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U.S. EPA Region III  
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STATE VOC REGULATORY REVIEW  
EPA REGION III  
DECEMBER 1987

U.S. EPA Region III  
Regional Center for Environmental  
Information  
1650 Arch Street (3PM52)  
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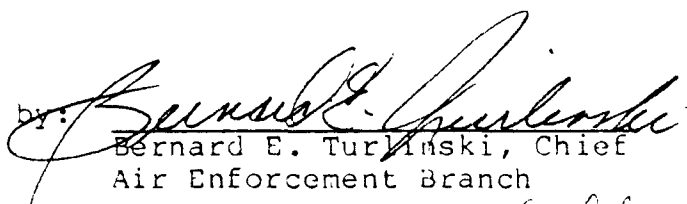
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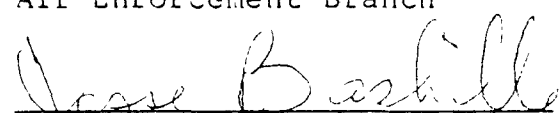
STATE VOC REGULATORY REVIEW  
EPA REGION III

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## PURPOSE

The purpose of issuing the State VOC Regulatory Review document is two-fold. The first is to provide a summary of the federal VOC guidelines and individual State VOC regulations and to discuss those issues which have surfaced as a result of the implementation of those regulations. The second is to provide a reference for States in developing ozone SIPs in accordance with the post-87 ozone/carbon monoxide (CO) policy.

As a summary of federal and State requirements, this document is a comprehensive, technical discussion of many issues which are generic to all VOC regulations as well as issues which may be specific to a particular VOC source category or a particular State. Where State regulations or federal guidelines were written vaguely and multiple interpretations have been used, this document attempts to clarify the original intent. However, many issues remain unresolved because of their national scope. In these cases, this document describes the difficulties which have surfaced in this Region as a result of these issues remaining unresolved. As to be expected, the issues discussed in this document represent those which have been encountered in this Region and may not include other issues which are important to another Region or State.

The proposed post-87 ozone/CO policy will require all States submitting ozone/CO SIPs for their nonattainment areas to show an average 3% emission reduction per year. EPA recognizes that certain reductions should have already taken place through the adoption of previously required regulations. Therefore, any credit given toward progress in the new SIP is over and above those previously required reductions. This is referred to as "leveling the playing field".

The VOC Regulation Review document provides much of the information necessary to determine the "leveling of the playing field". This document, in conjunction with other references provides the information which will serve as the basis of the ozone SIP calls in 1983. Region III is planning to make SIP calls which will include a list of VOC regulatory deficiencies which should be corrected with the submittal of the new ozone SIP.

STATE VOC REGULATORY REVIEW  
EPA REGION III

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	<u>Page</u>
List of Appendices	vi
Acknowledgements	viii
Executive Summary	ix
List Of Tables	xi
List of Figures	xii
 1.0 INTRODUCTION	
1.1 General Description of Project	1
1.2 Study Methodology	2
 2.0 FEDERAL REQUIREMENTS	
2.1 General Provisions	5
2.1.1 Alternative Controls	5
2.1.2 Applicability	7
2.1.3 Averaging Time	8
2.1.4 Breakdown, Malfunctions and Operation Changes	15
2.1.5 Circumvention	16
2.1.6 Compliance Schedules	16
2.1.7 Definition of Terms	21
2.1.8 Equivalency Provisions	23
2.1.9 Inspection, Maintenance and Operating Procedures	24
2.1.10 Test Methods & Procedures	24
2.1.11 Monitoring, Recordkeeping and Reporting	24
2.2 Gasoline Marketing Activities	30
2.2.1 Bulk Gasoline Plants	30
2.2.2 Bulk Gasoline Terminals	31
2.2.3 Leaks from Gasoline Tank Trucks and Vapor Collection Systems	31
2.2.4 Stage I Vapor Control Systems at Gasoline Service Stations	32
2.3 Refinery Emissions and Petroleum Liquid Storage	34
2.3.1 Petroleum Liquid Storage in Fixed Roof Tanks	34
2.3.2 Petroleum Liquid Storage in External Floating Roof Tanks	35
2.3.3 Leaks from Refinery Equipment	36
2.3.4 Refinery Vacuum Producing Systems, Waste Water Separators and Process Units	36



	<u>Page</u>
2.4 Surface Coating and Graphic Arts	38
2.4.1 Can Coating	38
2.4.2 Coil Coating	39
2.4.3 Paper Coating	39
2.4.4 Fabric and Vinyl Coating	40
2.4.5 Coating of Automobiles and Light Duty Trucks	40
2.4.6 Metal Furniture Coating	41
2.4.7 Insulation of Magnetic Wire	42
2.4.8 Large Appliance Coating	42
2.4.9 Coating of Miscellaneous Metal Parts	43
2.4.10 Coating Flat Wood Paneling	44
2.4.11 Graphic Arts	45
2.5 Other Round I and II CTG VOC Categories	46
2.5.1 Solvent Metal Cleaning	46
2.5.2 Cutback Asphalt	46
2.5.3 Manufacture of Synthesized Pharmaceutical Products	47
2.5.4 Manufacture of Pneumatic Rubber Tires	47
2.5.5 Perchloroethylene Dry Cleaning Systems	48
3.0 GENERIC PROGRAM ISSUES	50
3.1 Clarification of Can Coating Policy and Applicability to Other Source Categories	54
3.2 Enforcement Policy Where Bubbles Are Pending	54
3.3 Recordkeeping Issues	54
3.3.a Feasibility	
3.3.b Deficient Recordkeeping Requirements in SIPS.	
3.3.c Type of Records Which Should be Maintained.	
3.3.d Verification of Compliance (or noncompliance) Based on Source Records.	
3.3.e Determining VOC Emissions Where Available Records are Not Consistent With the Averaging Time Specified in the SIP.	
3.4 Determining if SIP Provisions are Generic	56
3.5 Bubbles in the context of Consent Decrees	56
3.6 Schedules for Low Solvent Technology	57
3.7 Non Major ("B") VOC Sources	57
3.8 Policy Guidance Distribution	57

	<u>Page</u>
3.9 Economic Feasibility of RACT	53
3.10 Determining Equivalency on a Solids-as-Applied Basis	53
3.11 NSPS vs RACT Emission Limits/Standards	58
3.12 Regulating Total VOC Content of Coatings	59
3.13 Baseline Year	59
3.14 Site Specific RACT Determination	59
3.15 Seasonal Afterburner Exemption	59
3.16 Transfer Efficiency (TE)	60
3.17 Capture Efficiency	60
3.18 Compliance Considerations Where Intermittent Incineration is Used in Conjunction with Both High and Low Solvent Based Materials	61
3.19 Appropriate VOC Test Methods	61
3.20 Examples of SIP Deviations involving VOC RACT Regulations	61
4.0 COMPARATIVE SUMMARY OF STATE REGULATIONS BASED ON CONSISTENCY AND ADEQUACY WITH REGARD TO FEDERAL REQUIREMENTS	
4.1 General Provisions	65
4.2 Gasoline Marketing	65
4.3 Refinery Processes and Petroleum Liquid Storage	65
4.4 Surface Coating and Printing	65
4.5 Other VOC Categories	65
5.0 STATE VOC REGULATORY ISSUES	
5.1 Common Issues	71
5.1.1 Definition of VOC	71
5.1.2 Recordkeeping	71
5.1.3 Equivalency	72
5.1.4 Test Methods and Procedures	73
5.1.5 Applicability Criteria and Exemptions	73
5.1.6 Clear Coat Definition	73
5.1.7 After Burner Exemption	74
5.2 Delaware	
5.2.1 General Provisions	75

	<u>Page</u>
5.2.2 Gasoline Marketing Activities	78
5.2.3 Refinery Emissions and Petroleum Liquid Storage	80
5.2.4 Surface Coating and Graphic Arts	81
5.2.5 Other Round I and II CTG Categories	84
5.2.6 Round III CTG Sources	85
5.2.7 Non-CTG Regulations	86
5.3 District of Columbia	
5.3.1 General Provisions	87
5.3.2 Gasoline Marketing	91
5.3.3 Refinery Emissions and Petroleum Liquid Storage	93
5.3.4 Surface Coating and Graphic Arts	96
5.3.5 Other Round I and II CTG Categories	97
5.3.6 Round III CTG Sources	98
5.3.7 Non-CTG Regulations	99
5.4 Maryland	
5.4.1 General Provisions	105
5.4.2 Gasoline Marketing	109
5.4.3 Refinery Emissions and Petroleum Liquid Storage	112
5.4.4 Surface Coating and Graphic Arts	113
5.4.5 Other Round I & II CTG Categories	117
5.4.6 Round III CTG Sources	118
5.4.7 Non-CTG Regulations	118
5.5 Pennsylvania	
5.5.1 DER	
5.5.1.1 General Provisions	120
5.5.1.2 Gasoline Marketing	123
5.5.1.3 Refining Emissions and Petroleum Liquid Storage	125
5.5.1.4 Surface Coating	126
5.5.1.5 Other Round I & II CTG Categories	123
5.5.1.6 Round III CTG Sources	129
5.5.1.7 Non-CTG Regulations	130

	<u>Page</u>
5.5.2 Allegheny County	
5.5.2.1 General Provisions	131
5.5.2.2 Gasoline Marketing	134
5.5.2.3 Refinery Emissions and Petroleum Liquid Storage	135
5.5.2.4 Surface Coating and Graphic Arts	136
5.5.2.5 Other Round I & II CTG Categories	138
5.5.2.6 Round III CTG Sources	139
5.5.2.7 Non-CTG Regulations	139
5.5.3 Philadelphia Air Management Services	140
5.6 Virginia	
5.6.1 General Provisions	141
5.6.2 Gasoline Marketing	145
5.6.3 Refinery Emissions and Petroleum Liquid Storage	147
5.6.4 Surface Coating and Graphic Arts	148
5.6.5 Other Round I & II CTG Categories	151
5.6.6 Round III CTG Sources	152
5.6.7 Non-CTG Regulations	153
5.7 West Virginia	
5.7.1 General Provisions	155
5.7.2 Gasoline Marketing	158
5.7.3 Refinery Emissions	158
5.7.4 Surface Coating and Graphic Arts	159
6.0 RECOMMENDATIONS	
6.1 SIP Call/SIP Revisions	160
6.2 Cooperative Interim Corrective Action	160
6.3 Direct EPA Action	161
6.4 Rule Effectiveness Study	161
6.5 Non-Major Sources	162

## APPENDICES

- 1.0 Summary of State VOC Regulation
- 2.0 Region III Transfer Efficiency Guidelines
- 3.0 Generic VOC Program Issues
  - 3.1 Can Coating Policy Clarification (Reserved)
  - 3.2 EPA Enforcement Response Where Bubbles are Pending
  - 3.3 Record Keeping
    - 3.3.a Feasibility of Daily Record Keeping
    - 3.3.b Deficient Record Keeping Requirements in SIPS (Reserved)
    - 3.3.c Type of Records that Should be Maintained
    - 3.3.d Verification of Source Compliance Based on Source Records
    - 3.3.e Determining VOC Emissions Where Available Records are not Consistent with Averaging Specified in the SIP Standard
  - 3.4 Determining if SIP Provisions are Generic: Bubbles, Equivalency Provisions, Variances, and Similar SIP Provisions (Reserved)
  - 3.5 Bubbles in the Context of a Consent Decree
  - 3.6 Schedules for Low Solvent Technology
  - 3.7 Non Major ('B') Sources
  - 3.8 Distribution of Policy and Guidance
  - 3.9 Economic feasibility of RACT: Non-CTG and Source Specific RACT Determinations
  - 3.10 Solids-As-Applied: Determining Equivalency (Reserved)
  - 3.11 NSPS vs RACT Limits: Averaging Time Differences (Reserved)
  - 3.12 Regulatory Total VOC vs VOC Coating Content
  - 3.13 Baseline Year
  - 3.14 Site Specific RACT Determinations

- 3.15 Seasonal Afterburner Exemption
- 3.16 Transfer Efficiency (Reserved)
- 3.17 Capture Efficiency (Reserved)
- 3.18 Intermittent Incineration use where both high and low solvent materials are used
- 3.19 Appropriate Test Methods
- 3.20 Averaging Times SIP Revision Policy

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I would also like to thank those State Agencies that took the time to review and comment on this report. Their insight and remarks were very helpful and enlightening. It is hoped that this document will promote the inter-agency dialogue necessary to resolve the issues cited here and eventually lead to attainment of the national ambient air quality standard for ozone.

## Executive Summary

- ° This report represents a desk top evaluation of VOC regulations in Federally approved Region III SIPs.
- ° General issues have been identified which effect most SIPs. These are:
  - Applicability Criteria: SIPs generally provide less stringent criteria and more liberal exemptions.
  - Equivalency Procedures: Some States are erroneously using equivalency provisions to change SIP requirements.
  - Recordkeeping: Specific requirements are lacking and States are reluctant to exercise their authority to require it. This makes compliance determinations difficult.
  - Compliance Testing & Procedures: All SIPs are deficient or are in need of substantial updating.
- ° SIP specific issues have been noted. Although most appear to be of minor concern, some are significant and may effect the enforceability of the particular regulation.
- ° Ultimately all issues can be addressed within the context of the 1988 SIP calls for areas that will not attain the ozone standard by December 31, 1987.
- ° A number of significant issues can be addressed through cooperative efforts between EPA and the States.
- ° Direct EPA action through SIPs or case specific enforcement remedies are strategies of last resort regarding the issues identified here.
- ° A cooperative effort with the States is recommended using the existing State EPA Agreement and air program grant processes.
- ° The cooperative effort should allow for the mitigation of deficiencies and the realization of additional VOC reductions at the earliest possible time.
- ° The regulatory effectiveness analysis now being initiated by EPA should build on this report and be used to prioritize efforts to implement corrective action.



° A "B" source compliance strategy is essential to the full effectiveness of the ozone SIPs and should be fully implemented by this Region.

List of Tables

<u>Table</u>	<u>Description</u>	<u>Page</u>
2-1	Requirements for Ozone Nonattainment Areas; Existing Stationary Sources	9
2-2	Region III Post 1982 Ozone Nonattainment Areas	10
2-3A	Compliance Schedules - Group I; Add-on Controls & Process Equipment Replacement & Modifications	17
2-3B	Compliance Schedules - Group I; Low Solvent Technology	18
2-4A	Round II Compliance Schedule; Miscellaneous Metal Parts; Flatwood Paneling; Pharmaceuticals, Rubber Tires; Graphic Arts, and Petroleum Liquid Storage	19
2-4B	Round II Compliance Schedules; Petroleum Refinery Equipment Leaks; Perchloroethylene Dry Cleaning; and Leaks from Gasoline Tank Trucks and Vapor Collection Systems.	20
2-5	VOCs exempted from Regulation by the Admin- istrator of EPA	22
2-6A	Test Methods or Procedures for Group I CTGs	25
2-6B	Test Methods or Procedures for Group II CTGs	28
3-1	VOC Issues; Status of Resolution	52
4-1	Comparative Summary General Provisions	66
4-2	Comparative Summary Gasoline Marketing	67
	Comparative Summary Refinery & PL Storage	68
4-3	Comparative Summary - Coating & Graphic Arts	69
4-5	Comparative Summary - Other CTG Categories	70
5-1A	Engraving and Plate Printing in D.C.	101
5-1B	Impact of Control Measures on Presses at BEP	102
5-2	Commonwealth of Virginia State Air Pollution Control Board Regulations for the Control and Abatement of Air Pollution: Regulation Reform Program - Reorganization Guide	155

List of Figures

<u>Figure</u>	<u>Description</u>	<u>Page</u>
2-1	Ozone Classification in Delaware	11
2-2	Ozone Classification in Maryland	12
2-3	Ozone Classification in Pennsylvania	13
2-4	Ozone Classification in Virginia	14



## 1.0 Introduction:

Enforcement of State VOC regulations is difficult, and in some cases impossible, as a result of significant flaws in regulatory language and construction. In certain nonattainment areas, these flaws may preclude attainment of the National Ambient Air Quality Standards for Ozone.

Many State agencies and EPA have been frustrated in their attempts to enforce Federally-approved VOC regulations in Part D Ozone SIPs. Deficiencies routinely arise in record-keeping, averaging time, equivalency and compliance testing requirements. As a result, compliance with the regulations and attainment of the NAAQS for ozone has suffered.

In recognition of these problems and in anticipation of the ozone attainment problem facing EPA, Region III's Air Management Division has completed this report evaluating the adequacy of VOC regulations in Region III. This effort will allow the Region to aggressively pursue measures which will lead to the full realization of VOC emission reductions anticipated in the SIPs. This approach has been adopted as the first step recommended by the Ozone Task Force in EPA's national post 1987 attainment program.

## 1.1 General Description of Project:

This study evaluates the existing Federally approved regulations for the control of volatile organic compounds (VOC) in Region III State Implementation Plans (SIPs), determines their consistency with EPA's policy and guidance and assesses the enforceability of these regulations. It is intended that this report be used as a basis for an in-the-field regulatory effectiveness analysis which would determine if the VOC emission reductions anticipated in the ozone nonattainment SIPs have actually been realized. This project involved a careful review of the VOC RACT regulations in each state and a comparison of these regulations to those requirements recommended by EPA's regulatory guidance documents and control techniques guidelines (CTGs). The regulatory guidance documents were the principal basis of this comparison with reference to the CTGs where necessary to determine technical equivalency.

Region III announced its intent to do this study at a meeting of Region III State Air Directors on January 29, 1985. Letters describing the scope and purpose of the study and inviting state agency participation were sent on March 1, 1985. A workgroup composed of Region III staff members was formed in April 1985 and work on the study began shortly thereafter. The job proved to be very time consuming and laborious. However, a draft report was completed and distributed

for State agency and EPA Headquarters review and comment in May 1986. Since no comments were received as a result of this initial distribution, states were reminded of the need to comment in January 1987. Several states did eventually comment.

