is correct. Section (d) (11) of Rule 11 historically specified exemptions from permit requirements for both printing equipment and printing operations. For clarity, this section's heading will be revised to read, "Printing and Reproduction Equipment and Operations". Please refer also to the definition of a Graphic Arts Operation in proposed amended Rule 67.16 that specifically includes the entire graphic arts process.

2. EPA COMMENT

EPA recommends that the District submit this version of Rule 11 as a revised part of the State Implementation Plan (SIP). This will make it easier to keep track of different versions of Rule 11 submitted to EPA.

DISTRICT RESPONSE

The District agrees. Rule 11, with amended Section (d)(11), will be submitted to EPA as a SIP revision.

3. EPA COMMENT

If a proposed amended Rule 11 contains any additional exemptions that may have emission impacts, these impacts should be addressed in the District's submittal. In addition, the exemptions in Rule 11 should be consistent with the exemptions in Rule 67.16.

DISTRICT RESPONSE

Section (d)(11) of Rule 11 contains new exemptions from permit requirements for digital printing operations, consistent with the exemptions in the proposed amended Rule 67.16.

“Large” digital printing operations as defined in Rule 67.16 are exempt from permit requirements, provided that the facility keeps specified records. Smaller digital printing operations commonly performed in homes, schools, business offices, etc. will be completely exempt from permit requirements.

Digital printing on a commercial scale is a comparatively new technology and its VOC emissions are not yet quantified. The proposed record keeping requirement will provide the data for estimating VOC emissions from large scale digital printing operations.

It is expected, however, that emission impacts from this exemption, if any, will not be significant. Many digital printing operations use dry inks and toners, UV inks or low VOC water-based inks and solvents. Some digital printing equipment is also equipped with internal VOC capture and recycling devices.

There were no ARB comments on proposed amendments to Rule 11.

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