08/17/1983 VOC260817831

Category: 26 – Bubbling

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Date: August 17, 1983

Subject: The Massachusetts 30 Day Bubble Regulation

From: John L. Hanisch, Chief
State Air Programs Section, Region I

To: Brock Nicholson, Chief
Technical Guidance Section, OAQPS

Massachusetts has adopted a generic VOC Bubble Regulation (310 CMR 7.00 Appendix B) which has been submitted to us for approval as a revision to the federal SIP (Attachment 1). Under the Massachusetts Regulation, a source may comply with RACT requirements on a 30-day average as long as it agrees to a daily limitation or "emissions cap" on the use of noncomplying coatings. If EPA approves this regulation it will be the first time that we have extended the Emission Trading Policy to give a state generic approval authority for bubbles with 30-day averaging times. Since EPA will be relinquishing the oversight authority which we normally have with source specific bubble SIP revisions, I feel it is imperative to explain why this regulation does not result in a relaxation of the SIP requirements for ozone attainment. The key lies in the tightness of both the regulation and the daily emissions cap. Each of these is discussed in detail below.

I. The Regulation

The Massachusetts Regulation clearly spells out the requirements for approval of a bubble with a 30-day averaging period. The bubble must:

1. contain emission limitations in an enforceable document.
2. insure RFP.
3. insure attainment and maintenance of NAAQS.
4. not trade toxic or hazardous VOCs for nontoxic or nonhazardous VOCs.
5. not be used to exceed applicable NSPS, NESHAPs, LAER or BACT emission rates/requirements.
6. include only emission points with predetermined RACT (federally-approved).
7. contain alternative emission reductions which are real, permanent and surplus using RACT as a baseline.
8. require an additional 5% reduction for every 10 miles of distance between bubbling facilities.
9. provide a published public notice and a 30-day comment period.
10. provide the opportunity for a public hearing.
11. require the source to insure that over 30 days, the average VOC content on a solids-applied basis will be equal to or less than RACT. This will be demonstrated by dividing the lbs of VOC used by total gallons used

12. require reporting of data to demonstrate compliance at specific intervals.
13. put a daily cap on emissions from coatings which are in excess of the applicable RACT limits (This is discussed in more detail in Part II).

Additionally, the State has agreed to include in the SIP narrative a commitment to adhere to the following principles, most of which are outlined in the April 15, 1983 memorandum from T. Helms to J. Sydnor (Attachment 2), namely:

14. The 30-day averaging time will only be granted where applicable RACT is not feasible on a daily basis.

15. Real VOC reductions will be achieved equivalent to the RACT control levels specified in the federal SIP.

16. The emissions cap will:

    a. be based on historic data from two consecutive years. This two year period will not go back further than 1979, which is the 1982 Massachusetts Ozone SIP inventory base year.

    b. reflect emission reductions equivalent to RACT and will not be an artificial constraint on potential emissions (See I. 7. above).

    c. prohibit the use of equipment down time in the determination of the 30-day average emission rate.

17. The VOC RACT limits must be in an enforceable document issued by Massachusetts (See I.1 above).

18. The bubble will not extend the compliance dates in the SIP.

19. The bubble application must contain a description of the affected processes and associated historical production, days of operation and operating rates.

20. The bubble application must contain a description of the control techniques to be applied to the affected sources (i.e. low solvent, waterborne coating technology, and/or add-on controls).

21. The bubble approval issued by the State will require reporting of information to show compliance with the daily cap and a demonstration that RACT was achieved over 30 days.

II. The Daily Cap

As mentioned above, the daily cap is an integral part of any 30-day bubble. The cap limits total daily emissions from noncomplying coatings to that quantity of emissions which would have occurred had the coatings been at RACT. This insures that the emissions from the facility will be no greater on

any given day than would have occurred had all the coatings been RACT coatings. The state has agreed to incorporate into the SIP narrative a discussion of how the cap will be determined. The calculation of the cap is best illustrated through an example.

Let's say that Acme Paper Coating Company has applied for a 30-day averaging period. The company must supply information on their existing operation based on at least 3 years of historic data. For each coating, the data must include:

- the VOC content on a solids-applied basis
- the VOC density in lbs/gallon
- the total tons of emissions per year based on 2 years of historic operating data.
- the expected VOC content under the bubble
- the expected density under the bubble.

The information supplied by the company is set out in Table 1, Columns 1 through 5. As shown in Column 4, the company will not achieve RACT with Coatings A or B. However, they will do much better than RACT for Coating C. The company intends to use the additional reductions from Coating C to insure that plantwide, the average VOC content over 30 days will be 2.9 lbs/gallon on a solid-applied basis.

It is now up to the State to determine the daily emissions cap for the facility.

RACT is 2.9 lbs/gallon less water. To achieve RACT, the emissions from Coatings A, B, and C must be reduced by 73.4% 93.3% and 93.3% respectively[1] (See Column 7). This in turn means that the total lbs of emissions per day that would occur with complying coatings is 40, 27, and 54, respectively (See Column 8).

The daily emissions cap only applies to noncomplying coatings. Therefore, the cap will apply only to Coatings A and B. The cap limits the lbs of emissions per day from Coating A to 40, and from Coating B to 27 (See Column 9).[2] Thus, the total emissions from Coatings A and B can be no greater than if the source was using complying coatings.