The study is primarily concerned with what is commonly called Round I and Round II CTG regulations. The status of Round III and non CTG source (greater than 100 tons per year) regulations is also presented but not discussed in detail. It is hoped that ozone nonattainment areas which are not able to attain the standard by the December 31, 1987 statutory deadline in the Clean Air Act will be able to use this study when considering if additional VOC emission reductions can be realized from full adherence to EPA policy and procedures.

## 1.2 Study Methodology

As noted, EPA's regulatory guidance documents for Round I & II CTG sources were the principal standard to which state regulations were compared. A document entitled "Regulatory Guidance for Control of Volatile Organic Compound Emissions from 15 Categories of Stationary Sources," EPA-905/2-78-001, was published in April 1978. This document provided guidance to the states in preparing RACT regulations for the 15 source categories included in Round I CTGs.

A regulatory guidance document was also developed from these Group II CTGs. Published in September 1979 and entitled "Guidance to State and Local Agencies in Preparing Regulations to Control Volatile Organic Compounds from Ten Stationary Source Categories," EPA-450/2-79-004, this document provided assistance to the state and local agencies in preparing RACT regulations for the 10 industrial categories covered by the Group II CTG documents.

The actual CTGs, which were the technical basis for RACT regulations, were used as necessary to evaluate the technical adequacy of these regulations. Eleven CTGs covering 15 VOC source categories were published prior to January 1978. These first eleven CTGs were:

- ° Surface Coating of Cans Coils, Paper, Fabric, Automobiles and Light-Duty Trucks (EPA-450/2-77-008.)
- ° Surface Coating of Metal Furniture (EPA-450/2-77-032).
- ° Surface Coating for Insulation of Magnetic Wire (EPA-450/2-77-033).
- ° Surface Coating of Large Appliances (EPA-450/2-77-034).

- Storage of Petroleum Liquids in Fixed Roof Tanks (EPA-450-77-036).
- Bulk Gasoline Plants (EPA-450/2-77-035).
- Solvent Metal Cleaning (EPA-450/2-77-022).
- Use of Cutback Asphalt (EPA-450/2-77-037).
- Refinery Vacuum Producing Systems, Wastewater Separators and Process Unit Turnarounds (EPA-450/2-77-025).
- Hydrocarbons from Tank Truck Gasoline Loading Terminals (EPA-450/2-77-026).
- Design Criteria for Stage I Vapor Control Systems, Gasoline Service Stations, U.S. EPA, OAQPS, November 1985.

EPA published an additional 10 CTG documents (Group II) in 1978. The 10 source categories covered were:

- Leaks from Petroleum Refinery Equipment (EPA-450/2-78-036).
- Surface Coating of Miscellaneous Metal Parts and Products (EPA-450/2-78-015).
- Manufacture of Vegetable Oil (EPA-450/2-78-035). This document was withdrawn by EPA and no Region III States have sources in this category. Consequently this category is not discussed in this report.
- Surface Coating of Flat Wood Paneling (EPA-450/2-78-032).
- Manufacture of Synthesized Pharmaceutical Products (EPA-450-2/78-029).
- Manufacture of Pneumatic Rubber Tires (EPA-450/2-78-030).
- Graphic Arts - Rotogravure and Flexography (EPA-40/2-78-033).
- Petroleum Liquid Storage in External Floating Roof Tanks (EPA-450/2-78-047).
- Perchloroethylene Dry Cleaning Systems (EPA-450/2-78-050).
- Leaks from Gasoline Tank Trucks and Vapor Collection Systems (EPA-450/2-78-051).

These documents were the principal references used for this study. In addition, practical insight and experience gained by staff also played a role in this evaluation.

Part of this effort was to summarize and state the Federal regulatory guidance. This is done in Part 2 of this report. State Regulations are evaluated in Part 5. Only differences from Federal guidelines are noted. These differences are summarized in table format in Part 4.

Generic program issues are discussed in Part 3. These are problems which have arisen since implementing the regulations and tend to impact the implementation of VOC RACT regulations nationwide. EPA has been attempting to address these issues and has met with some success. But certain issues remain to be resolved in spite of these efforts. Because of the broad program issues involved, EPA headquarters has lead responsibility to address these remaining questions.

Recommendations are addressed in Part 6. It should be realized that this report is not an end unto itself, but rather a first step in a process to evaluate where we have been and where we are going. It is more important for this report to serve as a catalyst for thought and discussion on these issues rather than attempt to dictate hard and fast answers to these complex questions.





## 2.0 FEDERAL REQUIREMENTS

This section describes the Federal requirements for Round I and II RACT Sources. These requirements are used to evaluate the requirements in approved SIPs. Deviations are noted and discussed in Sections 4.0 and 5.0.

### 2.1 General Provisions

The requirements presented here are taken from EPA's model regulations for Round I and II VOC Sources and Control Technique Guidelines (CTGs) for Reasonably Available Control Technology (RACT) for these sources. The model regulation documents are:

Regulatory Guidance for the Control of Volatile Organic Compound Emissions From Fifteen Categories of Stationary Sources, April 1978 (EPA-905/2-78-001)

and

Guidance to State and Local Agencies in Preparing Regulations to Control Volatile Organic Compounds from Ten Stationary Source Categories, September 1979 (EPA-450/2-79-004)

#### 2.1.1 Alternative Controls

At any time a source may apply to the State to use an alternative method of control. Upon approval by the State, this alternative may be submitted to EPA for approval as a SIP revision. This includes the concept of emission trading (or the "bubble concept"). The "bubble concept" implies relatively more control than would be required by the applicable regulation on sources with a low marginal cost of control and less on sources with a high cost, thus achieving the same emission reduction for less cost. It is important to note that the aggregate of the facility's emissions must be no more than the aggregate of the emissions allowable by the applicable regulations. Care should be taken in applying this concept so that the enforceability of the regulations is not jeopardized.

In general, the guidance provided with the Round I and II VOC SIPs was intended to provide the regulatory framework for evaluating and submitting a bubble proposal. A source specific bubble plan would not become effective until it was submitted and approved by EPA as a revision of the SIP pursuant

to § 110(a)(3)(A) of the Clean Air Act. The only exception to this is where the State has submitted and EPA has approved a generic bubble regulation. Unless a State's alternate control rule was specifically reviewed, processed and promulgated as a generic bubble (as is the case for Pennsylvania's coating/graphic arts bubble), source specific bubble proposals must be approved by EPA prior to implementation. EPA has an obligation under Section 110 to determine the effect on air quality of any change to a SIP. Under Section 110(a)(3)(A) of the Clean Air Act, 42 U.S.C. § 7410(a)(3)(A), "The Administrator of EPA shall approve revision of any implementation plan...[if] it meets the requirements of [Section 110(a)(2)]." Section 110(a)(2) includes the requirement that the SIP, as revised, will continue to provide for timely attainment and maintenance of National Ambient Air Quality Standards. In order to meet this responsibility, EPA must assess the air quality impacts of revisions to a SIP, either at the time that the bubble procedures are approved (in which case the procedures will be specifically approved, if appropriate, as a "generic bubble" mechanism), or each time the State grants a bubble to an individual source under the procedures. Accepting some provisions as generic when it is unclear whether EPA intended to approve them as such would not fulfill this obligation.

There are a number of air quality and enforcement considerations which must be addressed when considering a bubble. The air quality considerations are:

1. Air quality standards must be attained and maintained;
2. Emissions under the alternative must be quantifiable and trades must be at least even, both from mass emissions and air quality impact standpoint;
3. The trades must involve comparable pollutants (i.e., a VOC which has been determined to be hazardous cannot be traded with other non hazardous VOC's).

It is important to note that any Alternative Controls regulation should place the burden of proving quantifiable and even trades on the facility proposing the trade.

The enforcement considerations are:

1. All proposed alternative emissions control provisions must be submitted to EPA as alternatives or additions to the existing SIP, not as a replacement for it. This is to ensure that enforceable SIP provisions remain in effect, even if the alternative emission control provision is not approved or is unenforceable for any other reason.
2. Each emission point must have a specific emission limit and a test method that insures enforceability.
3. Noncomplying sources should not be allowed to submit alternative emission reduction proposals.
4. Final compliance must be achieved as expeditiously as possible and no later than the date that would be required under the applicable VOC emission reduction regulation.
5. There should be no delay of existing enforcement actions.

It is important to note that enforcement consideration number (2) specifically excludes facility-wide emission limitations or control alternatives which allow variable emission limits for a specific source. It is clear that, in order to be enforceable, an alternative control petition must provide measurable, permanently established emission limits for each source of VOC emissions that is affected by the petition.

#### 2.1.2 Applicability

In the memorandum of February 24, 1978, on "Criteria for Approval of 1979 SIP Revisions," two separate regulatory philosophies are presented. One, for major urban areas (population greater than 200,000), states that the regulation must reflect RACT for virtually all sized sources covered by the CTG's. The other, for rural nonattainment areas, requires RACT only for large sources (more than 100 ton/yr potential emissions).

Therefore, applicability exemptions should be presented for both urban and rural areas where necessary. In urban areas, the size exemption should be similar to the one presented in EPA-905/2-78-001, "Regulatory Guidance for Control of Volatile Organic Compound Emissions from 15 Categories of Stationary Sources" which states:

"In urban areas (population > 200,000), these regulations will not apply to sources whose emissions of volatile organic compounds are not more than 6.3 kilograms (15 pounds) in any 1 day, not more than 1.4 kilograms (3 pounds) in any 1 hour, provided the emission rates are determined and certified before March 1, 1980, in a manner approved by the Director."

Size limitations do not apply to certain CTG categories because either the intent of the regulation is to control VOC leaks (e.g., Petroleum Refinery Equipment, External Floating Roof Tanks, Gasoline Tank Trucks and Vapor Collection Systems) or the applicability section of the specific regulation has a different size limitation (e.g., Perchloroethylene Dry Cleaning Systems and Graphic Arts).

An exemption is also provided for research facilities, pilot plant operations, and laboratories if they meet certain criteria. It is not EPA's intent to regulate VOC sources within a facility if the sources are being used to develop process changes that may reduce VOC emissions from actual production equipment.

A brief summary of RACT requirements for VOC nonattainment areas is presented in Table 2-1. Please note that this report is primarily concerned with Round I and II RACT requirements as they affect post 1982 Ozone nonattainment areas. Table 2-2 lists those Region III areas which fall into this category. Figures 2-1 through 2-4 graphically show these areas.

#### 2.1.3 Averaging Time

Current EPA guidance specifies the use of a daily weighted average for VOC regulations as the preferred alternative where continuous compliance is not feasible. However, the preferred daily weighted alternative may not be economically or technically feasible in all cases. In such cases, a source specific SIP revision may be promulgated if the provisions of the January 20, 1984 O'Connor memorandum on averaging times are satisfied.

Table 2-1

REQUIREMENTS FOR OZONE NONATTAINMENT AREAS

Existing Stationary Sources

	1979 Plans		Extension	Post 1982
	Urban	Rural	Areas	SIP Calls
<u>Demonstration of Attainment</u>	<u>yes</u>	<u>no</u>	<u>yes</u>	<u>yes</u>
RACT as necessary to attain	yes, if <sup>1</sup>	NA	NA	NA
RACT on 100 tpy Sources				
Round I, II CTGs	NA	yes	NA	NA
Round III CTGs	NA	no	NA	NA
RACT on all applicable Sources				
Round I, II CTGs	yes	no	yes	yes
Round III CTGs	no	no	yes	yes
RACT on 100 tpy non-CTG	no	no	yes <sup>2</sup>	yes <sup>2</sup>
Additional Measures	no	no	yes, if <sup>3</sup>	yes, if <sup>3</sup>

NA - means not available as a strategy for area type

1 - photochemical dispersion model used in demonstration

2 - RACT is to be determined on a case-by-case basis

3 - necessary to attain by 1987

Table 2-2

REGION III POST 1982 OZONE NONATTAINMENT AREAS

Areas Receiving An Extension Beyond 1982 For Attaining The  
Ozone Standard:

<u>State</u>	<u>Nonattainment Area</u>
Delaware	Wilmington/New Castle County
District of Columbia	Washington
Maryland	Baltimore, Washington DC Area (Montgomery & Prince Georges Counties)
Pennsylvania	Allentown-Bethlehem-Easton, Philadelphia, Pittsburgh Metropolitan Areas
Virginia	Washington DC and Area (Cities of Alexandria, Falls Church, and Fairfax; and Loudoun, Prince William, Fairfax, and Arlington Counties).

Urbanized SIP Deficiency Call Areas (Plans Substantially  
Inadequate to Attain The Standards):

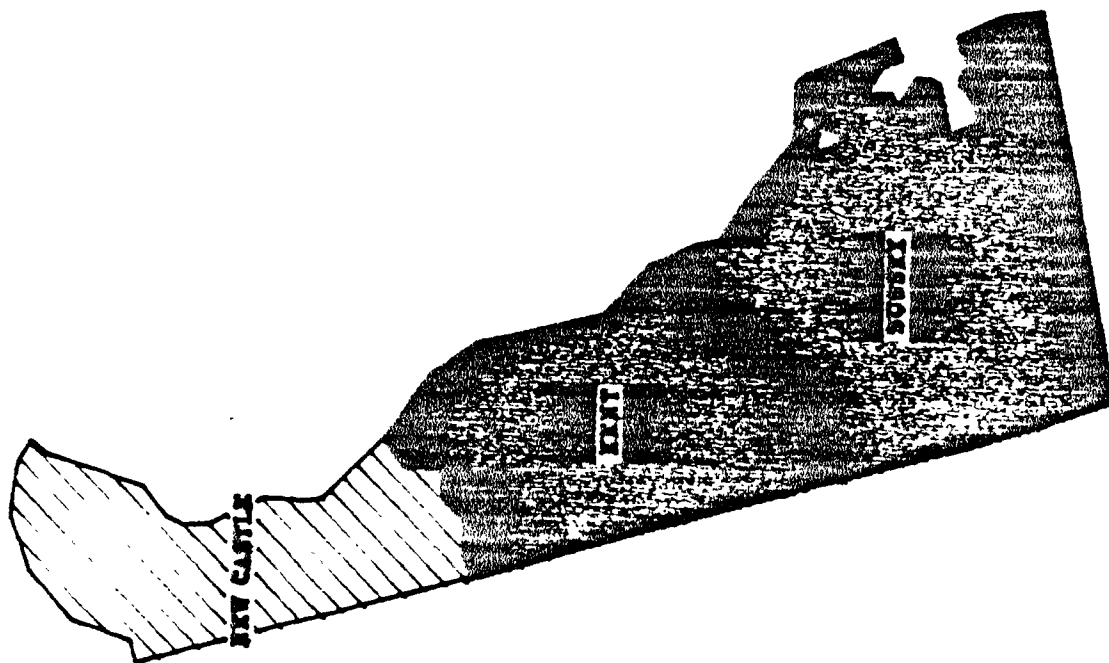
Pennsylvania	Scranton/Wilkes-Barre
Virginia	Richmond Area (includes Henrico & Chesterfield Counties)

Rural Ozone Non Attainment Areas:

Pennsylvania	Adams, Berks, Carbon, Crawford, Erie, Franklin, Greene, Juniata, Lancaster, Lawrence, Lebanon, Monroe Northumberland, Pike, Schuylkill, Snyder, Susquehanna, Warren, Wayne, Wyoming, York
--------------	--

# Ozone Classifications in Delaware

Figure 2-1

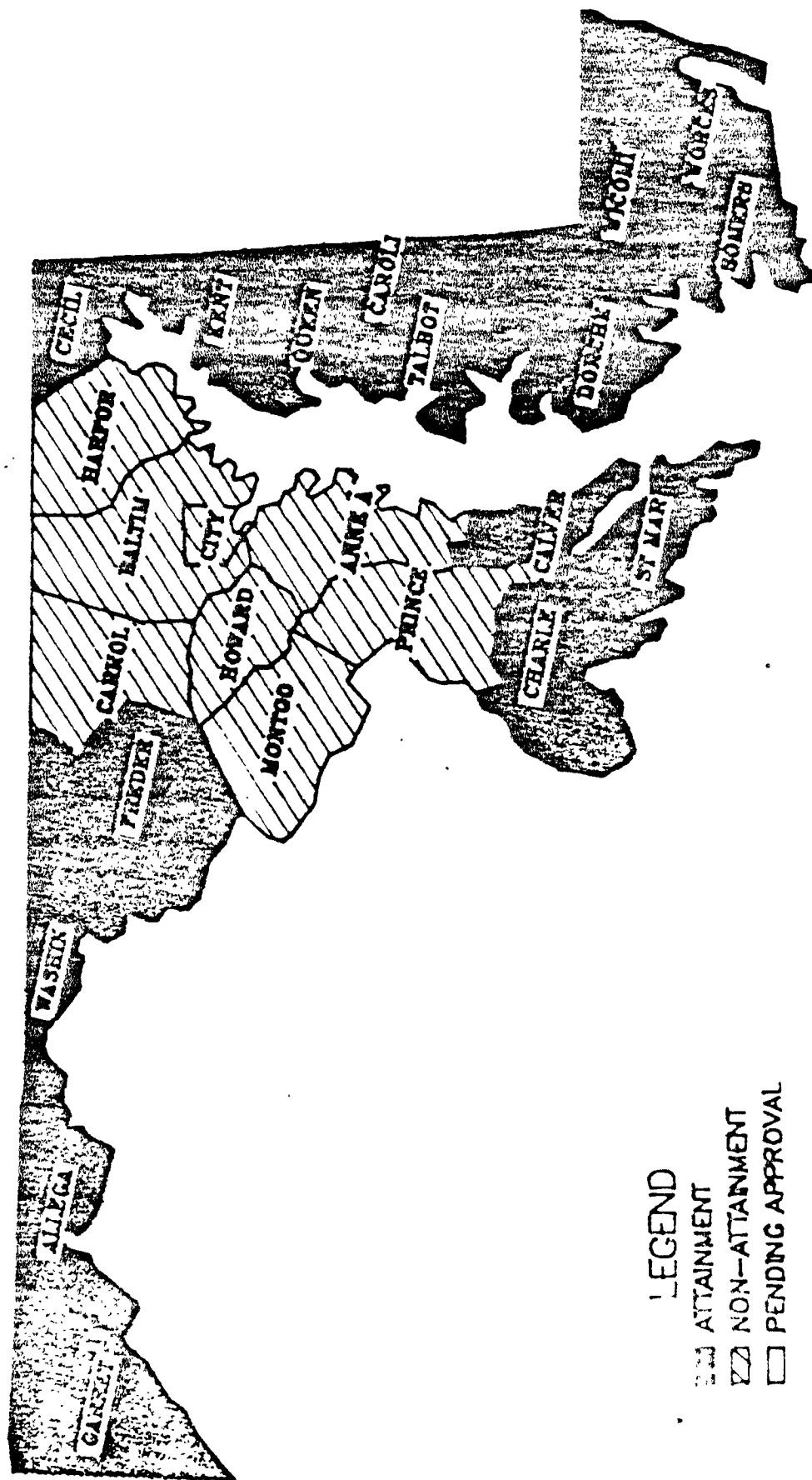


LEGEND  
NEW CASTLE NON-ATTAINMENT  
DELT ATTAINMENT  
SUSSEX ATTAINMENT



Figure 2-2

# Ozone Classifications in Maryland



# Ozone Classifications in Pennsylvania

Figure 2-3

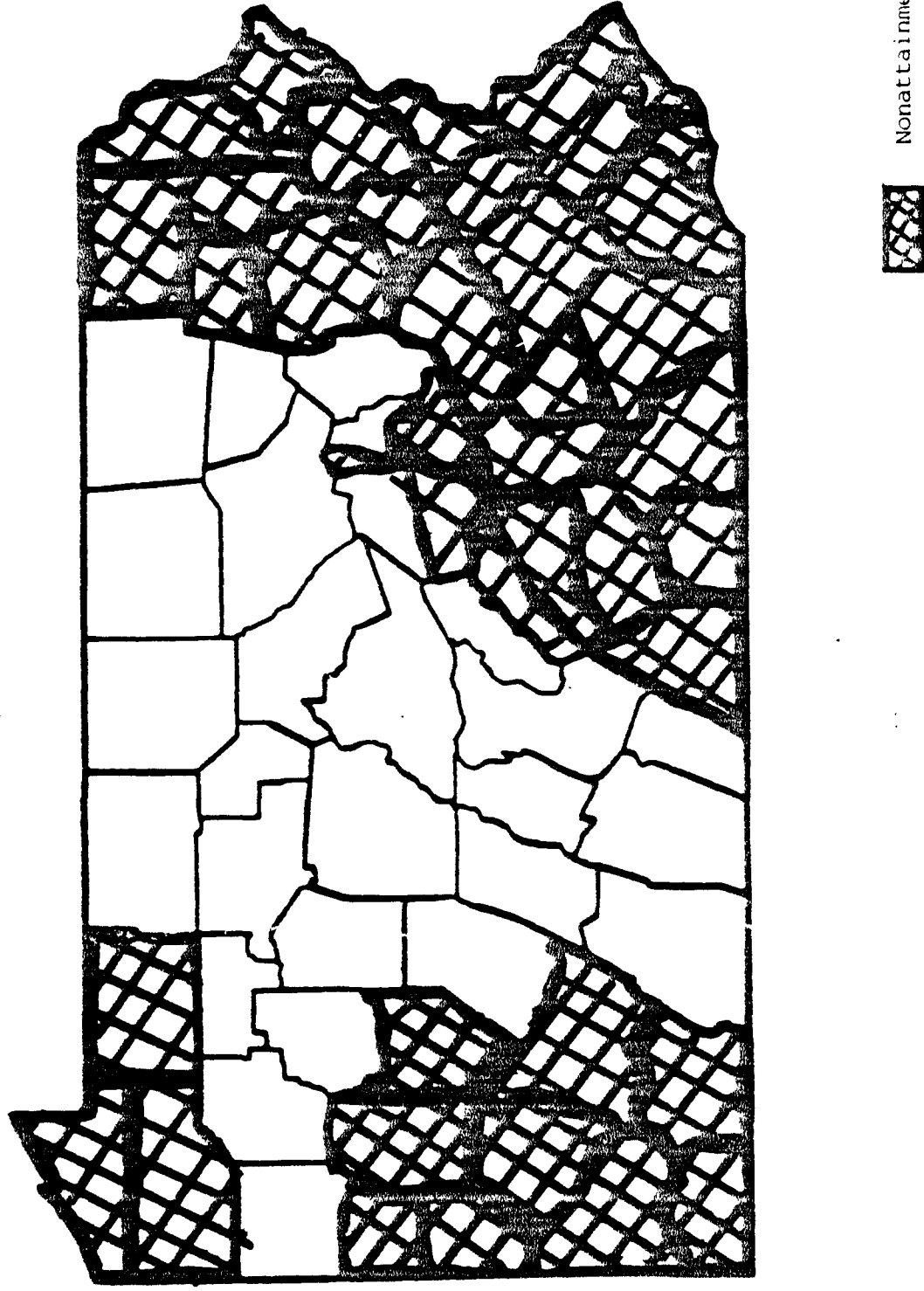


Figure 2-4

# Ozone Classifications in Virginia



It is important to note that the EPA's model regulations did not specifically address averaging times. It appears to assume that RACT would be satisfied by the use of either positive controls (e.g., incinerators or carbon adsorbers) or compliance coatings. Evidently it was not anticipated that a source would use a combination of complying and non-complying coatings. This latter development raised the issue of an appropriate averaging time. It should also be noted that averaging time policy is only effective where continuous compliance is not feasible. Since positive control devices provide for continuous control, averaging time issues under this policy do not directly apply to sources using positive (add-on) controls.

Where averaging time is not specifically addressed in a particular SIP, compliance determinations must be made on a continuous basis. The only exception is where it can be demonstrated that the SIP was intended to include averaging times (based on specific documents which are part of the official record in the rule making process) and the regulations may be interpreted as allowing for such a consideration. If the demonstration cannot be made or if the actual provisions of the SIP indicate that time averaging is not to be considered, compliance with the SIP must be determined on a continuous basis. Source specific compliance plans using any averaging time must be submitted as SIP revisions.

#### 2.1.4 Breakdown, Malfunctions and Operation Changes

EPA Model Regulations require the immediate notification of the Director in the event of a breakdown or malfunction of any air pollution control device or of any process equipment if it causes an increase in the emission of air contaminants. The Director can then initiate an investigation into the possibility of a violation of applicable regulations and to respond to any citizen complaints.

According to EPA guidance all emissions that exceed emission limitations during startup, shutdown, breakdown, or malfunction of process or control equipment should be considered a violation of the SIP. EPA policy states that, "any malfunction provisions must provide for the commencement of a proceeding to notify the source of its violation and to determine whether enforcement action should be undertaken for any period of excess emissions, whether due to malfunction or otherwise." However, the guidance does imply that "enforcement discretion" should be used in cases where there is a sudden and unavoidable malfunction that is entirely beyond the control of the owner or operator.

### 2.1.5 Circumvention

SIP regulations should prohibit the construction of any device or any action which conceals an emission which would otherwise constitute a violation of an applicable regulation. This includes the use of gaseous diluents to achieve compliance and the piecemeal carrying out of an operation to avoid coverage by a regulation.

### 2.1.6 Compliance Schedules

Federal guidelines for Round I sources suggest that compliance schedules range from 17 to 28 months depending on the type of controls selected by the source. The guidelines also indicated "increments of progress" and target dates for meeting each increment. These schedules are presented in Table 2-3A and 2-3B for add-on/process changes and low solvent coatings respectively. Alternate compliance schedules are allowed where it can be demonstrated and documented that implementation of the required compliance schedule is technologically infeasible. The alternate schedule must include the same increments of progress and provide for final compliance within 3 years of the effective date of the applicable State regulation.

Round II regulatory guidelines included specific schedules for each source category and method of compliance. Schedules generally followed the same format as that for the Round I sources with regard to increments of progress and alternate compliance plans except that no alternate schedule could go beyond the SIP ozone attainment date. Schedules for Round II sources are presented in Tables 2-4A and 2-4B.

Table 2-3A

COMPLIANCE SCHEDULES - GROUP I

Add-On Controls and Process Equipment Replacement & Modification

Increments Of Progress	Elapsed Time in Months	
	Install Add-On Controls Or Replace Process Equipment	Modify Existing Equipment
Effective Date Of Regulation	0	0
Final Plans	6	6
Contracts Awarded	12	8
Construction Started	14	11
Construction Completed	20	16
Final Compliance	21	17
Total	1 yr. 9 mos.	1 yr. 5 mos.

Table 2-3B

COMPLIANCE SCHEDULES - GROUP I

Low Solvent Technology

Increments of Progress	Elapsed Time in Months	
	Low Solvent Coatings New Technology	Low Solvent Coatings Existing Technology
Effective Date of Regulation	0	0
Final Plan	6	6
Complete R & D	12	--
Product Evaluation Completed	18	12
Purchase Orders for LSC	20	14
Start Process Modification	22	16
Begin Using LSC	27	21
Final Compliance	28	22
Total Time	2 yrs. 4 mos.	1 yr. 10 mos.

Table 2-4A

ROUND II COMPLIANCE SCHEDULES: Miscellaneous Metal Parts; Flatwood Paneling; Pharmaceuticals; Rubber Tires; Graphic Arts; and Petroleum Liquid Storage

Increments of Progress	Elapsed Time In Months				
	1	2	3	4	5
	LST Most Coating Sources	Most Add-Ons and Process Changes	Other Add-Ons and Process Changes	Rubber Tire Manufacturing	Pharmaceutical Products
Effective Date of Regulation	0	0	0	0	0
Final Plan Submitted	3.5	3.5	2.5	3.5	5
Product Quality Evaluation	9	---	---	---	---
Issue Purchase Orders	11	5.5	4	5.5	8
Initiate Process Mod./Constr.	12	11	6.5	10	11
Complete Process Mod./Constr.	24	23	10.5	22	23
Final Compliance	---	24	12	24	29

1 - Includes miscellaneous metal parts and flatwood paneling only. No schedule given for graphic arts.

2 - Same as 1 except it includes graphic arts. It also includes process changes requiring purchase orders. It does not include incineration without heat recovery.

3 - Covers exceptions in 2 plus incineration without heat recovery and substituting H<sub>2</sub>O base spray in green tire spraying for pneumatic rubber tire manufacturing and petroleum liquid storage.

4 - See 3 for exceptions.



Table 2-4B

ROUND II COMPLIANCE SCHEDULES: Petroleum Refinery Equipment Leaks; Perchloroethylene Dry Cleaning; and Leaks from Gasoline Tank Trucks and Vapor Collection Systems.

Petroleum Refinery Leaks

<u>Increments of Progress</u>	<u>Elapsed Time (Months)</u>
Effective Date of Regulation	0
Initiate Monitoring Program	6.5
First Report Due	12.5

Perchloroethylene Dry Cleaning

<u>Increments of Progress</u>	<u>Elapsed Time (Months)</u>
Effective Date of Regulation	0
Purchase Orders Issued	6
Complete Installation*	17
Final Compliance*	18

\*NOTE: A 60-day extension may be given if equipment is ordered within 6 months but can not be delivered by month 16.

Leaks from Gasoline Tank Trucks and Vapor Collection Systems

<u>Increments of Progress</u>	<u>Elapsed Time (Months)</u>
Effective Date of Regulation	0
Purchase Orders Issued	4
Commence Certification	12
Complete Initial Certification (all trucks)	18

### 2.1.7 Definition of Terms

EPA's model regulations included a substantial list of general definitions to be used in the State VOC regulations. They also included a number of specific definitions within each source category. Many States attempted to develop similar but more concise regulations. As a result many terms were not used or defined in State regulations. This evaluation was not concerned with these omissions as long as key terms and definitions were included in the State regulations and the regulations provided the same level of control, were reasonably precise and understandable and were clearly enforceable.

One important problem with definitions has become more of a concern recently; that is the definition of VOC. The Round I regulations used a definition which was based on the vapor pressure of the particular hydrocarbon. If the vapor pressure of a compound was less than 0.1mm Hg (0.0019 PSIA), it was not considered a VOC. Round II model regulations proposed a new definition which eliminated the vapor pressure criteria. This latter definition is basically the definition of VOC that appears in the NSPS regulation and is based on a compound's ability to react in the atmosphere to form ozone. Only compounds which the Administrator has designated as negligibly reactive are exempt from control under this definition. Most States still use the outdated Round I definition. Therefore, there is inconsistency in how various state and federal regulations define VOC and, therefore, the applicability of VOC regulations. There is also the concern that sources are emitting reactive VOC but escaping regulatory review because of the vapor pressure exemption in the old definition.

The recommended definition of VOC is as follows:

Volatile Organic Compound (VOC) - Any organic compound which participates in atmospheric photochemical reactions; that is, any organic compound other than those which the Administrator designates as having negligible photochemical reactivity. VOC may be measured by a reference method, an equivalent method, an alternative method or by procedures specific under 40 CFR Part 60. A reference method, an equivalent method, or an alternative method, however, may also measure nonreactive organic compounds. In such cases, an owner or operator may exclude the nonreactive organic compounds when determining compliance with a standard.

A list of compounds which the Administrator has designated as negligibly reactive and the appropriate Federal Register citation are presented in Table 2-5.

Table 2-5

VOCs Exempted From Regulation by The Administrator of EPA

42 FR 35314, dated July 8, 1977 exempts

Methane  
Ethane  
1,1,1-Trichloroethane (Methyl Chloroform)  
Trichlorotrifluoroethane (Freon 113)

42 FR 38391, dated August 1, 1977 - corrects 7/8/77 Federal Register

44 FR 32042, dated June 4, 1979 and 45 FR 32424, dated May 16, 1980  
exempts

Methyl Chloroform  
Methylene Chloride

45 FR 48941, dated July 22, 1980 exempts

Trichlorofluoromethane (CFC-11)  
Dichlorodifluoromethane (CFC-12)  
Chlorodifluoromethane (CFC-22)  
Trifluoromethane (FC-23)  
Trichlorotrifluoroethane (CFC-113)  
Dichlorotetrafluoroethane (CFC-114)  
Chloropentafluoroethane (CFC-115)

### 2.1.8 Equivalency Provisions

EPA's group I VOC model regulations for the coating industry routinely allowed for compliance by the application of low solvent technology, conventional add-on controls (incineration or carbon adsorption) or a system demonstrated to have equivalent or greater efficiency than that provided by the other two options. This last provision was evidently provided to allow the States to consider source specific compliance plans involving processes or equipment changes or new control technologies. Such things as improved transfer efficiency could be considered under equivalency provisions. However, these equivalency provisions were never intended to be a generic bubble nor were they intended to provide blanket approval to alternate controls or standards to those specified in the Federally approved SIP. Equivalent controls are to be applied in the same manner as low solvent technology or more conventional add-on controls. Generally, this means on a line-by-line basis with an averaging time ranging from continuous control to 24 hours if allowed by the particular SIP. In most cases a SIP revision will be required.

Equivalency is to be calculated on a solids applied basis. This is consistent with the development of the CTG's on which the regulations are based. This issue has caused much confusion with regard to calculating needed emission reductions. Most of the RACT coating regulations specify compliance coatings in terms of lb. VOC/gal coating. These units do not readily indicate the amount of reduction required because of the non-linear relationship between pounds of VOC and the volume of coating used. In the coating business, the one consistent factor is the amount of solids applied; that is, the object is to get the solids in the coating applied to the object being coated. As the VOC content goes down the solids fraction of the coating goes up. Since there are more solids per gallon in a gallon of compliance coating, the amount of coating (gallons) needed to coat a product goes down.

#### 2.1.9 Inspection, Maintenance and Operating Procedures

EPA's model regulations suggest that the following be required of the source:

- . Inspection and Maintenance Manual - submitted to director before final compliance date and must include normal maintenance activities and time intervals between maintenance or inspection.

- . Record of Maintenance and Repair - maintain a written record of all work performed on control equipment for two years.

- . Operators Manual - submitted to director by final compliance date; suitable for training a person to properly operate the control equipment.

- . Trained Operators - required for startup and shutdown of the control equipment.

#### 2.1.10 Test Methods and Procedures

Since the time the model regulations for Round I and II CTG's were published, numerous new source performance standards (NSPS) and associated test methods have been promulgated for source categories covered by the CTG's. These NSPS reference methods are essentially identical in principal to the CTG methods, but generally include simplifications, clarifications, or improvements to increase the practicality, accuracy or precision of the methods originally recommended in the CTG's. The test methods or procedures currently recommended for Groups I and II CTG sources are summarized in Tables 2-6A and 2-6B.