Since the 40 and the 27 are the emission projections used in demonstrating FRP, this cap insures that the bubble will not interfere with

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[1] For a detailed discussion on how to calculate emissions on a solids-applied basis, the reader is referred to the September 11, 1981 memo from Polglase and Williams to Helms entitled "Review of the Final Pennsylvania Group II VOC Regulations" (Attachment 3).

[2] In actual practice the state intends to issue the source a facility cap of 67 lbs/day. The source can then decide if they want to operate only Coating A, only Coating B or Coatings A & B. Each day, they must stop using these coatings after the cap has been reached.

the SIP which is designed to achieve attainment of the ozone standard. The cap, in effect, limits emissions from noncomplying coatings to the same levels as would have occurred if complying coatings were used. Additionally, the source must still demonstrate that over 30 days the average VOC content is 2.9 lbs/gallon on a solids-applied basis. This 30-day averaging time constraint further limits the use of noncomplying coatings.

The Massachusetts Generic Bubble Regulation (310 CMR 7.00 Appendix B) is a tough regulation with a singular interpretation and method of implementation. We believe that with the accompanying SIP narrative it provides for standards protection, replicability, and enforcement. Therefore, we do not believe that is necessary to review and approve these bubbles as source-specific SIP revisions. However, we do intend to audit the bubble approvals to insure compliance. Additionally, we will be copied on all bubble approvals as soon as they are issued.

If you have any questions please call me or Cynthia Greene, the Massachusetts State Coordinator, at 223-5130.

Attachment

cc: Chief, Air Branch, Regions I- X
Regional Emissions Trading Coordinators
Bob Bauman
Rich Biondi
Lanny Deal
Len Fleckenstein
Glenn Hanson
Tom Helms
Andrew Jackson
Mike Levin
Brian McLean
Rich Ossias
Ivan Tether
Joe Tikvart
Mike Trutna
John Ulfelder
Peter Wyckoff

TABLE 1

ACME Paper Coating Company

Company Supplied Data

# of Operating Days/Year: 200			Years of Inventory: 80,81		
Coatings	(1) VOC Content lbs/gal	(2) VOC Density lbs/gal	(3)* Existing Average Daily VOC Emissions lbs/day	(4) VOC Content under Bubble lbs/gal	(5) VOC Density under Bubble lbs/gal
A	6.0	9	150	6.0	9.0
B	8.0	9	400	8.0	9.0
C	8.0	9	800	1.2	7.36

State Determined Data

Coatings	(6)** RACT Limit lbs/gal	(7)*** % Reduction Required to Achieve RACT	(8)**** Allowable Emissions with RACT lbs/day	(9) CAP lbs/day
A	2.9	73.4	40	40
B	2.9	93.3	27	27
C	2.9	93.3	54	N/A

Total Facility Cap: 67

Attachment #1

310 CMR: DEPARTMENT OF ENVIRONMENTAL QUALITY ENGINEERING
310 CMR 7.00: Air Pollution Control Regulations

310 CMR 7.00, APPENDIX B: ALTERNATIVE EMISSION LIMITATIONS (BUBBLE) FOR VOLATILE ORGANIC COMPOUNDS

[310 CMR 7.00, Appendix B is added to the regulations by this amendment.]

(1) Alternative Emission Limitations:

(a) The owner of a facility, or of two or more facilities, may propose a bubble which establishes alternative emission limitations for the facilities included in the bubble. Emission limitations may be reallocated among facilities included in the bubble in accordance with the following requirements and the requirements set forth in Appendix B, (2).

1. Facility-specific emission limits shall be incorporated into plan approvals issued be the Department for the affected facilities and all emission limitations must be enforceable.

2. At no time may use of an alternative control strategy result in a violation of any National Ambient Air Quality Standard, or interfere with Reasonable Further Progress toward attainment of any such Standard.

3. The Department may further restrict or condition the control of contaminant based on their toxic character, photochemical reactivity or other characteristics. In no case may emissions of contaminants identified as hazardous in accordance with Section 112 of the Clean Air Act increase in exchange for reductions in emissions of non-hazardous contaminants.

4. No use of a bubble may result in violation of, as applicable, New Source Performance Standards (NSPS), National Emission Standards for Hazardous Air Pollutants (NESHAPS), the requirements for Lowest Achievable Emission Rate (LAER), or the requirement for the Best Available Control Technology (BACT).

5. If fugitive emissions are quantifiable and comply with an enforceable RACT emission limitation as defined by the department, then reductions in fugitive emissions beyond what is required by such RACT may be used in a bubble. This option shall not apply to

Appendix B continued: coating-line bubbles submitted pursuant to 310 CMR 7.18(2)(b).

6. Upon receiving notice from the Department that a new or more restrictive emission limitation has become applicable to any facility included in a bubble under 310 CMR 7.00, Appendix B, the owner of such facility shall submit a revised approval application. The revised approval application must demonstrate to the Department compliance with the new or more restrictive emission limitation through reduction in total bubble emissions.

(2) Determination of Emission Limitations:

(a) Total emissions from a bubble may not exceed the mathematical equivalent (calculated on a solids applied basis for coating processes, if applicable) of the existing VOC emission limits as prescribed by 310 CMR 7.02 or 7.18, or a department approved RACT for that facility. Multi-facility bubbles are subject to the further requirements of Appendix B, subsection, (3)(b).

(b) Each bubble plan shall demonstrate that the mix of applicable emission limitations will be achieved over either a 24-hour averaging period or a calendar month averaging period. Any approval issued by the Department of a proposed plan which contains a calendar-month averaging period shall contain a maximum quantity of emissions (in pounds per day) which the facility is permitted to emit. The maximum permissible quantity of emissions per day shall be computed by the Department based upon the facility's annual emissions during a past representative period and a weighted average degree of emissions reductions required of the facility, as determined by the Department, necessary to comply with the applicable limitation(s). For surface coating operations the maximum permissible quantity of emissions per day shall be calculated upon and applicable to those coatings with volatile organic compound content in excess of the applicable emission limitation.

©) Emission reductions at facilities to be included in a bubble are subject to the following requirements:

1. Emission reductions must represent real and permanent decreases in emissions below the applicable baseline level.

Appendix B continued:

2. The baseline used for reviewing emission reductions shall be the applicable emission limit for that facility, contained either in 310 CMR 7.02 or 7.18, or a Department approved RACT for that facility, whichever is less.

3. Emission reductions can be claimed only to the extent that the Department has not relied on them in issuing any approval under these regulations or in demonstrating attainment.

4. To confirm reductions, the Department may require facility tests or any other measurements.

(3) Multi facility Bubbles

Facilities under the same corporate ownership but located at different site locations may bubble the applicable combined emissions from their facilities provided that:

(a) The Department will not allow a Multi facility bubble if it would interfere with Reasonable Further Progress towards attaining the National Ambient Air Quality Standard for Ozone; and

(b) For each 10 miles of straight line distance between the two farthest-apart facilities which are part of the bubble, an additional 5 percent reduction in total VOC emissions produced by all of the facilities covered by the bubble, beyond the otherwise-applicable RACT limitation for each facility, will be required. The additional reduction may be obtained entirely from one facility or from a combination of the facilities which are part of the bubble. A straight-line distance of less than 10 miles shall require no additional reduction; a distance of more than 10 but less than 20 miles shall require a 5% reduction; etc.

(4) Compliance Status of Facilities

(a) Only facilities which are in compliance with all applicable air quality regulations and requirements may apply for alternative emission limits under this regulation. To be in compliance a facility must:

1. demonstrate compliance at the time an application is submitted, or

2. be meeting the requirements of a legally enforceable compliance schedule which meets the requirements of the federal Clean Air Act, or

Appendix B continued: 3. agree to a legally enforceable compliance schedule which insures compliance with alternative limitations on a schedule that meets the requirements of the federal Clean Air Act.

(b) Submission of an application for a bubble will not affect any existing obligation of a facility to comply with applicable laws, regulations and orders unless the Department issues an order specifically extending a compliance schedule. No such order may extend compliance dates beyond mandatory attainment dates in the Clean Air Act or interfere with reasonable further progress as required by the Clean Air Act.

©) No alternative emission limitation will be established for a facility which is presently subject to or has in the past been subject to federal enforcement action unless the U.S. Environmental Protection Agency approves the alternative limitation and the schedule for meeting it.

(5) Public Notice and Participation:

(a) The Department, at the applicant's expense, shall publish a notice of all bubble applications in a newspaper of general circulation in the area affected by the facility, or facilities, included in the bubble application.

(b) The Department shall allow for a 30 day public comment period following the published notice.

©) The Department shall make available for public inspection documents relating to bubble application at the appropriate regional office and the central office.

(d) The Department may conduct a public hearing in accordance with the provisions of M.G.L. c.30A, Sec. 2, if a request is made in writing to the Department by a member of the public before the end of the public comment period or if the Commissioner deems a public hearing to be appropriate.

(6) Monitoring and Reporting Requirements:

Any facility which receives an approval for a bubble plan pursuant to 310 CMR 7.00, Appendix B, shall submit comprehensive and accurate reports in a form and on a schedule specified by the Department. Such reports shall contain information necessary to demonstrate to the

Appendix B continued:

Department's satisfaction that all requirements of the bubble approval are being met. The Department may designate a single person from each facility who shall be legally responsible for submitting the required information in a timely and accurate fashion.

(7) Revocation:
The Department may revoke a bubble approval at any time if it determines that the facility has failed to submit accurate and timely reports containing all required information, or otherwise to comply with the requirements of its bubble approval.

REGULATORY AUTHORITY:

310 CMR 7.00 Appendix B: M.G.L. c. 111, S 142A-142Ds

Attachment # 2

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

DATE: April 15, 1983

SUBJECT: Reynolds Metals - VOC Bubble With Long-Term Emissions Averaging

FROM: G. T. Helms, Chief
Control Programs Operations Branch (MD-15)

TO: Jim Sydnor, Acting Chief
Air Management Branch, Region III

This memorandum is to follow up on our recent telephone conversation concerning the appropriateness of extended or long averaging times in VOC regulatory actions. My staff has reviewed the available guidance and information and we offer the following recommendation.

The objective of EPA's national VOC emissions control program is the attainment and maintenance of the one hour NAAQS for ozone. SIP revisions and other regulatory actions relating to VOC control must maintain the integrity of this basic objective. There should be assurance that VOC emission control is reasonably consistent with protecting the short-term O3 standard. Further, since SIP's and associated VOC control programs contemplate the application of real RACT level controls, regulatory actions that incorporate longer term averages to circumvent the installation of RACT level controls should not be allowed.