#### 2.1.11 Monitoring, Recordkeeping and Reporting

For Round II, the suggested language in EPA's model regulations was aimed primarily at add-on control requirements not low solvent technology. This includes not only control strategies which involve a combination of complying and noncomplying coatings but also relatively simple programs which use only complying coatings. The model regulation also leaves the actual decision on what is to be monitored, recorded or reported to the discretion of each individual State director. Suggested provisions include the following:

Table 2 6A  
TEST METHODS OR PROCEDURES FOR GROUP 1 CTG

Industry	CTG Document Number	Applicable Control Options	Recommended Method(s) and Document(s) Citing Test Method	Document May Be Ordered From
Cans, Coils, Paper, Fabric, and Automobiles and Light-Duty Trucks	EPA-450/2-77-008	Low solvent coatings	Method 24, 40 CFR Part 60	GP07
		Add-on1	Method 25, 40 CFR Part 60 or methods in "Measurement of Volatile Organic Compounds," EPA 450/2-78-041	GP07
Metal Furniture	EPA-450/2-77-032	Low solvent coatings	(CTG pp.5-1 to 5-5) Method 24, 40 CFR Part 60	NTIS2 GP07
		Add-on1	Method 25, 40 CFR Part 60 or methods in "Measurement of Volatile Organic Compounds," EPA 450/2-78-041	GP07
Magnetic Wire Coating	EPA-450/2-77-033	Add-on1	Method 25, 40 CFR Part 60 or methods in "Measurement of Volatile Organic Compounds," EPA 450/2-78-041	NTIS2
			Method 25, 40 CFR Part 60 or methods in "Measurement of Volatile Organic Compounds," EPA 450/2-78-041	GP07
Large Appliance	EPA-450/2-77-034	Low solvent coatings	(CTG pp. 5-1 to 5-4) Method 24, 40 CFR Part 60	NTIS2 GP07
		Add-on1	Method 25, 40 CFR Part 60 or methods in "Measurement of Volatile Organic Compounds," EPA 450/2-78-041	GP07
				NTIS2

Table 2 6A (continued)

## TEST METHODS OR PROCEDURES FOR GROUP I CTGS

Industry	CTG Document Number	Applicable Control Options	Recommended Method(s) and Document(s) Citing Test Method	Document May Be Ordered From
Petroleum Refineries				
Vacuum Producing Systems, Waste-water Separators and Process Unit Turnaround	EPA-450/2-77-025	Various Equipment Specifications and Operating Procedures	CTG pp. 6-2	NTIS <sup>2</sup>
*Cutback Asphalt	EPA-450/2-77-037	Water Emulsion	Direct Observation by Inspector	
		Emulsion Solvent Content	ASTM Distillation Test D-244	ASIM
*Degreasing	EPA-450/2-77-022	Equipment Specifications and Operating Procedures	CTG pp. 3-31, 3-33, 3-35, and 7-1 to 7-7	NTIS <sup>2</sup>
		Add-on Carbon Adsorber	Draft Test Method	QAQPS6

Table 2 6A  
(continued)

## TEST METHODS OR PROCEDURES FOR GROUP 1 CTGS

Industry	CTG Document Number	Applicable Control Options	Recommended Method(s) and Document(s) Citing Test Method	Document May Be Ordered From
Bulk Terminals	EPA-450/2-77-026	Add on <sup>1</sup>	40 CFR 60.503 "Test Methods and Procedures", Methods 25A, 25B, 2A, 2B	GP07
Bulk Plants	EPA-450/2-77-035	Vapor Balance System <sup>4</sup> Equipment Specifications and Operating Procedures	Leak Tests--Monitoring During Transfer (see tank truck CTG)	NTIS <sup>2</sup>
Service Stations--Stage 1	Design Criteria Document (DCD)	Equipment Specifications and Operating Procedures Vapor Balance System <sup>4</sup>	Equipment Inspection, CTG pp. 6-3 Leak Tests--Monitoring During Transfer (see tank truck CTG)	ESED <sup>3</sup>
Fixed-Roof Tanks	EPA-450/2-77-036	Equipment Specifications and Maintenance Requirements Internal Floating Roof <sup>5</sup> Add-on <sup>1</sup>	Equipment Inspection, DCD pp. 3-6 Leak Tests--Monitoring During Transfer (see tank truck CTG) CTG pp.6-2	NTIS <sup>2</sup> GP07



Table 2 6A

## TEST METHODS OR PROCEDURES FOR GROUP 11 CTGS

Industry	CTG Document Number	Applicable Control Options	Recommended Method(s) Citing Test Method	Document May Be Ordered From
Petroleum Refinery Fugitive Emissions (Leaks)	EPA-450/2-78-036	Inspection Monitoring Maintenance	Method 21, 40 CFR Part 60	GP07
Surface Coating Miscellaneous Metal Parts and Products	EPA-450/2-78-015	Low Solvent Coatings	(CTG pp. 6-1) or Method 24, 40 CFR Part 60	NTIS2 GP07
		Add-on1	Method 25, 40 CFR Part 60	GP07
Factory Surface Coating of Flatwood Paneling	EPA-450/2-78-032	Low Solvent Coatings	(CTG pp. 5-1) or Method 24, 40 CFR Part 60	NTIS2 GP07
		Add-on1	Method 25, 40 CFR Part 60	GP07
Pharmaceutical Manufacture	EPA-450/2-78-029	Maintenance and Operation	(CTG pp. 7-2)	NTIS2
		Add-on1	Method 25, 40 CFR Part 60	GP07
Rubber Tire Manufacture	EPA-450/2-78-030	Add-on1	Method 25, 40 CFR Part 60	GP07
Graphic Arts Rotogravure and Flexography	EPA-450/2-78-033	Low Solvent Inks, High Solids Inks	Method 25, 40 CFR Part 60	GP07
		Add-on1	Method 24A, 40 CFR Part 60	GP07
External Floating Roof Tanks	EPA-450/2-78-047	Inspection Maintenance Monitoring	Method 25, 40 CFR Part 60	GP07
*Drycleaning Perchloroethylene	EPA-450/2-78-050	Operation and Maintenance	CTG pp. 5-1 to 5-4	NTIS2
			CTG pp. 6-1 to 6-4	NTIS2
		Add-on Carbon Adsorption	Draft Test Method 23	OAQPS6

- a. Monitors, including alarms, on all process and control equipment.
- b. Daily record of monitored parameters.
- c. Records of compliance testing.
- d. Records of alarm actuations.
- e. Maintain records for at least two years.
- f. Annual reporting on all VOC emissions (minimum).

The Round I guidance generic record-keeping, reporting and monitoring section had similar requirements to Group II but did include the following catch all language:

"Maintain, in writing, data and/or reports relating to monitoring instruments or procedures which will, upon review, document the compliance status of the volatile organic compound emission source or control equipment to the satisfaction of the Director."

This statement generally requires sources to maintain records which document their compliance status; however, the term "to the satisfaction of the Director" could be a problem. It is there to allow the director source specific discretion in nailing down actual recordkeeping needs. States have been reluctant to impose short term record keeping requirements for sources using an averaging time approach. As a result, the director is "satisfied" with records (and the source is maintaining records) which may not readily relate to the standard.

## 2.2 Gasoline Marketing Activities

This section includes bulk gasoline plants, bulk gasoline terminals, leaks from gasoline tank trucks and vapor collection systems and stage I vapor control systems at gasoline service stations.

### 2.2.1 Bulk Gasoline Plants

#### Applicability:

- loading, unloading, and storage facilities at all bulk gasoline plants (throughput <20,000 gal/day) and all tank trucks or trailers delivering or receiving gasoline at the plant; and,

- exemption for tanks less than 528 gallons

#### Level of Control:

- all stationary storage tanks, tank trucks or trailers must be equipped with a vapor balance system and either use and have equipment available for submerged filling or use bottom filling;

- equipment properly maintained and used;

- trailer or truck hatches closed at all times;

- no leaks; and,

- pressure relief valves are set to release at no less than 0.7 psi.

#### Compliance:

- visual equipment inspection (CTG pp. 6-3);

- leak test - monitoring during transfer (see tank truck CTG); and,

- no specific recordkeeping requirements are indicated.

### 2.2.2 Bulk Gasoline Terminals

#### Applicability:

- bulk gasoline terminals (through put equal to or greater than 20,000 gal/day) and the appurtenant equipment necessary to load tank trucks and/or trailers.

#### Level of Control:

- vapor control system which consist of:
  1. a 90% efficient absorber or condenser system;
  2. a system which directs all vapors to a fuel gas system; or
  3. a system equivalent to 1 or 2.
- all vapors directed to vapor control system;
- control equipment must not allow VOC to exceed 80 milligrams per liter of gasoline loaded; and,
- good work practices.

#### Compliance:

- visual equipment inspection (CTG pp. 6-3);
- leak tests - monitoring during transfer (see tank truck CTG);
- no specific recordkeeping requirements are indicated; and,
- test vapor control unit by Method 25A or 25B.

### 2.2.3 Leaks from Gasoline Tank Trucks and Vapor Collection Systems

#### Applicability:

- vapor collection and control systems at bulk terminals, bulk plants, gasoline dispensing facilities and to gasoline tank trucks equipped for gasoline vapor collection.

#### Level of Control:

- For Tank Trucks
  1. Annual test - no more than 3 in. of H<sub>2</sub>O drop in 5 min. when pressurized to 18 in. of H<sub>2</sub>O or evacuated to 6 in. of H<sub>2</sub>O. Must be retested within 15 days if criteria are not met;

2. sticker showing compliance test date, gas tank ID No. and expires within one year of test;

For Vapor Collection System

1. designed and operated to prevent gauge pressure exceeding 18 in. of H<sub>2</sub>O and vacuum exceeding 6 in. of H<sub>2</sub>O in gasoline tank truck;

2. prevent readings greater than 100% of LEL at 2.5 cm from leak source during loading and unloading;

3. repair of vapor collection system within 15 days of exceeding requirements; and,

4. specific recordkeeping and reporting requirements.

Compliance:

- testing according to Method 27, 40 CFR 60 or CTG, Appendix B; and,

- recordkeeping and reporting.

2.2.4 Stage I Vapor Control Systems at Gasoline Service Stations

Applicability:

- tanks at gasoline dispensing facilities equal to or greater than 2,000 gallons capacity in operation before January 1, 1979;

- tanks at gasoline dispensing facilities equal to or greater than 250 gallons capacity installed after December 31, 1978; and,

- exemptions are available for facilities with floating roof tanks or tanks of less than 550 gallons capacity with submerged fill pipes and used to refuel implements of husbandry.

Level of Control:

- tanks must be equipped with a submerged fill pipe and a vapor control system;

- vapor control system must include, vapor-tight transfer lines, a refrigeration - condensation system or equivalent that is 90% efficient;

- delivery vessel must be vapor tight and refilled only at regulated bulk plants and terminals; and,

- maintain equipment.

Compliance:

- Equipment inspection (CTG, pp. 3-6);

- Leak testing monitoring during transfer (See tank truck CTG); and,

- Maintain records.

## 2.3 Refinery Emissions and Petroleum Liquid Storage

This section includes storage in fixed and external floating roof tanks, leaks from refinery equipment, and emission from vacuum producing systems, wastewater separators and process units.

### 2.3.1 Petroleum Liquid Storage in Fixed Roof Tanks

#### Applicability:

- fixed roof storage vessels with capacities greater than 40,000 gal. containing petroleum liquids with true vapor pressure greater than 1.5 psi.; and,

- tanks with capacity less than 416,000 gal. storing crude oil and condensate prior to lease custody transfer are exempt.

#### Level of Control:

- retrofit internal floating roof with closure seal(s) or equivalent;

- proper maintenance to protect against holes, seals and openings in the fabric;

- all openings equipped with covers, lids or seals and kept closed when not in use;

- automatic bleeder vents closed except when roof is floated off or landed on roof legs; and,

- rim vents set to open when roof is being floated.

#### Compliance:

- visual inspection of floating roof (CTG, pp 6-2); and,

- recordkeeping which includes inspection reports, average monthly storage temperature or true vapor pressure, and throughput.

### 2.3.2 Petroleum Liquid Storage in External

#### Floating Roof Tanks:

##### Applicability:

- External floating roof tanks with capacities greater than 40,000 gal. containing petroleum liquids with true vapor pressure greater than 1.5 psia.

- The following Floating Roof Tanks are exempt: Tanks that store waxy, heavy pour crude oil; tanks that have capacities less than 420,000 gal. and are used to store produced crude oil and condensate prior to lease custody transfer; tanks that contain a petroleum liquid with a true vapor pressure less than 4.0 psia and are of welded construction and have a metallic-type shoe, liquid mounted foam, liquid mounted liquid filled type seal or equivalent device; or are of welded construction, equipped with a metallic seal and has a secondary seal from the shoe seal to the tank wall.

##### Level of Control:

- retrofitted with a continuous secondary seal from floating roof to tank wall or equivalent device;

- seal or seal fabric has no visible holes, tears, etc., seal fabric is intact and uniform around the circumference; accumulated area of gaps exceeding 1/8 inch shall not exceed 1 square inch per foot of tank diameter;

- all openings are equipped with covers, seals, lids, etc.; closed when not in use; equipped with projections which are always below liquid surface;

- automatic bleeder valve closed except when roof is floated off or landed on roof legs;

- rim vents are set to open when roof is being floated; and,

- emergency roof vents have slotted fabric covers which cover 90% of opening area.

##### Compliance:

- visual inspection of seal gaps and measurement/calculation of gap greater than 1/8" when required (CTG, pp 5-1 to 5-3);

- recordkeeping including records of semi-annual visual inspection, annual secondary seal gap measurement, type of liquid stored and maximum true vapor pressure.



### 2.3.3 Leaks from Refinery Equipment

#### Applicability:

- pump seals, compressor seals, oil degreasing vents, pipeline valves, flanges and other connections; pressure relief devices, process drains and open ended pipes at petroleum refineries.

#### Level of Control:

- monitoring program;
- repairs within 15 days;
- identify components that cannot be repaired until shut down or turnaround; and,
- mark valves in gaseous service.

#### Compliance:

- recordkeeping of monitoring and repair activity;
- quarterly and annual reporting on units inspected and those not repaired within 15 days; and,
- Method 21, 40 CFR Part 60.

### 2.3.4 Refinery Vacuum Producing Systems, Separators and Process Units

#### Applicability:

- vacuum producing systems, wastewater separators and process unit turnarounds at a petroleum refinery;

#### Level of Control:

- vacuum producing systems must direct non-condensable VOC to a firebox, incinerator or the refinery fuel gas;
- wastewater separators must have covers and seals for all separators and forebays with lids kept closed on all openings; and,

- control emissions at process turnaround by depressurization to a vapor recovery system, flare or firebox and no emission to the atmosphere unless internal pressure is less than 19.7 psia.

Compliance:

- equipment standards and operating procedures; and,
- recordkeeping for process turnaround.

## 2.4 Surface Coating and Printing

This section includes can coating, coil coating, paper coating, fabric and vinyl coating, coating of automobiles and light duty trucks, metal furniture coating, insulation of magnetic wire, large appliance coating, coating of miscellaneous metal parts, flatwood paneling and graphic arts.

### 2.4.1 Can Coating

#### Applicability:

- coating application and ovens of sheet, can or end coating lines involved in sheet base coat (exterior and interior) and overvarnish; two piece can exterior (basecoat and overvarnish); two and three-piece can interior body spray; two-piece can exterior end (spray or roll coat); three-piece can side-seam spray and end sealing compound operations.

#### Level of Control:

- for coating delivered to the applicator (excluding water) emissions can not exceed:

2.8 lb. VOC/gal. - sheet basecoat (interior-exterior) and overvarnish  
- two piece can exterior (base coat and overvarnish)

4.2 lb. VOC/gal. - two and three piece can interior body spray and two piece can exterior end (spray or roll)

5.5 lb. VOC/gal. - three piece can side seam spray

3.7 lb. VOC/gal. - end sealing compound

- control methods include LST, incineration (90% efficient) or equivalent method.

#### Compliance:

- LST - Method 24, 40 CFR Part 60 and certification of coatings;

- add-on - Method 25, 40 CFR Part 60 or methods in "Measurement of VOC" - EPA 450/2-78-041; and,

- recordkeeping as appropriate to document compliance.

#### 2.4.2 Coil Coating

##### Applicability:

- coating applicators, ovens and quench area of coil coating lines involved in prime and top coat or single coat operations.

##### Level of Control:

- for coating delivered to the applicator (excluding water) emissions can not exceed:

2.6 lb. VOC/gal. - prime coat and top coat or single coat

- control methods include LST, incineration (90% efficient) or equivalent method.

##### Compliance:

- LST Method 24, 40 CFR Part 60 and certification of coatings;

- add-on - Method 25, 40 CFR Part 60 or methods in "Measurement of VOC", EPA 450/2-78-041; and,

- recordkeeping as appropriate to document compliance.

#### 2.4.3 Paper Coating

##### Applicability:

- roll, knife or rotogravure coaters and drying ovens.

##### Level of Control:

- for coating delivered to the applicator (excluding water) emissions can not exceed 2.9 lb. VOC/gal. - all coatings; and,

- control methods include LST, incineration (90% efficient) or equivalent method.

##### Compliance:

- LST Method 24, 40 CFR Part 60 and Certification of Coatings;

- add-on Method 25, 40 CFR Part 60 or methods in "Measurement of VOC", EPA 450/2-78-041; and,

- recordkeeping as appropriate to document compliance.

#### 2.4.4 Fabric and Vinyl Coating

##### Applicability:

- roll, knife or rotogravure coaters and drying ovens of fabric and vinyl coating lines.

##### Level of Control:

- for coatings delivered to the applicator (excluding water) emissions can not exceed:

2.9 lb. VOC/gal. - fabric coating line

3.8 lb. VOC/gal. - vinyl coating line

- control methods include LST, incineration (90% efficient) or equivalent method.

##### Compliance:

- LST Method 24, 40 CFR Part 60 and Certification of Coatings;

- Add-on - Method 25, 40 CFR Part 60 or methods in "Measurement of VOC" - EPA 450/2-78-041; and,

- Recordkeeping, as appropriate, to document compliance.

#### 2.4.5 Coatings of Automobiles and Light Duty Trucks

##### Applicability:

- application areas, flashoff areas and ovens of automotive and light duty truck manufacturing plants involved in prime coat, topcoat and final repair coating.

##### Level of Control:

- for coating delivered to the applicator (excluding water) emissions can not exceed:

1.9 lb. VOC/gal. - prime coat

2.8 lb. VOC/gal. - top coat

4.8 lb. VOC/gal. - repair

- control methods include LST, incineration (90% efficient) or equivalent method.

Compliance:

- LST, Method 24, 40 CFR Part 60 and Certification of Coatings;

- add-on, Method 25, 40 CFR Part 60 or methods in "Measurement of VOC", EPA 450/2-78-041; and,

- recordkeeping, as appropriate, to document compliance.

2.4.6 Metal Furniture Coating

Applicability:

- application areas, flashoff areas and ovens of metal furniture coating lines involved in prime and top coat or single coat operations.

Level of Control:

- for coating delivered to the applicator (excluding water) emissions can not exceed:

3.0 lb. VOC/gal. - prime and top coat  
single coat

- control methods include LST, incineration (90% efficient) or equivalent method.

Compliance:

- LST, Method 24, 40 CFR Part 60 (CTG, pp. 5-1 to 5-5) and certification of coatings;

- add-on, Method 25, 40 CFR Part 60 or methods in "Measurement of VOC", EPA 450/2-78-041;

- recordkeeping, as appropriate, to document compliance.

#### 2.4.7 Insulation of Magnetic Wire

##### Applicability:

- ovens of magnetic wire coating operations.

##### Level of Control:

- for coating delivered to the applicator (excluding water) can not exceed:

1.7 lb. VOC/gal. - wire coating

- control methods include LST, incineration (90% efficient) or equivalent method.

##### Compliance:

- LST, Method 24, 40 CFR Part 60 and Certification of Coatings;
- add-on, Method 25, 40 CFR Part 60 or methods in "Measurement of VOC", EPA 450/2-73-041;
- recordkeeping, as appropriate, to document compliance.

#### 2.4.8 Large Appliance Coating

##### Applicability:

- application areas, flashoff areas and ovens of large appliance coating lines involved in prime, single or top coat operations;

- use of quick drying lacquers for repair is exempt if no more than 1 qt. is used in an 8 hr. period.

##### Level of Control:

- for coating delivered to the applicator (excluding water) emissions can not exceed:

2.3 lb. VOC/gal. - prime, single or top coat

- control methods include LST, incineration (90% efficient) or equivalent method.

Compliance:

- LST, Method 24, 40 CFR Part 60 (CTG pp 5-1 to 5-4) and Certification of Coatings;
- add-on, Method 25, 40 CFR Part 60 or methods in "Measurement of VOC", EPA 450/2-78-041;
- recordkeeping, as appropriate, to document compliance.

2.4.9. Coating of Miscellaneous Metal Parts

Applicability:

- coating of large farm machinery, small farm machinery, small appliances, commercial machinery, industrial machinery and fabricated metal parts;
- coating of metal parts and products in any industrial category included under SIC Code Major Groups 34, 35, 36, 37, 33 and 39; and
- excludes metal parts coating addressed in category specific CTG's, customized top coating of automobiles and trucks, if production is less than 35 vehicles per day, automobile refinishing and the exterior coating of marine vessels and airplanes.

Levels of Control:

- for coating delivered to the applicator (excluding water) emissions can not exceed:

4.3 lb. VOC/gal. - clear coatings

3.5 lb. VOC/gal. - air dried coating  
- forced warm air dried coatings  
- extreme performance coatings

3.0 lb. VOC/gal. - all other coatings

- solvent washings (purging of spray guns) is included unless evaporation is prevented;

- control methods include LST, incineration (90% efficient), or an equivalent means of VOC removal; and,

- capture system when used with add on controls must provide for 30% overall emission reduction at a minimum.



Compliance:

- LST, Method 24, 40 CFR Part 60 (CTG pp. 6-1) and Certification of Coatings;
- add-on, Method 25, 40 CFR Part 60 and CEM; and,
- recordkeeping, as appropriate, to document compliance.

2.4.10 Coating of Flat-Wood Paneling

Applicability:

- surface coating and finishing of
  1. printed interior panels made of hardwood, plywood and thin particle board;
  2. natural finish hardwood panels;
  3. hardwood paneling with Class II finishes;
- exterior siding, tile board, or particle board used as a furniture component is exempt.

Level of Control:

- for coating delivered to the applicator (excluding water) emissions can not exceed:
  - 6.0 lb. VOC/1000 ft<sup>2</sup> - printed interior panels
  - 12.0 lb. VOC/1000 ft<sup>2</sup> - natural finish hardwood panels
  - 10.0 lb. VOC/1000 ft<sup>2</sup> - Class II finishes on hardboard panels
- control methods include LST, incineration (90% efficient) or equivalent means of VOC removal;
- capture system in conjunction with add-on controls must provide an overall level of control equivalent to the compliance coating emissions rates specified.

Compliance:

- LST, Method 24, 40 CFR Part 60 (CTG 5-1) and Certification of Coatings;

- Add-on, Method 25, 40 CFR Part 60 and CEM; and,
- Recordkeeping, as appropriate, to document compliance.

#### 2.4.11 Graphic Arts Systems

##### Applicability:

- packaging rotogravure, publication rotogravure and flexographic printing facilities; and,
- only facilities with emissions greater than 100 tons VOC/year based on historical records are subject to the requirements.

##### Level of Control:

- for waterborne inks, ink volatile fraction contains 25% or less organic solvent by volume and 75% or more water by volume;
- for high solids ink, ink as applied to the substrate (less water) contains 60% by volume or more of nonvolatile material;
- incineration, carbon adsorption or equivalent system which is at least 90% efficient;
- a capture system which provides for the following overall control efficiency with add-on controls:
  - 75% - publication rotogravure
  - 65% - packaging rotogravure
  - 60% - flexographic printing

##### Compliance:

- LST, Method 24, 40 CFR Part 60 and certification of inks;
- Add-on Method 25, 40 CFR Part 60 and CEM;
- Recordkeeping, as appropriate, to document compliance

## 2.5 Other Round I & II CTG Categories

### 2.5.1 Solvent Metal Cleaning

#### Applicability:

- cold cleaning, open top vapor degreasing and conveyORIZED degreasing operations.

#### Level of Control:

- operation and work practice standards
- equipment standards
- refrigerated chiller, carbon adsorption or equivalent system

#### Compliance:

- for equipment specifications and operating procedures, CTG pp. 3-31, 3-33, 3-35 and 7-1 to 7-7;
- add-on carbon adsorber - draft test method.

### 2.5.2 Cutback Asphalt

#### Applicability:

- manufacture and use of cutback asphalt

#### Level of Control:

- prohibition against use of cutback asphalt except when the director may approve its use, manufacture, storage, mixing or application where:

1. long-life stock pile storage is necessary.
2. use or application at ambient temperature less than 50° F.
3. it is to be used solely as a penetrating prime coat.

#### Compliance:

- Direct observation by inspector;
- ASTM Distillation Test D-244.

### 2.5.3 Manufacture of Synthesized Pharmaceutical Products

#### Applicability:

- all synthesized pharmaceutical manufacturing facilities;
- includes the following: reactors, distillation units, dryers, storage of VOC, transfer of VOC, extraction equipment, filters, crystallizers and centrifuges that have the potential to emit 15 lb/day or more VOC.

#### Level of Control:

Surface condensors - reactors, distillation operation,  
(or equivalent) crystallizers, centrifuges and vacuum  
dryers;

90% reduction or - air dryers and production equipment  
33 lb/day (if un- exhaust systems;  
controlled emission  
< 330 lb/day)

vapor balance - VOC transfers and storage tanks;  
system (90% eff.)  
and pressure/  
vacuum conservation  
vessels

enclosure - centrifuges, rotary vacuum filters  
and other filters;

covers - all process tanks; and,

leak repair - observed liquids.

#### Compliance:

- maintenance and operation standards, CTC pp. 7-2.
- add-on controls, Method 25, 40 CFR Part 60 and CEM.

### 2.5.4 Manufacture of Pneumatic Rubber Tires

#### Applicability:

- the following processes at pneumatic rubber tire manufacturing plants:

1. undertread cementing

2. tread end cementing
3. bead dipping
4. green tire spraying

- the production of speciality tires is exempt.

Level of Control:

capture system (up to 85% efficient) and add-on controls (95% efficient for carbon system and 90% for incineration)

- undertread cementing; tread and cementing or bead end cementing

water based sprays or capture system (90% efficient) and add-on controls (95% efficient for carbon systems and 90% for incinerators)

- green tire spraying operation

Compliance:

- for water based green tire spraying, Method 24, 40 CFR Part 60 and certification;
- add-on controls, Method 25, 40 CFR Part 60 and CEM;
- recordkeeping, as appropriate, to document compliance.

2.5.5. Perchloroethylene Dry Cleaning Systems

Applicability:

- all perchloroethylene dry cleaning facilities.

Level of Control:

- carbon adsorption or equivalent control on dryer exhaust where space and steam capacity are adequate;
- emissions from dryer control device may not exceed 100 ppm (vol.) VOC, where space and steam capacity are adequate; and,
- operation standards.

Compliance:

- operation and maintenance standards, CTG 6-1 to 6-4 and for VOC content of stills and filter residue American National Standards Institute paper, "Standard Method of Test for Dilution of Gasoline Engine Crankcase Oils";

- add-on carbon adsorption, Draft Test Method 23.



### 3.0 Generic Program Issues

This section addresses general VOC program issues affecting the implementation of existing VOC SIPs. These issues were developed by EPA's VOC Compliance Workgroup which includes representatives from all EPA Regional Offices and the Stationary Source Compliance Division (SSCD), Control Programs Development Division (CPDD) and Emission Standards and Engineering Division (ESED) in EPA's Office of Air Quality Planning and Standards (OAQPS), Office of Air and Radiation. The original issues suggested by workgroup members were consolidated into 19 issues, listed and distributed to workgroup members by the then Director of SSCD, Ed Reich, in a memorandum dated May 20, 1985. (As a result, they are often referred to as the 19 Reich issues.) Many of the issues have been addressed by new policy or guidance but several key issues are still being addressed. Table 3-1 lists these issues and their status. The remainder of this section describes each issue and summarizes the resolving policy or guidance, or indicates the status and schedule for resolution.

For the reader's convenience, the May 20, 1985 Reich memorandum has been included as Appendix 3.0. Subsequent new policy and guidance related to each of the issues have been included in Appendices 3.1 through 3.19 which correspond to the issues as numbered and addressed in this text.

Another list of issues, similar to the Reich issues was presented in a memorandum from G. T. Helms, Chief, Control Programs Operation Branch to all Air Branch Chiefs dated April 10, 1987. The Helms issues differ from the Reich issues in that they present examples of SIP deviations with regard to RACT regulations which are relatively common. They also deal with more basic problems like the definition of VOC and applicability criteria. Their differences provide insight into general VOC problems which must be considered. Therefore, these examples of SIP deviations are included in this report in Section 3.20



Table 3-1

VOC Issues  
Status of Resolution

Note: See Ed Reich's May 20, 1985 memorandum for a more complete listing of issues (Appendix 3.0) and Appendix numbers which correspond to the issue number for full text of policy or guidance.

Issue No.	Description	Status	Date Issued by EPA HQ	Date Transmitted to Region III States
3.1	Can coating clarification	In process CPDD lead	-	-
3.2	EPA's enforcement response where bubbles are pending	Complete	2-28-86 Emison	4-4-86
3.3 a.c.d.	Recordkeeping	Complete	4-11-86 Emison	5-1-86
3.3b	Inadequate SIP recordkeeping requirements	In process CPDD lead	-	-
3.3e	Determination of emissions when records are inconsistent with SIP averaging time	Complete	1-7-87 Price	2-20-86
3.4	Generic bubble/time averaging	In process OECM-AED lead	-	-
3.5	Bubble in context of consent decrees	Complete	1-17-86 Price	2-20-86
3.6	Schedules for LST	Complete	1-7-87 Potter	9-5-86

Issue No.	Description	Status	Date Issued by EPA HQ	Date Transmitted to Region III States
3.7	'B' sources	Complete	1-31-86 Reich	2-20-86
3.8	Policy/Guidance distribution	Complete	1-31-86 Reich	2-20-86
3.9	RACT Determinations	Complete	4-11-86 Emison	5-1-86
3.10	Solids-as-applied	In process CPDD lead	-	-
3.11	NSPS vs. RACT limits (averaging time differences)	In process ESED lead	-	-
3.12	Regulating total VOC vs. VOC coating content	Dropped	No action required must meet SIP requirements.	
3.13	Baseline year	Complete	2-28-86 Emison	4-4-86
3.14	Site specific RACT limits	Complete	2-28-86 Emison	4-4-86
3.15	Seasonal afterburner exemption	Complete	2-28-86 Emison	4-4-86
3.16	Transfer Efficiency	Complete	4-11-86 Emison	5-1-86
3.17	Capture Efficiency	In process ESED lead	-	-

Issue No.	Description	Status	Date Issued by EPA HQ	Date Transmitted to Region III States
3.18	Intermittent incinerator use where both high and low solvent materials are used	Complete	4-11-86 Emison	5-1-86
3.19	Appropriate test methods	Complete	4-11-86	5-1-86

### 3.1 Clarification of Can Coating Policy and Applicability to other Source Categories

Issue: Included in this issue are questions involving crossline averaging, 24-hour averaging, applicability to other CTG categories, need for SIP revisions and hybrid compliance approaches (e.g., use of combination of LST and add-on controls).

Response Status: CPDD has indicated that this issue has, in fact, been resolved by issuance of the Emission Trading Policy (FR 43815, December 4, 1986). Indications are that CPDD now feels that the can coater policy really amounts to a bubble and is not a true alternate RACT determination. Although it is unlikely that the policy will be withdrawn, it will not be extended to other source categories unless the requirements of the new Emission Trading Policy are satisfied.

### 3.2 Enforcement Policy Where Bubbles Are Pending

Issue: EPA's enforcement response where bubbles (SIP revisions) are pending and, more specifically, where the bubbles are in areas lacking an approved attainment demonstration are addressed.

Response: EPA will follow "Timely and Appropriate" enforcement procedures. However, if by day 120 a bubble (SIP revision) has at least been scheduled for a State hearing and EPA staff-level review shows it is likely to be approved, EPA will continue to defer to the State activity as a timely response which will bring about compliance (See Appendix 3.2).

### 3.3 Recordkeeping Issues:

Issue: Recordkeeping problems are addressed under this issue. They include:

- a. Feasibility of daily recordkeeping;
- b. Deficient recordkeeping requirements in SIPs;
- c. Type of records which should be maintained;
- d. Verification of compliance (or noncompliance) based on source records; and
- e. Determining VOC emissions where available records are not consistent with the averaging time specified in the SIP.

Response:

- a. The legal requirement to maintain daily records will depend on the language of the individual SIP. Daily record-keeping is considered feasible and appropriate except under conditions as articulated in John O'Connor's January 20, 1984 memorandum. Sources must maintain records needed to make compliance determinations for the time interval set forth in the SIP (See Appendix 3.3a).
- b. This issue is being addressed by SSCD and will result in a recordkeeping procedures manual. A draft is due in March 1988. However, the manual will not solve the problem of deficient SIPs that fail to require records. Federal rulemaking may be required if deficient SIPs are not revised.
- c. Recordkeeping requirements should be tailored to the source and to applicable SIP emission limits or other applicable Federal requirements. Coating and ink formulation data should be maintained consistent with EPA 450/3-84-019, Procedures for Certifying Quantity of Volatile Organic Compounds Emitted by Paint, Ink and Other Coatings. For add-on controls, operational parameters for both the capture and control systems should be observed and recorded to verify consistency with the compliance demonstration tests. Care should be taken to assure that records are consistent with the averaging time and emission unit regulated by the SIP and stated in the standard (See Appendix 3.3c).
- d. Methods of determining compliance include auditing records and emission requirements, checking operation and maintenance records, and reviewing operating permits, stack testing and coating certification procedures. Some combination of these methods is usually required to assure compliance. In certain cases, auditing process records and testing the formulation may be the only way to verify compliance. The regulatory agency must initiate these procedures if actual compliance is to be determined or verified (See Appendix 3.3d).
- e. Where the SIP itself requires records to be maintained that correspond to the SIP emission limitation, corrective action can be taken under Section 113 of the Clean Air Act to require the source to keep proper records. If the SIP does not require recordkeeping consistent with the applicable standard, either algorithms and/or § 114 authority should be used. Algorithms are mathematical computations which use monthly or yearly data to produce a figure representing the minimum number of days that a source had to be out of compliance. Section 114 authority may be used to acquire available source records needed to support the algorithms previously mentioned, or to require the source to maintain appropriate records prospectively, or require specific emission tests (See Appendix 3.3e).

### 3.4 Determining if SIP Provisions are Generic

Issue: This issue considers whether EPA approved SIP provisions involving bubbles, equivalency, time extensions, variances and similar provisions are generic or if SIP revisions and EPA approval are required.

Response: This issue is being reevaluated. It is not possible at this time to predict when a final response will be available.

### 3.5 Bubbles in the context of a Consent Decree

Issue: This question deals with the agency's ability to consider a bubble proposal (or any alternate control strategy) which does not call for final compliance with the SIP within the context of a consent decree.

Response: EPA cannot endorse a consent decree which contains a schedule for compliance with a bubble until EPA has promulgated final approval of the particular bubble as a SIP revision (or until a bubble has been approved by the State if the bubble is granted under a generic bubble provision). A consent decree must require final compliance with the currently applicable SIP. A decree may contain a general provision recognizing that either party may petition the court to modify the decree if the relevant regulation is modified, as would be the case with a bubble (See Appendix 3.5).

### 3.6 Schedules for Low Solvent Technology (LST)

Issue: This question concerns how much time should a source be allowed to develop and implement LST and when should add-on controls be required to assure expeditious compliance.

Response: Schedules for LST can provide no more than three months from the date of filing of the complaint (or equivalent State action), include an add-on control schedule with stipulated penalties, be expeditious and include appropriate civil penalties. SIP revisions which extend compliance dates must demonstrate timely attainment and maintenance of the ozone standard, and where relevant, reasonable further progress. SIP revisions must also provide for implementation of all reasonably available control measures as expeditiously as practicable. However, unless it can be shown that the original timeframe approved in the SIP did not allow sufficient time for a technologically and economically feasible compliance plan to be implemented, a SIP revision for a compliance date extension beyond these timeframes (three years maximum for most categories with certain exceptions for can coaters, automotive plants and graphic arts facilities) should be denied (see Appendix 3.6).

### 3.7 Non Major ('B') VOC Sources

Issue: This question addresses the need to more aggressively pursue compliance activities with regard to 'B' sources. In many metropolitan areas, substantial Regional and State and local agency work on 'B' sources is not recognized by current policies but may be an important factor in attaining the ozone standard.

Response: EPA has developed a 'B' source strategy which is proposed for implementation in FY 1988. The proposal considers nontraditional approaches to assure compliance at small VOC sources which include: 1) compliance promotion; 2) selected inspections; and 3) enforcement. Supplemental, 105 grant money will also be available for certain areas which can demonstrate that small source emissions have a significant impact on the area's attainment plan (see Appendix 3.7).

### 3.8 Policy Guidance Distribution

Issue: This involves the timely and appropriate distribution of EPA policy and guidance and its impact on efforts to resolve compliance issues by the Regions and State agencies.

Response: SSCD agreed to institute a process of listing quarterly all policy and guidance memoranda that have been issued. This list would be sent to all Air Branch Chiefs in Regional offices to assure that they are aware of all new VOC policy. Regional Offices are responsible for distributing policy and guidance documents to State and local agencies (see Appendix 3.3).