Past Agency guidance specified the use of a daily weighted average for VOC regulations as the preferred alternative where continuous compliance is not practical. This is particularly applicable where a facility operates in a batch manner with multiple lines and various products. Reference is made to the December 8, 1980, Federal Register (copy attached) where can coaters are allowed to "bubble" across lines and average emissions over 24 hours.

Where this preferred daily weighted average is impractical because the source operations are such that daily VOC emissions cannot be determined or where the application of RACT is not feasible on a daily basis, longer averaging times might be permitted as long as the following principles are honored.

1. Real emission reductions are achieved, consistent with the RACT control levels specified in State SIP's or the CTG; preferably the emission limits should be expressed in terms of VOC per unit of production.

2. Averaging periods should be as short as practicable and no longer than 30 days.

3. Where it is not practical to specify emission limits in terms of VOC per unit of production, emission limits per unit of time can be approved

provided that:

a. The emissions limit reflects typical (rather than potential or allowable) production rate and operating hours. This should be supported by historical data;

b. The adopted limits truly reflect emissions reductions consistent with RACT and are not simply an artificial constraint on potential emissions;

c. Nonproduction or equipment downtown is not allowed in the limit calculation.

4. Where possible, short-term (i.e., daily) emission caps are desirable especially for sources subject to large fluctuations in emissions. The use of a daily cap that limits short-term emissions to less than historical levels would tend to support the above objective of ensuring VOC control that is consistent with attaining the NAAQS for ozone.

In order to show adherence to the above principles, our staff recommendation is that sources and States include the following information in their request for averaging times greater than 24 hours:

1. The VOC RACT limits specified in an enforceable form with appropriate compliance dates.

2. A description of the affected processes and associated historical production and operating rates.

3. A description of the control techniques to be applied to the affected processes such as low solvent and waterborne coating technology and/or add-on controls.

4. The nature of the emission control program whether a bubble, a regulation change; a compliance schedule, or some other form of alternative control program.

5. The method of recordkeeping and reporting to be employed to demonstrate compliance with the RACT requirement.

If you have any questions regarding these principles, please give me or Brock Nicholson a call at FTS 629-5526.

Attachment

1. Federal Register: December 8, 1980

cc: Chief, Air Branch, Regions I-II, IV-X
Rich Biondi
Barbara Sih

Attachment

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

DATE: September 11, 1981

SUBJECT: Review of the Final Pennsylvania Group II VOC Regulations

FROM: Tom Williams and Bill Polglase
Technical Guidance Section

TO: G. T. Helms

THRU: Brock Nicholson, Chief
Technical Guidance Section

The final Pennsylvania Group II VOC regulations have been reviewed and the following comments are offered.

1. Section 129.53 Internal Offsets — The equation cited in this section is incorrect for determining allowable emissions. The equation overstates the allowable emissions by not correcting for the greater coverage resulting from the higher solids content of complying coatings. All else being equal, the amount of coating required to coat a specific object depends on the amount of solids in the coating. The Pennsylvania regulation assumes the current usage of coating will not change when a source goes from its existing coating to a high solids coating. Less total coating will, in fact, be used because a high solids coating contains a greater amount of solids, therefore, less coating is required to coat a specific object.

Example (one of several coating lines):

Current coating =

$$= \left(\frac{5.5\,\text{lbs VOC}}{\text{gal coating}}\right) \times 10\left(\frac{\text{gals coating used}}{\text{hr}}\right) = 55\left(\frac{\text{lbs VOC}}{\text{hr}}\right)$$

Pennsylvania allowable emissions with complying coating =

$$= \left(\frac{3.0\,\text{lbs VOC}}{\text{gal coating}}\right) \times 10\left(\frac{\text{gals coating used}}{\text{hr}}\right) = 30\left(\frac{\text{lbs VOC}}{\text{hr}}\right)$$

Actual allowable emissions =

$$= \left(\frac{3.0\,\text{lbs VOC}}{\text{gal coating}}\right) \times 4.24\left(\frac{\text{gals coating used}}{\text{hr}}\right) = 12.7\left(\frac{\text{lbs VOC}}{\text{hr}}\right)$$

The difference in usage of from 10 to 4.24 gals/hr is because fewer gallons are needed to coat the same number of objects as before. See Attachment 1 for calculating the complying coating usage.

2. Section 129.58 Refinery Leaks – Paragraph (b) exempts fittings on all valves one inch or smaller from the requirement of a second valve, flange, plug, or cap. It appears that this exemption is aimed at pipes and lines that are inch or less in size. The summary of the State public hearing comments (see issue 21) indicated that the State agreed to delete this exemption. This exemption should be deleted unless the State can make a showing that the emissions from smaller lines are insignificant.

3. Section 129.62 General Standards for Gasoline Marketing (Tank Truck Testing) – Paragraph (C)(5) exempts gasoline trucks with a capacity of less than 4,800 gallons from the leak test requirements. The State should provide information on the effect of this exemption. What is the number of gallons annually transported in small trucks and what percent is this of the total gallons transported?

4. Section 129.64 Cutback Asphalt – Paragraph (b)(3) exempts cutback used as a tack coat. The State hearing summary indicated that tack coat emissions are less than five percent of total emissions from all asphalt paving. Verification of the State emission inventory data should be adequate documentation for approving this regulation.