### 3.9 Economic Feasibility of RACT

Issue: This issue deals with economic considerations involved in setting new RACT requirements for non CTG sources and CTG sources where RACT is technically infeasible.

Response: No universally applicable rule can supplement case-by-case judgement on what constitutes RACT. Although cost effectiveness is an important factor, no cost effectiveness threshold exists. In addition, numerous other factors including the age of the facility, quantity of emissions, nature of emissions, severity of existing air quality problem, extent of existing controls, comparability to standard industry practice in related industries, cross media impacts and economic impacts must be considered (see Appendix 3.)).

### 3.10 Determining Equivalency on a Solid-As-Applied Basis

Issue: Since a number of SIPs do not specifically require that equivalency be determined on a "solids-as-applied basis" and some States are still making erroneous equivalency decisions, EPA's "solids-as-applied" requirements for determining equivalency should be established in a definitive manner.

Response: A draft Federal Register notice formally restating EPA's requirement and fully explaining the regulatory history of scientific facts which support this policy had been prepared. However, publication of the Federal Register notice has been postponed indefinitely.

### 3.11 NSPS vs. RACT Emission Limits/Standards

Issue: A perception exists that NSPS requirements are or should be more stringent than RACT requirements. However, RACT standards generally require compliance on a continuous or 24 hour basis whereas NSPS generally allow for 30 day averaging.

Response: It would be worthwhile to explain the relationship between these two standards and apparent conflicts between the perceived level of control provided by each standard. However, currently there is no plan to publish any EPA policy response on this matter.



### 3.12 Regulating Total VOC vs. VOC Content of Coatings

Issue: This issue was dropped.

Response: Source must meet standards specified in the applicable SIP.

### 3.13 Baseline Year

Issue: Where percent reductions from a baseline (either stated or inferred) are required, what baseline should be used?

Response: This issue only relates to percent reduction types of regulations. Regulations based on VOC content (or equivalent add-on reductions) are not affected since compliance is based on a SIP emission limit. Generally, the baseline year will be the effective date of the regulations or, in some cases, specified in the SIP. The concept of baseline as it related to emission trading is specified in EPA's Emission Trading Policy (FR 43815, December 4, 1986)(See Appendix 3.13).

### 3.14 Site Specific RACT Determinations

Issue: This issue asks if source specific RACT determinations are being made and infers a need to distribute information and be consistent in regulating similar industries throughout the country.

Response: Site specific RACT determinations are appropriate and are being made for non-CTG sources with emissions greater than 100 tons/year in urbanized 1987 extension areas and, in limited cases, to CTG sources where conventional RACT is either technologically or economically infeasible. The VOC Clearinghouse is available and should be used for ensuring Regional Consistency in RACT determinations for similar site-specific source categories (See Appendix 3.14).

### 3.15 Seasonal Afterburner Exemption

Issue: Although EPA has an established policy exempting the use of incinerators during non-ozone season, some SIPs do not include that exemption. A question arises concerning the enforcement of the SIP which did not take advantage of the exemption policy.

Response: EPA's exemption applies to gas fired afterburners which control VOC emissions to protect the ozone standard only and must be implemented through the SIP process. This 1976 policy was intended to conserve energy at a critical time in our nation's history. In the absence of an appropriate exemption in the SIP, sources are obligated to continuously operate afterburners to meet applicable emission limits (note: SIP requirements may be more stringent than Clean Air Act and EPA policy requirements). Once Federally effective, the SIP requirements are to be met by sources and enforced by the States and EPA (See Appendix 3.15).

### 3.16 Transfer Efficiency (TE)

Issue: This includes questions concerning how to calculate TE, what is an appropriate baseline for TE and how to implement TE based emission control measures. TE improvements are often claimed by sources but are rarely documented. State agencies may claim the authority to approve such claims under equivalency provisions in this SIP even though TE control methods and procedures are not specifically addressed in the SIP.

Response: TE improvements must be determined on a solids applied basis and compared to the particular industry norm during the baseline period. Baseline TE values have been set by EPA for automobile, large appliance and metal furniture categories. In most cases (where TE is not specifically mentioned in the SIP) SIP revisions implementing the TE compliance method (or emission credits for a bubble) are required. Because of documented variances between similar application equipment and different sources producing the same product, case-by-case TE testing and documentation is required. Tables indicating TE values based on the type of application equipment are not to be used unless required by specific language in the applicable SIP (See Appendix 2 and 3.16).

### 3.17 Capture Efficiency

Issue: Most SIPs specify an overall emission reduction when add-on controls are used for coating and printing sources; however, only control device destruction/recovery efficiency test methods are specified in the SIP or EPA's standard methods. Overall efficiency is the product of capture efficiency and destruction efficiency. There is a need to have a formally approved method of determining capture efficiency to enforce SIP requirements.

Response: ESED has drafted and received comments on a proposed test procedure which will be promulgated as a rule in Part 52. The NPRM is expected during mid-1988.

### 3.18 Compliance Considerations Where Intermittent Incineration is Used in Conjunction with Both High and Low Solvent Based Materials.

Issue: Concern has been expressed with regard to determining compliance where both low solvent coatings and high solvent coatings are used with incineration.

Response: Recordkeeping which documents process operation, incinerator operation and coating type used is essential. The incinerator should perform adequately provided that it is brought up to operating levels prior to initiating high solvent usage in the process (See Appendix 3.18).

### 3.19 Appropriate Test Methods

Issue: Many SIPs specify other than EPA standard methods for determining compliance. Often these other methods were early versions of NSPS test methods presented in RACT CTGs. In other cases SIPs fail to specify a test method. What are the recommended test methods for the various CTG category sources.

Response: Appendix 3.19 includes a listing of recommended test methods by CTG and NSPS categories. Where the Federally approved SIP specifies a different method, that method is the Federally approved method for that SIP and should be followed (See Appendix 3.19).

### 3.20 Examples of SIP Deviations Involving VOC RACT Regulations

Some State regulations to control VOC emissions are being implemented in a manner that does not conform with EPA requirements and policies and can, in certain cases, significantly interfere with the effectiveness of those regulations. Such problems include incorrect or ambiguous definitions, variable interpretation or lack of key provisions (e.g. compliance times, test methods, etc.), incorrect calculation procedures, and specific provisions in State regulations that are inconsistent with current EPA policies.

Examples of such problems include, but are not necessarily limited to, the following:

1. RACT regulations exemptions above the size cutoff recommended in the CTG should not be allowed.

2. Cutoffs of 100 tons/year should refer to the entire plant and not to individual emission units emitting more than 100 tons/year.

3. Equivalency calculations for coating should be performed in units of lbs VOC/gallon solids rather than lbs VOC/gallon coating when bubbling, crossline averaging, or compliance with add-on control equipment such as incinerators are involved.

4. Compliance calculations for coatings expressed as lb VOC/gallon coating (less water) should treat exempt solvents such as 1.1.1 - trichloroethane and methylene chloride as water for purposes of calculating the "less water" part of the coating composition.

5. VOC definitions should include all organic materials which evaporate and participate in atmospheric photochemical reactions. A vapor pressure of 0.1mm Hg should not be used to define VOC. The following definition is a model for use:

Volatile Organic Compound (VOC) - Any organic compound which participates in atmospheric photochemical reactions; that is any organic compound other than those which the Administrator designates as having negligible photochemical reactivity. VOC may be measured by a reference method, an equivalent method, an alternative method or by procedures specified under 40 CFR Part 60. A reference method, an equivalent method, or an alternative method, however, may also measure nonreactive organic compounds. In such cases, an owner or operator may exclude the nonreactive organic compounds when determining compliance with a standard.

6. Other definitions need correction:

a) "Coating line" should not exempt from control, lines that do not have bake ovens.

b) Definitions of "refinishing" in miscellaneous metal coating rules should make clear that "in-line" or "final off-line" repair by original equipment manufacturers is not refinishing. Refinishing should be defined as the repainting of used equipment.

c) Coatings should be defined to include "functional" as well as protective or decorative films.

d) The definition of paper coating should make clear that paper coating regulations cover coating on plastic film and metallic foil as well.

e) Paper and fabric coating should cover "saturation" operations as well as strictly coating operations.

f) Vinyl coating definitions should make clear that organisol and plastisol coatings (which traditionally have contained little or no solvent) cannot be used to bubble emissions from vinyl printing and topcoating.

7. A source may use improved transfer efficiency as a substitute for meeting the SIP solvent content limit for coating only if this substitution receives EPA approval as a source-specified SIP revision.

8. A source may use crossline averaging only upon EPA approval as a source-specific SIP revision.

9. VOC rules should state explicitly the compliance time frame associated with each emission limit (e.g., instantaneous or daily). Rules may include periods longer than 24 hours only in accordance with the memorandum from John O'Connor, Acting Director of the Office of Air Quality Planning and Standards, dated January 20, 1984, and only as source-specific SIP revisions. Without a stated compliance time, rules should be interpreted to require continuous compliance.

10. State rules should require explicitly that sources keep records needed to assess compliance for the time frame specified in the rule. The rule should give reporting schedules and reporting formats. For example, if the rule requires daily compliance, then daily records must be required. If units of lb VOC/gallon solids are required for daily compliance, the source must record the gallons of solids used per day and the pounds of VOC emitted per day. The rules should also require sources to list separately the amount of diluents and, when relevant to determining compliance, wash and clean-up VOC.

Beyond that, State rules should require sources to document (1) that the coatings manufacturer used either EPA Method 24 or an EPA-approved State method to calculate the amount of VOC per gallon of coating (less water and exempt solvents) and (2) what method the manufacturer used to calculate the volume percent solids content of the coating.

11. State rules should require the use of the most current test methods to determine the VOC content of coatings (e.g., EPA Reference Method 24 or equivalent ASTM Methods). The method used to determine volume percent solids should be specific and should be an EPA-approved method (see "Procedures for Certifying Quantity of Volatile Organic Compounds Emitted by Paint, Ink, and Other Coatings," EPA-450/3-84-019, December 1984). The procedures in outdated ASTM methods and the Volume II CTG are generally no longer acceptable. Procedures should specify that EPA or States may verify test data submitted by companies with independent tests and that EPA or State conducted tests will take precedence.

12. State rules should specify the procedures the relevant agencies would use to measure capture and control device efficiencies. For example, the rules for some types of sources or control systems should require the use of temporary enclosures, rather than material balances, in capture efficiency tests. Provisions that require "well engineered capture systems" or "maximum reasonable capture" should be replaced with specific control requirements.

13. Concerning equipment leaks, sources that have previously been exempt from monitoring requirements due to line size or the use of plug and ball valves should be subject to the SIP requirements. In addition, SIPs should not exempt unsafe and inaccessible valves from all periodic monitoring requirements. EPA believes that inaccessible and unsafe-to-monitor valves should be monitored as often as practicable because of the potential for finding leaks and reducing emissions. EPA does not consider annual monitoring or shutdown for monitoring to be an unreasonable burden for inaccessible and unsafe-to-monitor valves.

For natural gas plants, RACT should apply to equipment that contains or contacts a process stream with VOC concentration of 1.0 percent by weight or more. Equipment with process streams containing relatively low percentages of VOC (i.e., between 1.0 and 10.0 percent) contributes a significant portion of total emissions from natural gas plants and, therefore, is subject to RACT requirements.

14. Although many SIPs contain provisions giving the State authority to grant variances, exemptions and strategies for alternative means of control, SIPs should make clear what must be submitted as a revision to the SIP.



#### 4.0 Comparative Summary of State Regulations Based on Consistency and Adequacy with Regard to Federal Requirements

This part summarizes deficiencies in SIP VOC Regulations in tabular form. A narrative analysis of each regulation is presented in Part 5 of this report.

The tables use the codes indicated below. A blank (no symbol) in the table indicates that the SIP has no regulation for that category and no sources of that type are located in the ozone nonattainment area.

##### Table Symbols

D = minor differences

DD = Substantive differences

DDD = Significant differences

- (dash) = satisfactory rule or no regulatory impact

? = Impact unknown

N = No Impact

S = Significant Impact

R = Issue Resolved

#### 4.1 General Provisions

See Table 4-1

#### 4.1 Gasoline Marketing

See Table 4-2

#### 4.3 Refinery Processes and Petroleum Liquid Storage

See Table 4-3

#### 4.4 Surface Coating and Printing

See Table 4-4

#### 4.5 Other VOC Categories

See Table 4-5



TABLE 4-1

## Comparative Summary- General Provisions

(Consistency/Impact)

	Del.	D.C.	MD.	PA. DER	PA. AC	PA. AMS	VA.	W.VA.
A. Alternate Controls	-	-	DD	DD	DD	DD	-	-
B. Applicability	-	D	DDD	DDD	S	DDD	-	?
C. Averaging	DDD	N	S	S	S	-	N	-
D. Breakdowns/Malfunctions and operation changes	D	D	D	D	-	D	-	-
E. Circumvention	D	?	?	?	?	-	?	?
F. Compliance Schedule	D	-	DD	D	-	D	-	-
G. Definition of Terms	DD	DD	DDD	DD	DD	DD	DD	?
H. Equivalency	-	?	S	-	?	-	D	S
I. Inspection, Maintenance and operating changes	D	-	S	S	S	-	S	-
J. Test Methods & Procedures	DD	DD	N	-	-	D	-	-
K. Monitoring, Record-keeping & Reporting	DD	?	DD	DD	?	DD	DD	S

TABLE 4-2

Comparative Summary  
Gasoline Marketing Activities

	Del.	D.C.	MD.	PA. DER	PA. AC.	PA. AMS.	VA.	W.VA.
<u>Bulk Plants:</u>								
<u>Applicability</u>	D		DDD	D	D	D	D	
<u>Level of Control</u>	-		DDD	-	-	-	DD	
<u>Enforceability</u>	-		DDD	-	-	-	-	
<u>Impact of Deficiencies</u>	?		S	?	?	?	?	
<u>Bulk Terminals:</u>								
<u>Applicability</u>	-	DD	DDD	D	D	D	D	-
<u>Level of Control</u>	D	D	DDD	-	-	-	DD	-
<u>Enforceability</u>	-	-	DDD	-	-	-	-	DD
<u>Impact of Deficiencies</u>								
<u>Tank Trucks :</u>								
<u>Applicability</u>	D	DD		D	D	D	DD	
<u>Level of Control</u>	-	DD	DDD	-	-	-	DD	
<u>Enforceability</u>	-	DD	-	-	-	-	-	
<u>Impact of Deficiencies</u>	?	S	S	?	?	?	S	

TABLE 4-2

## Gasoline Marketing Activities

Continued

	Del.	D.C.	MD.	PA. DER	PA. AC.	PA. AMS.	VA.	W.VA.
Stage I: Applicability	D	-	DDD	DD	DD	DD	DD	
Level of Control	-	-	-	-	-	-	-	
Enforceability	-	-	-	-	-	-	-	
Impact of Deficiencies	?	-	S	?	?	?	?	

TABLE 4-3

Comparative Summary  
Refineries & PL Storage

	Del.	D.C.	MD.	PA. DER	PA. AC.	PA. AMS.	VA.	W.VA.
<u>Fixed Roof Tanks:</u>								
Applicability	-	DD	-	-	-	-	-	-
Level of Control	-	DD	-	D	D	D	-	-
Enforceability	-	-	DDD	-	-	-	DD	-
Impact of Deficiencies	-	N	S	?	?	?	?	N
<u>External Float Roof Tanks:</u>								
Applicability	-	-	-	-	-	-	-	-
Level of Control	-	-	-	D	D	D	-	-
Enforceability	-	-	-	-	-	-	-	-
Impact of Deficiencies	-	-	-	?	?	?	-	-
<u>Refinery Leaks:</u>								
Applicability	DD	DD	-	-	-	-	-	-
Level of Control	D	-	-	D	D	D	-	-
Enforceability	-	-	-	-	-	-	DD	-
Impact of Deficiencies	?	N	-	N	N	N	?	?

TABLE 4-3

## Refineries &amp; PL Storage

Continued

	Del.	D.C.	MD.	PA. DER	PA. AC.	PA. AMS.	VA.	W.VA.
<u>Refinery Processes:</u>								
<u>Applicability</u>	DD		DD	-	-	-	-	-
<u>Level of Control</u>	D		D	-	-	-	-	-
<u>Enforceability</u>	-		-	DD	DD	DD	-	-
<u>Impact of Deficiencies</u>	?		?	?	?	?	-	-

TABLE 4-4

Comparative Summary  
Coating and Graphic Arts

	Del.	D.C.	MD.	PA. DER	PA. AC.	PA. AMS.	VA.	W.VA.
<u>Can Coating:</u> <u>Applicability</u>								
<u>Level of Control</u>								
<u>Enforceability</u>								
<u>Impact of Deficiencies</u>								
<u>Coil Coating:</u> <u>Applicability</u>	D							
<u>Level of Control</u>	-							
<u>Enforceability</u>	-							
<u>Impact of Deficiencies</u>	N							
<u>Paper Coating :</u> <u>Applicability</u>	D							
<u>Level of Control</u>	-							
<u>Enforceability</u>	-							
<u>Impact of Deficiencies</u>	N							

## Coating &amp; Printing

Table 4-4

	Del.	D.C.	MD.	PA. DER	PA. AC.	PA. AMS.	VA.	W.VA.
<u>Fabric &amp; Vinyl Coating:</u>								
Applicability	D		-	-	-	-	-	
Level of Control	-		-	-	-	-	-	
Enforceability	-		-	-	-	-	-	
Impact of Deficiencies	N		-	-	-	-	-	
<u>Auto &amp; Lt. Duty Trucks:</u>								
Applicability	DD		-	-	-	-	-	
Level of Control	-		DD	-	-	-	DD	
Enforceability	-		-	-	-	-	-	
Impact of Deficiencies	R		N	-	-	-	?	
<u>Metal Furniture:</u>								
Applicability	D		-	-	-	-	-	
Level of Control	-		-	-	-	-	-	
Enforceability	-		-	-	-	-	-	
Impact of Deficiencies	N		-	-	-	-	-	

TABLE 4-4

## Coating &amp; Printing

Continued

	Del.	D.C.	MD.	PA. DER	PA. AC	PA. AMS	VA.	W.VA.
<u>Magnetic Wire:</u>								
<u>Applicability</u>				-	-	-	-	
<u>Level of Control</u>				-	-	-	-	
<u>Enforceability</u>				-	-	-	-	
<u>Impact of Deficiencies</u>				-	-	-	-	
<u>Large Appliance:</u>								
<u>Applicability</u>	D		-	-	-	-	-	
<u>Level of Control</u>	-		-	-	-	-	-	
<u>Enforceability</u>	-		-	-	-	-	-	
<u>Impact of Deficiencies</u>	N		-	-	-	-	-	
<u>Metal Parts:</u>								
<u>Applicability</u>	D		DD	-	-	-	-	
<u>Level of Control</u>	DD		D	DD	DD	DD	DD	
<u>Enforceability</u>	-		-	-	-	-	-	
<u>Impact of Deficiencies</u>	?		?	?	?	?	?	