5. Section 126.69 Rubber Tires – Paragraph (d) allows a bubble of 72.9 grams/tire for the 4 covered processes. The State should show that this is equivalent to RACT for the sources that will be affected. What are the current emissions in grams/tire? Will the plants achieve any reductions if they meet the bubble number?

6. Section 129.70 Perchloroethylene Dry Cleaning – This section requires venting of emissions through a properly functioning condenser or carbon adsorber but does not have an emission limit stated. The CTG recommended 100 ppm limit for carbon adsorbers. Additional information indicates that the 100 ppm limit may not be applicable for all types of control equipment. A 90 percent recovery rate for the dryer would be a reasonable emission limit and would allow the source several choices in adding control equipment. A perchloroethylene mileage rate would also be an acceptable method to limit emissions while giving the sources maximum flexibility.

The States regulation is deficient for the following reasons: (1) All plants have a water-cooled surface condenser on the dryer. The condenser requirement in the regulation would, therefore, not reduce emissions from dry cleaners. Emissions from a dryer with a water-cooled condenser during the dryer exhaust cycle range from 3 to 6 kgs per 100 kgs of clothes cleaned. A 90 percent recovery rate would reduce this to 0.3 - 0.6 kg/100 kgs clothes cleaned. A carbon adsorber would reduce the emissions to less than 0.3 kg/100 kgs clothes cleaned. (2) The requirement that the condenser or adsorber be "properly functioning" is so general that it would not be enforceable.

We are sympathetic to the State's reluctance to require these small sources to stack test and to the State's concern over the burden of enforcement. Earlier guidance suggested a small size exemption from the requirement to install a control device. See memo from G. T. Helms dated August 4, 1980, "Issues Concerning VOC RACT II Regulation Development." The sample regulation contained in EPA-450/2-79-004 suggested additional exemptions for dry cleaners.

There are several options open to the State that would satisfy an emission limit without requiring stack testing by the source. (1) An emission limit of 100 ppm for adsorbers or 90 percent recovery rate for other control devices could be met by requiring the manufacturers to demonstrate equivalence with the limits. Once this was documented, any dry cleaner installing and using the equipment, per the operating parameters at the time of the test, would be considered to be in compliance. (2) An emission limit based on perc mileage would require recordkeeping but not testing. Such a limit of 5 kgs/100 kgs clothes cleaned (for the entire plant operation) would be the easiest to enforce if the proper records were kept.

Attachments

cc: Ray Cunningham
Neil Swanson

Attachment 1

GROUP I VOC REGULATIONS

State of Pennsylvania

CTG document	RACT limits	Compliance dates	Test methods	Exemptions
1. Auto & lt. duty trucks	yes	low solvent - *3 yrs add-on *2 yrs	yes	50 tons/yr
2. Cans	"	"	"	"
3. Paper	"	"	"	"
4. Fabric	"	"	"	"
5. Metal furn.	"	"	"	"
6. Large appl.	"	"	"	"
7. Magnet wire	"	"	"	"
8. Coils	"	"	"	"
9. Fixed-roof tks	yes	*2 yrs	yes	< 40,000 gals
10. Bulk terminals	yes	*2 yrs	yes	trucks < 250 gals
11. Bulk plants		*2 yrs	yes	trucks < 250 gals
a. submerged fill of trucks				
b. vapor bal. incoming trucks				b. < 2,000 gals/ day throughput
c. vapor bal. outgoing trucks				c. < 16,000 gals/ day throughput
12. Stage I	yes	*2 yrs	yes	< 2,000 gal tank < 60,000 gal annual throughput
13. Pet. ref. sources	yes	*2 yrs	yes	
14. Cutback asphalt	yes	4/30/82	yes	tack coat, prime coat, dust palliative, pre-coating of aggregate
15. Degreasers	yes	*2 yrs	yes	

*From date of adoption of the regulation.

Attachment 2

GROUP II VOC REGULATIONS

State of Pennsylvania

CTG category	RACT limits	Compliance dates	Test methods	Exemptions
Tank Trucks	yes	plan due *15 months start tests 1/1/83 complete initial test 1/1/84	yes	< 4,800 gals
Refinery Leaks	yes	*18 months	yes	fittings on valves 1 inch or smaller from a second valve, cap, etc.
Floating Roof Tanks	yes	*2 years	yes	< 40,000 gals
Miscellaneous Metals	yes	low solvent - *3 yrs add-on *2 yrs	yes	< 50 tons/yr
Paneling	---	----	---	----
Pharmaceutical	yes	*2 years	yes	< 50 tons/yr
Rubber Tires	yes?	*2 years	yes	< 5,000 tires/day < 100 tons/yr
Dry Cleaning	no	7/1/82	yes	
Graphic Arts	yes	add-on - *2 yrs LSI - *3 yrs porous substrate LSI - 12/31/85 non-porous substrate	yes	< 1,000 lbs/day or < 100 tons/yr proof presses

*From date of adoption of the regulation.

Attachment 3

Allowable Emissions for One of Several
Coating Lines in a Bubble Calculation

Given:

Existing coating - 5.5 lbs VOC/gal coating
Existing coating solvent density = 7.36 lbs/gal
Existing coating usage = 10 gals/hr

Complying coating = 3.0 lbs VOC/gal coating
Complying coating solvent density = 7.36

Assumption - transfer efficiency and film thickness stays constant

Existing coating:

$$\frac{5.5\,\text{lbs VOC/gal coating}}{7.36\,\text{lbs/gal (density)}} \times 100 = 0.75\,\text{volume \% solvent}$$

$$1.00 - 0.75\,\text{volume \% solvent} = 0.25\,\text{volume \% solids}$$

$$10\left(\frac{\text{gal}}{\text{hr}}\,\text{coating used}\right) \times 0.25\,\text{volume \% solids} = 2.5\,\text{gal solids applied}$$

Complying coating:

$$\frac{3.0\,\text{lbs VOC/gal coating}}{7.36\,\text{lbs/gal (density)}} \times 100 = 0.41\,\text{volume \% solvent}$$

$$1.00 - 0.41\,\text{volume \% solvent} = 0.59\,\text{volume \% solids}$$

application rate = 2.5 gals solids/hr (see above)

$$\begin{pmatrix}\text{gallons coating}\\ \text{required}\end{pmatrix} = \frac{2.5\,\text{gals solids applied}}{0.59\,\text{volume \% solids}} = 4.24\,\frac{\text{gals coating required}}{\text{hr}}$$

Allowable emissions:

$$\text{Allowable emissions} = 3.0\,\frac{\text{lbs VOC}}{\text{gal}} \times 4.24\,\frac{\text{gals coating}}{\text{hr}} = 12.72\,\frac{\text{lbs VOC}}{\text{hr}}$$

Attachment 4

Calculation of Percent Reduction
for Table 1

Coating A

1. % of VOC in a gallon of Complying Coating

$$\frac{\text{lbs VOC compliance coating}}{\text{Density}} = \frac{2.9 \times 100}{7.36} = 39.4\%$$

2. % of solids in a gallon of Complying Coating 60.6%

3. % of VOC in Coating A

$$\frac{\text{lbs/gal VOC Coating A}}{\text{Density Coating A}} = \frac{6.0 \times 100}{9.0} = 66.6\%$$

4. % of solids in Coating A 33.3%

5. Number of gallons of Coating A needed to coat same amount as one gallon of a Compliance Coating

$$\frac{\text{\% Solids Compliance}}{\text{\% Solids Coating A}} = \frac{60.6}{33.3} = 1.82 \text{ gallons}$$

6. Amount of VOC in 1.82 gallons of Coating A

$$1.82 \text{ gals} \times 6.0 \text{ lbs/gal} = 10.9\text{lbs}$$

7. Percent reduction in emissions from Coating A

$$\frac{10.9 - 2.8}{10.9} = 73.4\%$$

8. Uncontrolled historic emissions from Coating A = 150 lbs/day

9. Allowable emissions with a Compliance Coating

$$150 \times \left(1 - \frac{73.4\%}{100\%}\right) = 40\text{lbs/day}$$

Coatings B and C

1. % VOC in Complying Coating = 39.4%

2. % solids in a Complying Coating = 60.6%

3. % VOC in Coating B/C

$$\left(\frac{8.0}{9.0}\right) \times 100 = 88.9\%$$

4. % solids in Coating B/C = 11.1%

5. Number of gallons of Coating B needed to Coat same amount as 1 gallon of a Compliance Coating

$$\left(\frac{60.0}{11.1}\right) = 5.40 \text{ gal}$$

6. Amount of VOC in 5.46 gallons of Coating B/C

$$5.46 \times 8 \text{ lbs/gal} = 43.2 \text{ lbs}$$

7. Percent reduction needed to achieve RACT

$$\left(\frac{43.2 - 2.9}{43.2}\right) \times 100\% = 93.3\%$$

8. Uncontrolled historic emissions from Coating B 400 lbs/day

9. Allowable emissions with a Compliance Coating 27 lbs/day

10. Uncontrolled historic emissions from Coating C 800 lbs/day

11. Allowable emissions with a Compliance Coating 54 lbs/day

Attachment # 3

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

DATE: September 11, 1981

SUBJECT: Review of the Final Pennsylvania Group II VOC Regulations

FROM: Tom Williams and Bill Polglase
Technical Guidance Section

TO: G. T. Helms

THRU: Brock Nicholson, Chief
Technical Guidance Section

The final Pennsylvania Group II VOC regulations have been reviewed and the following comments are offered.

1. Section 129.53 Internal Offsets — The equation cited in this section is incorrect for determining allowable emissions. The equation overstates the allowable emissions by not correcting for the greater coverage resulting from the higher solids content of complying coatings. All else being equal, the amount of coating required to coat a specific object depends on the amount of solids in the coating. The Pennsylvania regulation assumes the current usage of coating will not change when a source goes from its existing coating to a high solids coating. Less total coating will, in fact, be used because a high solids coating contains a greater amount of solids, therefore, less coating is required to coat a specific object.

Example (one of several coating lines):

Current coating =

$$= \left(\frac{5.5\,\text{lbs VOC}}{\text{gal coating}}\right) \times 10\left(\frac{\text{gals coating used}}{\text{hr}}\right) = 55\left(\frac{\text{lbs VOC}}{\text{hr}}\right)$$

Pennsylvania allowable emissions with complying coating =

$$= \left(\frac{3.0\,\text{lbs VOC}}{\text{gal coating}}\right) \times 10\left(\frac{\text{gals coating used}}{\text{hr}}\right) = 30\left(\frac{\text{lbs VOC}}{\text{hr}}\right)$$

Actual allowable emissions =

$$= \left(\frac{3.0\,\text{lbs VOC}}{\text{gal coating}}\right) \times 4.24\left(\frac{\text{gals coating used}}{\text{hr}}\right) = 12.7\left(\frac{\text{lbs VOC}}{\text{hr}}\right)$$

The difference in usage of from 10 to 4.24 gals/hr is because fewer gallons are needed to coat the same number of objects as before. See Attachment 1 for calculating the complying coating usage.