TABLE 4-4

## Coating &amp; Printing

continued

	Del	D.C	MD	PA DER	PA AC	PA A/S	VA	W.VA.
<u>Paneling:</u>								
<u>Applicability</u>							-	
<u>Level of Control</u>							-	
<u>Enforceability</u>							-	
<u>Impact of Deficiencies</u>							-	
<u>Graphic Arts:</u>	DD		-	-	-	-	-	
<u>Applicability</u>								
<u>Level of Control</u>	D		DD	-	-	-	DD	
<u>Enforceability</u>				-	-	-	DDD	
<u>Impact of Deficiencies</u>	?		?	-	-	-	?	

TABLE 4-5

## Comparative Summary-Other CTG Categories

	Del.	D.C.	MD.	PA. DER	PA. AC	PA. AMS	VA.	W.V.A.
<u>Metal Cleaning:</u>								
Applicability	-	-	?	-	-	-	-	
Level of Control	-	-	?	D	D	D	-	
Enforceability	-	-	?	-	-	-	-	
Impact of Deficiencies	-	-	?	?	?	?	-	
<u>Cutback Asphalt:</u>								
Applicability	D	D	D	D	D	D	D	
Level of Control	-	-	-	-	-	-	-	
Enforceability	-	-	-	-	-	-	-	
Impact of Deficiencies	N	?	N	?	?	?	?	
<u>Pharmaceuticals:</u>								
Applicability	-	-	D	-	-	-	D	
Level of Control	-	-	-	D	D	D	-	
Enforceability	-	-	DD	-	-	-	-	
Impact of Deficiencies	-	-	?	N	N	N	N	
<u>Rubber Tires:</u>								
Applicability				DD	DD	DD	-	
Level of Control				D	D	D	-	
Enforceability				-	-	-	-	
Impact of Deficiencies				?	?	?	-	
<u>Perc Dry Cleaning:</u>								
Applicability	-	-	-	DDD	DDD	DDD	-	
Level of Control	-	-	-	DDD	DDD	DDD	-	
Enforceability	-	-	-	DDD	DDD	DDD	-	
Impact of Deficiencies	-	-	=	S	S	S	-	



## 5.0 STATE VOC REGULATORY ISSUES

The following sections evaluate Region III VOC Regulations, for the reader's convenience a summary of these Regulations can be found in Appendix I. This summary was taken from EPA publication "Summary of State VOC Regulations", April 1985 (EPA-450/2-85-003).

### 5.1 Common Issues

This section describes those issues or deficiencies which are common to most Region III VOC RACT regulations. More specific information on these problems within each State regulation is provided in the Sections that follow.

#### 5.1.1 Definition of VOC

Virtually all Region III ozone SIPs still include the definition of VOC used for the original Round I regulations. This definition is based on vapor pressure and is no longer acceptable since it has been determined that most VOC will react to form ozone; that is, reactivity is not dependent on volatility. The Round II VOC model regulations published in September 1979 revised the definition to include all reactive VOC. The new definition is also used in NSPS regulations.

Since Region III States have not changed their definition of VOC, they may be exempting sources that emit reactive VOC because the vapor pressure of their organic compounds is below that stated in the definition.

#### 5.1.2 Recordkeeping

Region III SIPs generally provide for recordkeeping to the extent required by the State Air Director. For many RACT categories, but especially the coating and graphic arts industries, there are no general or specific requirements to maintain records which would allow for a determination of compliance based on the particular standard being enforced. Where positive controls (e.g. incinerators or carbon adsorption systems) are being used, this is not a major problem since control is being provided on a continuous basis. However, where low solvent technology is being used a significant problem is realized.

When using complying coatings, sources should be documenting the VOC content of each coating or ink as it is applied. Coatings and inks are usually diluted with solvent (VOC) before applying. Inks routinely are subject to significant evaporative losses during the printing process which requires that additional amounts of solvent be added to maintain the inks viscosity and printability. Sources rarely maintain adequate records to show that the coating or ink once diluted and applied meets RACT standards. As a result compliance (or non compliance) cannot be determined.

At a minimum, sources should be required to maintain records which would allow the regulatory agency to determine its compliance status. Although State Air Directors seem to have the authority to require adequate records, they have not acted to do so.

### 5.1.3 Equivalency

Most State regulations include provisions which allow them to consider equivalent VOC emission control measures which will provide an equivalent or greater emission reduction than the RACT standard. An issue has developed concerning the State authority to allow for such a change without revising their SIP. Except in the case of conventional add-on controls like incineration or carbon adsorption, the implementation of a so called equivalent method requires that the State accept an emission standard or compliance procedure that is not included in the Federally approved SIP. Therefore in effect, the State action would potentially change an emission standard in their Federally approved SIP. Section 110 of the Clean Air Act, however, requires EPA review and approval prior to such a change. A relevant example of this problem is presented in the Regional Counsel opinion in Appendix 2 concerning the equivalency provision in the Pennsylvania SIP and transfer efficiency improvements.

Other issues exist concerning how States determine equivalency even with conventional controls. Equivalency must be determined on a solids as applied basis for the coating industry. Only the Pennsylvania SIP clearly requires this although all Region III States appear to have accepted this principal in implementing their regulations. The calculation should also be consistent with the procedure used to develop the standard; that is, it should use the typical solvent density (7.36 lbs.VOC per gallon of solvent) used by EPA to generate the SIP standard in terms of lbs. VOC per gallon of coating to calculate an equivalent standard in terms of lbs. VOC per gallon of solids as applied. Otherwise, sources may be allowed to escape the full measure of RACT requirements.

#### 5.1.4 Test Methods and Procedures:

Most Region III SIPs contain test methods and procedures suggested in the original CTGs. Because the CTG test procedures were modified, and improved as subsequent NSPS standards were promulgated, the SIPs must be updated to include these changes and to assure accurate and consistent compliance tests and procedures.

There is also a need to document the performance of equivalent control techniques with reasonable performance tests. These are critical tests which are needed to demonstrate that emission reductions which meet RACT requirements are actually being realized. State agencies are often reluctant to require tests where EPA approved standard methods do not exist but are usually more willing to accept a source's claim of emission reductions without empirical data to support the conclusion. SIP's should require that a source develop and submit to the regulatory agency for approval, appropriate test methods and procedures when standard methods are not available. Sources must also be required to demonstrate compliance with the standard by conducting a compliance test once approved by the State agency.

#### 5.1.5 Applicability Criteria and Exemptions

State agencies were allowed some latitude in setting RACT standards in their nonattainment areas. Generally this was accomplished by using more or less stringent applicability criteria, providing or eliminating exemptions or, in some cases, actually relaxing a RACT standard. These differences in RACT requirements are not critical for areas which have attained the ozone standard, but demand reevaluation in areas that have not. This study points out a number of differences in regulations which, if made to comply with the RACT standard proposed by EPA, could result in additional reductions in VOC emissions. Where attainment of the ozone standard has not been realized, these changes must be considered.

#### 5.1.6 Clear Coat Definition

All of Region III's SIPs allow a relaxed standard for the application of clear extreme performance coatings. EPA had suggested that clear coatings not used in a base coat/clear coat operation be subject to a more stringent standard. It is not known whether a change to the more stringent definition suggested by EPA would result in a significant net reduction in VOC emission overall but a 55% reduction on a case by case basis is possible. Therefore, consistency with EPA's suggested standard should be considered as part of any SIP for areas which have not been able to attain the ozone standard.

#### 5.1.7 Afterburner Exemption:

All Region III states have more liberal afterburner exemption regulations than suggested by EPA policy. EPA suggested an exemption during winter months that was limited to gas fired units while state regulations provide the same exemption regardless of fuel type. The rationale for the EPA was the natural gas shortage in the late 1970's. The justification for the broader exemption granted by the State is not evident. Although there appears to be no reason for the exemption today, EPA has decided not to change its policy. The state exemptions do not appear to have a significant impact on attainment of the ozone standard because no ozone standard violations have occurred during the winter months when the exemption is exercised.

## 5.2 Delaware

Delaware's VOC regulations for RACT sources are contained in Regulation XXIV of the Department of Natural Resources and Environmental Control. Definitions are included in Regulation I: Definitions and Administrative Principles. Certain general provisions affecting these sources are also included in Regulation XVII: Source Monitoring, Recordkeeping and Reporting. Delaware's regulations are promulgated under Title 7, Delaware Code, Chapter 60. Delaware's VOC RACT Regulations affect only sources located in New Castle County.

### 5.2.1 General Provisions (Del.)

Except as noted above, there are few general provisions in Delaware's regulation which affect VOC RACT Sources. Most requirements are stated in source specific sections of Regulation XXIV. This part of the Section covers generic provisions which cover all or a number of source types. Source specific requirements are addressed in the corresponding source specific sections of this report.

#### A. Alternate Controls (Reg XXIV § 2 - reserved):

Delaware's regulation does not include any substantive provision for alternative control plans.

#### B. Applicability (Reg XXIV § 1):

Summary: The regulation applies to all VOC sources whose emissions exceed 10 pounds per day (except for solvent metal cleaning) unless other limits are stated in the source specific sections. This criterion is more stringent than EPA's suggested applicability criterion (15 lbs/day); however, no hourly rate is specified. Exemptions are provided for methane, ethane, trichlorotrifluoroethane, methyl chloroform and methylene chloride.

Issue: The regulation generally meets EPA guidelines. No issues are evident.

#### C. Averaging Time:

Summary: As originally promulgated the Delaware regulation appears to allow yearly averaging for the coating industries. This is contrary to how the State has indicated that they determine compliance; that is, no averaging time for coating industry except for the automobile coating industry. The term "yearly average" is clearly stated in the heading of Table 1, page XXIV-10 which indicates compliance coating requirements for all RACT coating sources. The only clarification is a footnote which states that, for the auto/light duty truck category, compliance would be determined by the "arithmetic average of all colors at any time." The state interprets this as being a continuous compliance requirement.



EPA has proposed approval of a SIP revision (51FR 40828, 11/10/86) which, in part, drops the word "yearly" from the term "yearly average". There is some concern whether this change fully resolves the problem. It still leaves open the notion that some kind of average is allowed for most coating industry compliance determinations (either time or crossline). This is contrary to the way the State actually implements the regulation and EPA prefers the program to be implemented. Since EPA and Delaware are in agreement on how this regulation should be implemented, the issue is not significant.

Issue: It may prove difficult for EPA to enforce a continuous compliance interpretation where the regulation suggests that some type of average is required. However, since EPA and Delaware agree on the interpretation and implementation of these regulations it is unlikely that this will be a significant problem.

#### D. Breakdown, Malfunction & Operation Changes:

Summary: No equivalent language is provided. EPA's policy considers breakdowns, malfunctions and operational changes as SIP violations but encourages enforcement discretion where such a problem is beyond the control of the owner or operator. Delaware's regulation does have a definition for the term malfunctions which addresses some of this policy. But no link between that definition and the VOC regulations is apparent.

Issue: The main advantage of EPA's suggested provision lies in its reporting requirement. Sources who have a breakdown, malfunction or operational change are required to notify the director and maintain records of the problem. There does not appear to be a similar requirement in Delaware.

#### E. Circumvention:

Summary: No similar regulatory language was evident.

Issue: This does not appear to be a major issue.

#### F. Compliance Schedules: (Reg. XXIV - see source category section)

Summary: Compliance schedules do not comply with EPA recommendations in total but differences are not significant.

Issue: Since time frames allowed for in the SIP have passed, this is not a critical issue.

#### G. Definition of Terms:

Delaware's regulations do not use many of the terms defined in EPA's model regulation; however, the regulation tends to be more concise than EPA's. Generally, the terms defined are adequate for the regulation as written with two exceptions. First, the term "clear coat" as used for the miscellaneous metal parts is not defined. If interpreted or defined broadly, the requirement for clear extreme performance coatings may have been relaxed from the 3.5 lb/gal intended compliance level to 4.3 lb/gal. Second, the definition of VOC includes an exemption based on vapor pressure and, therefore, is less stringent than EPA's recommended definition. (See 2.17)

Issue: The "clear coat" question is addressed under miscellaneous metal parts, Section 5.2.4 I.

#### H. Equivalency Provisions: (Reg. XXIV - See specific source category section)

Summary: The regulation is generally consistent with EPA's suggested language. There is, however, a generic problem concerning the latitude state agencies have in making equivalency decisions which is discussed in Section 2.13 of this report. Delaware's regulations do require that equivalency be defined on a solids applied basis. It also specifically lists transfer efficiency (TE) improvements as an equivalency consideration. A formula is offered for determining TE and baseline TE's for the auto industry. (Reg. XXIV § 9.7).

Issue: In addition to the issue discussed in § 3.0 of this report, there is some concern with regard to the baseline TE's established for the auto industry. The fact that the regulation clearly addresses TE may weaken EPA's contention that TE compliance/credit (if averaging is allowed) requires a SIP revision. However, this is not a major problem by itself.

#### I. Inspection, Maintenance and Operating Procedures:

Summary: No language equivalent to that suggested by EPA is evident.

Issue: Although it would be preferable for the regulation to address these suggested provisions, the omission does not represent a major flaw.

#### J. Test Methods and Procedures

Summary: No general section addressing standard test methods and procedures is evident; however, most source categories in Regulation XXIV do state specific compliance methods (usually ASTM methods). These generally do not incorporate the changes which have resulted from the promulgation of NSPS standards (and standard EPA test methods) in recent years.

Issues: Any source category testing issue will be discussed under the respective section of this report. In general, Delaware's testing methods and procedures should be revised to reflect the publication of the NSPS methods.

K. Monitoring, Recordkeeping and Reporting (Reg. XVII)

Summary: This section gives the State broad authority to require whatever type of monitoring, recordkeeping and reporting it deems appropriate. Some source sections of Regulation XXIV may also address these requirements and will be considered in the respective sections of this report.

Issue: Minimum recordkeeping and monitoring requirements should be required to adequately demonstrate compliance with the regulations.

5.2.2 Gasoline Marketing Activities (DE)

A. Bulk Gasoline Plants (Reg. XXIV, § 6)

Summary: The regulations are generally consistent with EPA requirements; however, there are some seemingly minor differences. Bulk plants which have a vapor balance system in place on or before April 30, 1980 are exempt from submerged fill pipe/bottom fill requirements. Certain bulk plants known as "certified bulk gasoline plants" (CBGP's) are exempt from regulatory requirements. CBGP's must certify that they will exclusively load gasoline into certified delivery vessels. Certified Delivery Vessels, in turn, are delivery trucks which service only tanks with a capacity of 2,000 gallons or less.

It is difficult to assess the effect of these exemptions on VOC emissions. From a technical standpoint, splash loading generates a considerable amount of VOC vapors and could generate a significant amount of VOC emission (regulations allow for the emission of up to 10 kg by weight of the gasoline vapors). With regard to the certification exemption, it is difficult to conclude that many facilities would be willing to restrict their business to just delivery vessels that service small tanks. "Certification" criteria for the plant or delivery vessel are not stated nor is the method for documenting compliance with the certification. No record-keeping is indicated.

Issue: On the surface, it does not appear that the exemptions noted cause a significant problem. However, if additional VOC reductions are required to realize attainment, the impact of these exemptions should be evaluated. The procedures for certification and documenting compliance should be clarified, at least by State guidance or policy.

B. Bulk Gasoline Terminals (Reg. XXIV, § 7)

Summary: Delaware's regulation does not require a 90% efficient absorber or condenser system per se. Nor does it specify clearly that all vapors be directed to the control system. However, the regulation does include a maximum mass emission rate consistent with EPA guidelines. Although the mass emission rate appears to be adequate from a compliance determination standpoint, it does potentially represent a relaxation from nominal RACT requirements. No recordkeeping requirements are indicated.

Issue: The differences between Delaware's regulation and EPA's guidance are not critical, but may be reconsidered if additional VOC emission reductions must be obtained to realize attainment.

C. Leaks from Gasoline Tank Trucks and Vapor Collection Systems (Reg. XXIV, § 5)

Summary: The regulations are substantively equivalent to those suggested by EPA. However, an exemption is provided for delivery vessels which load tanks with 2,000 gallons or less capacity and receive gas from "certified bulk gasoline plants" (See § A of this part). This does not appear to be a significant relaxation.

Issue: If additional emission reductions are required to achieve attainment, the exemption noted above should be reevaluated.

D. Stage I Vapor Control Systems at Gasoline Service Stations (Reg. XXIV, § 4)

Summary: A general exemption is provided for all tanks with a 2,000 gallon capacity or less. EPA's guidance limits this exemption to tanks in operation before January 1, 1979. Tanks installed after December 31, 1978 guidance are exempt if their capacity is 250 gallons or less. Delaware's regulation

also provides an exemption from bottom fill/submerged fill pipe requirements where the tank is equipped with a vapor balance system on or before April 30, 1980. It is not possible to determine the impact of these exemptions.

Issues: The impact of the noted exemptions on VOC emissions should be evaluated if additional reductions are required for attainment. The exemptions are not a compliance issue.

### 5.2.3 Refinery Emissions and Petroleum Liquid Storage

#### A. Petroleum Liquid Storage in Fixed Roof Tanks (Reg XXIV, § 8)

Summary: This section of Delaware's regulation covers both fixed roof tanks and external floating roof tanks. This section includes provisions which meet all suggested EPA CTG and model regulation requirements.