2. Section 129.58 Refinery Leaks – Paragraph (b) exempts fittings on all valves one inch or smaller from the requirement of a second valve, flange, plug, or cap. It appears that this exemption is aimed at pipes and lines that are inch or less in size. The summary of the State public hearing comments (see issue 21) indicated that the State agreed to delete this exemption. This exemption should be deleted unless the State can make a showing that the emissions from smaller lines are insignificant.

3. Section 129.62 General Standards for Gasoline Marketing (Tank Truck Testing) – Paragraph (C)(5) exempts gasoline trucks with a capacity of less than 4,800 gallons from the leak test requirements. The State should provide information on the effect of this exemption. What is the number of gallons annually transported in small trucks and what percent is this of the total gallons transported?

4. Section 129.64 Cutback Asphalt – Paragraph (b)(3) exempts cutback used as a tack coat. The State hearing summary indicated that tack coat emissions are less than five percent of total emissions from all asphalt paving. Verification of the State emission inventory data should be adequate documentation for approving this regulation.

5. Section 126.69 Rubber Tires – Paragraph (d) allows a bubble of 72.9 grams/tire for the 4 covered processes. The State should show that this is equivalent to RACT for the sources that will be affected. What are the current emissions in grams/tire? Will the plants achieve any reductions if they meet the bubble number?

6. Section 129.70 Perchloroethylene Dry Cleaning – This section requires venting of emissions through a properly functioning condenser or carbon adsorber but does not have an emission limit stated. The CTG recommended 100 ppm limit for carbon adsorbers. Additional information indicates that the 100 ppm limit may not be applicable for all types of control equipment. A 90 percent recovery rate for the dryer would be a reasonable emission limit and would allow the source several choices in adding control equipment. A perchloroethylene mileage rate would also be an acceptable method to limit emissions while giving the sources maximum flexibility.

The States regulation is deficient for the following reasons: (1) All plants have a water-cooled surface condenser on the dryer. The condenser requirement in the regulation would, therefore, not reduce emissions from dry cleaners. Emissions from a dryer with a water-cooled condenser during the dryer exhaust cycle range from 3 to 6 kgs per 100 kgs of clothes cleaned. A 90 percent recovery rate would reduce this to 0.3 - 0.6 kg/100 kgs clothes cleaned. A carbon adsorber would reduce the emissions to less than 0.3 kg/100 kgs clothes cleaned. (2) The requirement that the condenser or adsorber be "properly functioning" is so general that it would not be enforceable.

We are sympathetic to the State's reluctance to require these small sources to stack test and to the State's concern over the burden of enforcement. Earlier guidance suggested a small size exemption from the requirement to install a control device. See memo from G. T. Helms dated August 4, 1980, "Issues Concerning VOC RACT II Regulation Development." The sample regulation contained in EPA-450/2-79-004 suggested additional exemptions for dry cleaners.

There are several options open to the State that would satisfy an emission limit without requiring stack testing by the source. (1) An emission limit of 100 ppm for adsorbers or 90 percent recovery rate for other control devices could be met by requiring the manufacturers to demonstrate equivalence with the limits. Once this was documented, any dry cleaner installing and using the equipment, per the operating parameters at the time of the test, would be considered to be in compliance. (2) An emission limit based on perc mileage would require recordkeeping but not testing. Such a limit of 5 kgs/100 kgs clothes cleaned (for the entire plant operation) would be the easiest to enforce if the proper records were kept.

Attachments

cc: Ray Cunningham
Neil Swanson

Attachment

GROUP I VOC REGULATIONS

State of Pennsylvania

CTG document	RACT limits	Compliance dates	Test methods	Exemptions
1. Auto & lt. duty trucks	yes	low solvent - *3 yrs add-on *2 yrs	yes	50 tons/yr
2. Cans	"	"	"	"
3. Paper	"	"	"	"
4. Fabric	"	"	"	"
5. Metal furn.	"	"	"	"
6. Large appl.	"	"	"	"
7. Magnet wire	"	"	"	"
8. Coils	"	"	"	"
9. Fixed-roof tks	yes	*2 yrs	yes	< 40,000 gals
10. Bulk terminals	yes	*2 yrs	yes	trucks < 250 gals
11. Bulk plants		*2 yrs	yes	trucks < 250 gals
a. submerged fill of trucks				
b. vapor bal. incoming trucks				b. < 2,000 gals/ day throughput
c. vapor bal. outgoing trucks				c. < 16,000 gals/ day throughput
12. Stage I	yes	*2 yrs	yes	< 2,000 gal tank < 60,000 gal annual throughput
13. Pet. ref. sources	yes	*2 yrs	yes	
14. Cutback asphalt	yes	4/30/82	yes	tack coat, prime coat, dust palliative, pre-coating of aggregate
15. Degreasers	yes	*2 yrs	yes	

*From date of adoption of the regulation.

Attachment

GROUP II VOC REGULATIONS

State of Pennsylvania

CTG category	RACT limits	Compliance dates	Test methods	Exemptions
Tank Trucks	yes	plan due *15 months start tests 1/1/83 complete initial test 1/1/84	yes	< 4,800 gals
Refinery Leaks	yes	*18 months	yes	fittings on valves 1 inch or smaller from a second valve, cap, etc.
Floating Roof Tanks	yes	*2 years	yes	< 40,000 gals
Miscellaneous Metals	yes	low solvent - *3 yrs add-on *2 yrs	yes	< 50 tons/yr
Paneling	---	----	---	----
Pharmaceutical	yes	*2 years	yes	< 50 tons/yr
Rubber Tires	yes?	*2 years	yes	< 5,000 tires/day < 100 tons/yr
Dry Cleaning	no	7/1/82	yes	
Graphic Arts	yes	add-on - *2 yrs LSI - *3 yrs porous substrate LSI - 12/31/85 non-porous substrate	yes	< 1,000 lbs/day or < 100 tons/yr proof presses

*From date of adoption of the regulation.

Attachment

Allowable Emissions for One of Several
Coating Lines in a Bubble Calculation

Given:

Existing coating - 5.5 lbs VOC/gal coating
Existing coating solvent density = 7.36 lbs/gal
Existing coating usage = 10 gals/hr

Complying coating = 3.0 lbs VOC/gal coating
Complying coating solvent density = 7.36

Assumption - transfer efficiency and film thickness stays constant

Existing coating:

$$\frac{5.5\,\text{lbs VOC/gal coating}}{7.36\,\text{lbs/gal (density)}} \times 100 = 0.75\,\text{volume \% solvent}$$

$$1.00 - 0.75\,\text{volume \% solvent} = 0.25\,\text{volume \% solids}$$

$$10\left(\frac{\text{gal}}{\text{hr}}\,\text{coating used}\right) \times 0.25\,\text{volume \% solids} = 2.5\,\text{gal solids applied}$$

Complying coating:

$$\frac{3.0\,\text{lbs VOC/gal coating}}{7.36\,\text{lbs/gal (density)}} \times 100 = 0.41\,\text{volume \% solvent}$$

$$1.00 - 0.41\,\text{volume \% solvent} = 0.59\,\text{volume \% solids}$$

application rate = 2.5 gals solids/hr (see above)

$$\begin{pmatrix}\text{gallons coating}\\ \text{required}\end{pmatrix} = \frac{2.5\,\text{gals solids applied}}{0.59\,\text{volume \% solids}} = 4.24\,\frac{\text{gals coating required}}{\text{hr}}$$

Allowable emissions:

$$\text{Allowable emissions} = 3.0\,\frac{\text{lbs VOC}}{\text{gal}} \times 4.24\,\frac{\text{gals coating}}{\text{hr}} = 12.72\,\frac{\text{lbs VOC}}{\text{hr}}$$

Attachment

Calculation of Percent Reduction
for Table 1

Coating A

1. % of VOC in a gallon of Complying Coating

$$\frac{\text{lbs VOC compliance coating}}{\text{Density}} = \frac{2.9 \times 100}{7.36} = 39.4\%$$

2. % of solids in a gallon of Complying Coating 60.6%

3. % of VOC in Coating A

$$\frac{\text{lbs/gal VOC Coating A}}{\text{Density Coating A}} = \frac{6.0 \times 100}{9.0} = 66.6\%$$

4. % of solids in Coating A 33.3%

5. Number of gallons of Coating A needed to coat same amount as one gallon of a Compliance Coating

$$\frac{\text{\% Solids Compliance}}{\text{\% Solids Coating A}} = \frac{60.6}{33.3} = 1.82 \text{ gallons}$$

6. Amount of VOC in 1.82 gallons of Coating A

$$1.82 \text{ gals} \times 6.0 \text{ lbs/gal} = 10.9\text{lbs}$$

7. Percent reduction in emissions from Coating A

$$\frac{10.9 - 2.8}{10.9} = 73.4\%$$

8. Uncontrolled historic emissions from Coating A = 150 lbs/day

9. Allowable emissions with a Compliance Coating

$$150 \times \left(1 - \frac{73.4\%}{100\%}\right) = 40\text{lbs/day}$$

Coatings B and C

1. % VOC in Complying Coating = 39.4%

2. % solids in a Complying Coating = 60.6%

3. % VOC in Coating B/C

$$\left(\frac{8.0}{9.0}\right) \times 100 = 88.9\%$$

4. % solids in Coating B/C = 11.1%

5. Number of gallons of Coating B needed to Coat same amount as 1 gallon of a Compliance Coating

$$\left(\frac{60.0}{11.1}\right) = 5.40 \text{ gal}$$

6. Amount of VOC in 5.46 gallons of Coating B/C

$$5.46 \times 8 \text{ lbs/gal} = 43.2 \text{ lbs}$$

7. Percent reduction needed to achieve RACT

$$\left(\frac{43.2 - 2.9}{43.2}\right) \times 100\% = 93.3\%$$

8. Uncontrolled historic emissions from Coating B 400 lbs/day

9. Allowable emissions with a Compliance Coating 27 lbs/day

10. Uncontrolled historic emissions from Coating C 800 lbs/day

11. Allowable emissions with a Compliance Coating 54 lbs/day