Issues: None

#### B. Petroleum Liquid Storage in External Floating Roof Tanks (Reg. XXIV, § 8)

This category is covered under 5.2.3.A above.

#### C. Leaks from Refinery Equipment (Reg XXIV § 14)

Summary: It appears that Delaware's regulation may be significantly less stringent than EPA requirements. Delaware limits the applicability to "refineries which use crude oil as the primary raw material." EPA's definition of petroleum refinery subject to these regulations is much broader.

"Petroleum refinery" means any facility engaged in producing gasoline, aromatics, kerosene, distillate fuel oils, lubricants, asphalt, or other products through distillation of petroleum or redistillation, cracking, rearrangement or reforming of unfinished petroleum derivations. (EPA 450/2-79-004 page 12). (emphasis added)

The regulation also exempts inaccessible valves and storage tank valves. No such exemption is suggested in the CTG or model regulation for this source category.

Issues: The regulation is less stringent than required with regard to applicability. However, Delaware's one refinery, Texaco, uses crude oil as the primary raw material. Therefore, this difference does not appear to change the effectiveness of the RACT requirement. Exemptions provided for certain valves represent a potentially significant relaxation and require more detailed review.

D. Refinery Vacuum Producing Systems, Separators and Process Units (Reg. XXIV, § 10)

Summary: The regulations are generally consistent with EPA requirements except that they limit control techniques for vacuum systems to only one piece of equipment, distillation columns, and do not address recordkeeping for process turnarounds. The impact of these differences is not readily evident but could be considerable.

Issue: The impact of the differences between this regulation and RACT requirements must be more clearly defined. Recordkeeping concerns may be resolved through operating permit conditions. If limiting vacuum system applicability only to distillation columns proves significant, the regulation should be revised.

5.2.4 Surface Coating and Graphic Arts (Reg. XXIV § 9 through 15)

Section 9.1 - 9.7 include general provisions and exemptions for the coating industry. Emission limitations (compliance coating criteria) and compliance dates are presented in Table I on a lb. VOC/gal. of coating basis and in Table I.a. on a lb. VOC/gal. of applied solids (automobile light duty trucks only). Table II indicates compliance schedules/increments of progress. These tables are generally consistent with EPA requirements except with regard to averaging time (see 5.2.1.C).

Section 9.2 limits applicability to sources that emit 40 lb. VOC in any one day (7.3 t/y). This is slightly less stringent than the general applicability criteria of 10 lb/day stated in the general portion of the regulation (§ 1) and EPA's suggested cut off of 15 lb/day (2.7 t/y). However, the significance of the problem is not readily evident.

Section 9.3 indicates the methods for complying with the regulations and includes transfer efficiency and methods for achieving equivalent emission reductions. See §§ 5.2.1 H and 2.1.8. of this report for a discussion of these issues. Section 9.3 also states that for miscellaneous metal parts

control systems using incineration, 90% of the VOC must be oxidized and an 80% overall efficiency must be achieved. These requirements are generally consistent with EPA requirements.

Section 9.4 requires the increments of progress indicated in Table 2. Sections 9.5 and 9.6 indicates ASTM methods to be used in determining VOC and solids content of coatings. Recordkeeping is not addressed at all in this section.

Graphic arts facilities are addressed in § 15.

A. Can Coating

No regulations: The state has certified that no facilities are known to exist in the nonattainment area.

B. Coil Coating (§ 9, Tables 1 and 2)

Summary: The regulation is generally consistent with Federal requirements.

Issue: None

C. Paper Coating (§ 9 Tables 1 and 2)

Summary: The regulation is generally consistent with Federal requirements.

Issue: None

D. Fabric and Vinyl Coating (§ 9, Tables 1 and 2)

Summary: The regulation is generally consistent with Federal requirements.

Issue: None

E. Automobile and Light Duty Trucks (§ 9, Tables 1, 1a and 2)

Summary: In addition to the issues discussed under Averaging Time (Section 5.2.1 C) the standards for surface coating operations differ from Federal guidelines in that they are divided into two categories, lacquer and enamel coatings. The standards for enamel and lacquer topcoats and final repair are identical to Federal requirements. The primer (lacquer), surfacer (lacquer) and the primer/surfacer (enamel) standards are unique to Delaware regulations. There are some

averaging time issues as previously noted; however, the State appears to be implementing the regulations in a manner consistent with EPA policy.

Issue: Averaging time issues must be resolved. A SIP revision is being processed by EPA which should resolve this issue.

F. Metal Furniture Coating (§ 9, Tables 1 and 2)

Summary: The regulation is generally consistent with Federal requirements.

Issues: None

G. Insulation of Magnetic Wire

No Regulations: The State has certified that no facilities are known to exist in the nonattainment area.

H. Large Appliance Coating (§ 9, Table 1 and 2)

Summary: The regulation is generally consistent with Federal requirements.

Issues: None

I. Coating Miscellaneous Metal Parts (§ 9, Tables 1 and 2)

Summary: In general, DNR's regulation conforms to EPA requirements. The regulation, however, does not define "clear coat" nor does it indicate which compliance coating criteria applies when a clear extreme performance coating is used. Clear coat complies at 4.3 lb. voc/gal of coating while high performance coatings comply at 3.5 lbs. VOC/gal of coating. EPA's regulatory guidance pointed out that State agencies must evaluate this problem on a case-by-case basis to assure that true "extreme performance coatings" which happen to be clear are not considered as a "clear coat".

Issue: Delaware should consider adding clarifying definitions or footnotes in § 9 Table 1 to clearly indicate when a particular coating is subject to clear coat or extreme performance coating requirements. At the minimum, a policy statement by the State should be issued which indicates how they interpret these terms.



#### J. Coating of Flat Wood Paneling

No Regulations: The State has certified that no facilities are known to exist in the nonattainment area.

#### K. Graphic Arts (Reg. XXIV, § 15)

Summary: The regulation generally conforms to EPA requirements except for the following:

1. Applicability is limited to any rotogravure or flexographic printing press emitting 7.7 tons or more of press ready ink per year (§ 15.1). EPA's suggested guidelines exempt printing "facilities" (not any press) which emit less than 100 tons VOC/yr. The Delaware regulation may exempt certain individual presses at a facility from regulatory requirements and is, therefore, potentially less stringent than EPA guidelines. It could also be more stringent by regulating some small printing operations which have presses that emit greater than 7.7 tons per year but less than 100 tons per year by the entire facility.

2. Section 15.3, Alternate Emission Reduction Plan, appears to be a bubble provision for graphic arts facilities. EPA did not specifically approve this section as a generic bubble and would require that a SIP revision be submitted. However, EPA's silence on this point at the time of promulgation will undoubtedly cause confusion. This section looks like and may be interpreted by the State as a generic bubble. They have argued this point before on more obscure equivalency provisions and would most likely contend that the more explicit language in § 15.3 is an EPA approved bubble provision.

Issue: The inventory of class 'A' graphic arts facilities in Delaware consists of one source. It must be determined if the exceptions noted here affect the compliance status of this source. As written, the regulation may also impact class 'B' sources; however, it would be more stringent than EPA's guidance in that regard since EPA's rule only addresses 'A<sub>1</sub>' and 'A<sub>2</sub>' sources. The 'B' sources become important only if reductions from this type of source are needed to demonstrate attainment.

#### 5.2.5 Other CTG Categories

##### A. Solvent Metal Cleaning (Reg. XXIV, § 11)

Summary: Delaware's regulation is generally consistent with EPA requirements.

Issues: None.

B. Cutback Asphalt (Reg. XXIV § 12)

Summary: Delaware's regulation generally conforms to EPA requirements except for the following:

1. The temperature exemption has been changed to a prohibition against the use of cut back asphalt from May 1 through September 30.

2. Delaware's regulation only addresses asphalt used for highway purposes. No similar limitation is indicated in Federal guidance. However, this is the primary use of asphalt.

Issues: It does not appear that the difference noted result in significant problems.

C. Manufacture of Synthesized Pharmaceutical Products (Reg. XXIV, § 16).

Summary: Delaware's regulation is generally consistent with Federal requirements.

Issues: None

D. Manufacturing of Pneumatic Rubber Tires

No Regulation: The State has certified that no facilities are known to exist in the nonattainment area.

E. Perchloroethylene Dry Cleaning (Reg. XXIV, § 13)

Summary: Delaware's regulation is generally consistent with EPA guidelines.

Issues: None

5.2.6 Round III CTG Sources

Delaware has certified that the following Round III Source categories are not located in the ozone nonattainment area.

1. Large Petroleum Dry Cleaning
2. Manufacture of High Density Polyethylene, Polystyrene and Polypropylene Resins
3. Natural Gas/Gasoline Processing Plants
4. SOCM I Air Oxidation processes

Delaware submitted draft SOCM I fugitive emission regulations to EPA on 4/13/87, EPA sent comments on 6/8/87. Three sources will be affected by this Round III regulation.

#### 5.2.7 Non-CTG Regulations

Pigment Tray Drying- Region III tracking information indicates that this source specific RACT determination for Ciba Geigy, was approved by a Notice of Final Rule Making on February 26, 1985. No such notice was found for that date.

No information was found in Region III's SIP Library or SIP tracking reports. Further investigation of this matter is required.

### 5.3 District of Columbia

The District has proposed sweeping changes to their regulations which reorganize them into a new format that is more logical and readable. The substantive changes are of two types: 1. changes which restructure and/or reword existing regulations; and 2. new control requirements for sources not previously addressed. This evaluation considers this proposed regulation which has been approved by DC and is in the process of being approved.

The DC regulations are somewhat unusual in that they contain variations of requirements for traditional CTG categories used in a unique way (e.g., refinery leak detection methods are required for similar components used at bulk plants) or they may address source types which are not now located in the District. The apparent intent is to improve the level of control and compliance at the regulated facility or to set minimum control requirements for new sources that may be constructed in the District.

#### 5.3.1 General Provisions

##### A. Alternate Controls

Summary: The regulation does not include specific provisions for alternate controls (bubbles).

Issues: None

##### B. Applicability

Summary: Specific applicability criteria, as appropriate, are listed in each subsection in Chapter 7 - Volatile Organic Compounds. For the most part the applicability criteria for CTG sources for which the District has or has proposed regulations are consistent with EPA guidelines. Non-CTG sources usually are subject to the regulations regardless of size; that is, if a source category is regulated all sources within that category are subject to the regulations.

The regulations do include a "catch-all" category (§ 700.1-700.3). VOC sources not subject to any other part of Chapter 7 are potentially subject. Two groups are identified depending on solvent reactivity. The first group (§ 700.2) requires anyone who discharges more than 15 lbs. of "photochemically reactive solvents" in any one day, or 3 lbs.

in any one hour to reduce emissions by at least 85%. The term "photochemically reactive solvent" is defined in terms similar to "Rule 66"; that is, it encourages substitution of solvents based on their suspected level of reactivity.

EPA has rejected this approach in general, but DC's regulation does not appear to affect CTG sources or non-CTG sources with emissions equal to or greater than 100 tons. In addition, the other part of this section (§ 700.3) requires anyone who discharges more than 40 lbs. of "non-photochemically reactive solvents" in any one day or more than 8 lbs. in any one hour to reduce emissions by 85%. The term "non-photochemically reactive solvent" is not defined but it is reasonable to assume that it includes all solvents not covered by the definition of "photochemically reactive solvent." Therefore, at the minimum, any source emitting more than 40 lb/day (7.3 tpy max) of a solvent into the atmosphere, regardless of its reactivity, must provide for an 85% reduction in emissions. As a result the use of "Rule 66" definitions in this case is not a critical flaw. It should be noted, however, that the term "solvent" is not defined and that water may be considered a solvent. Theoretically, someone emitting water vapor could be subject to this regulation.

Issue: None

#### C. Averaging Time

Summary: The regulation is silent on this issue. Generally, this term/issue becomes important with regard to the coating and printing industry, especially where a combination of solvent and low solvent coatings are in use. The District has certified that no sources in these CTG categories are located in the nonattainment area. The District does include several non-CTG printing plants which are considered in Section 5.3.7.

Issues: None

#### D. Breakdowns, Malfunctions and Operation Changes

Summary: Although the term "malfunction" is defined, the term is apparently not used in the text of the regulation. The phrase "malfunctioning equipment" is used in Section 107.3. Section 107 primarily addresses scheduled shutdowns of control equipment.

Section 107.3 seems to imply that similar review and approval is required for control equipment which malfunctions, however, this is not very clear. The procedure and approvals

needed for scheduled shutdowns are similar to those required in Section 103, Variance. Section 107.3, however, seems aimed more at short, scheduled shutdowns for maintenance.

No regulatory language is evident that is equivalent to that suggested in Federal model regulations. In particular, it should be noted that there is no specific requirement in the District's regulation requiring notification and reporting related to a malfunction or breakdown. Operational changes could adequately be addressed by provisions in Sections 103 (Variance), 107 (Control Devices or Practices) and 202 (Modification, Revocation and Termination of Permits).

Issue: Although it would be preferable to have language similar to that indicated in the EPA guidelines, this does not appear to be a critical issue.

#### E. Circumvention

Summary: Section 107.1 requires that all devices and practices provided for the control of air pollutants remain operative and forbids removal. Section 105.1 specifies penalties for falsifying records or reports. Aside from these sections, there appears to be no regulatory language in the District's regulations which track this part of the EPA model regulation.

Issue: This does not appear to be a major problem.

#### F. Compliance Schedules

Summary: Compliance schedules are included in the regulations for Petroleum Dry Cleaners (§ 706), Perchloroethylene (§ 707) and Engraving and Plate Printing (§ 710). No general compliance schedule or source/category specific compliance schedules are evident. It is believed that most sources subject to the regulation may have been in general compliance with the regulations when they became effective.

Issue: This does not appear to be a major problem.

#### G. Definition of Terms (§ 199).

Summary: The District has modified some EPA recommended definitions and added or deleted others. As previously noted, in the initial paragraph of this section, the District has attempted to use certain suggested regulations in a new way. The differences by themselves are not critical. What is important is that the regulations as they are written are effective and reasonable in producing the required result.

The effect of these differences, therefore, will be considered in the review of the respective parts of this report dealing with each source category. It should also be noted that the definition of VOC includes an exemption based on vapor pressure and, therefore, is less stringent than EPA's recommended definition. (See Section 2.1.7).

Issues: The definition of VOC must be corrected.

#### H. Equivalency Provisions:

Summary: Except as may be provided in each section of the regulation for each source or category, there are no equivalency provisions in the District's rule.

Issues: None

#### I. Inspection, Maintenance and Operating Procedures

Summary: The District's regulations do not contain language similar to that suggested by EPA (See § 2.1.9).

Issue: Although it is desirable to have the suggested language in the District's regulation, its absence is not a critical flaw.

#### J. Test Methods and Procedures (§ 502)

Summary: Section 502, Sampling, Tests and Measurements, generally addresses test methods and procedures and alternative methods. However, VOC test procedures are not included in this section. Where appropriate, tests methods and compliance determinations are addressed in the source specific sections of this report.

Issues: A standardized listing of applicable test methods for VOC sources in a generic testing section is very desirable.

#### K. Monitoring, Recordkeeping and Reporting (§ 500 & 501)

Summary: These sections are very broad and lack specificity with regard to recordkeeping requirements. For the most part they indicate the District's authority to require what ever is needed, so long as it is reasonable, to document compliance.

Issues: At a minimum, recordkeeping and monitoring should be required which adequately demonstrate compliance with the regulations.

### 5.3.2 Gasoline Marketing Activities

In addition to the typical sections covered under this heading (i.e., Bulk gasoline plants and terminals, leaks from gasoline tank trucks and Stage I vapor control systems), Stage II vapor recovery will also be considered. It is not a requirement of Round I, II or III RACT requirements but has been included in this part because of its obvious relationship to gasoline marketing activities.

#### A. Bulk Gasoline Plants

The District's regulation includes one section titled Terminal Vapor Recovery which deals with loading facilities and the transfer of gasoline or volatile organic compound. This regulation is evaluated in item B below.

#### B. Bulk Gasoline Terminals (§ 703)

Summary: The District's regulation differs from EPA's suggested language in the following ways:

1. It does not provide exemptions based on facility size, and in addition to tank trucks and trailers addresses the loading of railroad tank cars.
2. It allows for loading through hatches provided that a vapor-tight seal and vapor collection adaptor are provided.
3. It addresses "volatile organic compounds" in addition to gasoline.
4. It does not specifically state that all vapors be directed to the vapor control system.
5. It does not prohibit VOC from exceeding 80 milligrams per liter of gasoline loaded.
6. It does not mention good work practice standards.

The test methods cited for determining compliance are those recommended by EPA in the CTG.

EPA currently recommends upgraded procedures in 40 CFR 60.503 "Test Methods and Procedures", Methods 25A, 25B, 2A and 2B. Leak test procedures have not changed (see tank truck CTG).



Issues: Although more precision in the regulatory language and reference to the upgraded test procedure are preferred, the regulations appear to be enforceable. Consideration should be given to including a statement that all VOC vapors be directed to the control system.

C. Leaks from Gasoline Tank Trucks and Vapor Collection Systems (§ 704.4)

The District's regulation covers this item under its Stage I regulation; however, it only includes leaks from the tank truck itself. It does not include leaks from vapor collection and control systems at bulk terminals and gasoline dispensing facilities. Apparently, the District is attempting to correct part of this shortcoming by using the refinery leak procedures at bulk plants. It is not clear what is proposed for service stations. It also does not require the following:

1. The vapor collection system should be designed and operated to prevent gauge pressure exceeding 18 in. of H<sub>2</sub>O and vacuum exceeding 6 in. of H<sub>2</sub>O in gasoline tank trucks.
2. Readings greater than 100% of LEL at 2.5 CM from leak source must be prevented during loading and unloading.
3. Specific recordkeeping and reporting requirements.

Issue: The regulation's deficiencies may be significant, especially with regard to the leak detection testing procedures at dispensing facilities.

D. Stage I Vapor Recovery Systems: (§ 704)

Summary: The regulation generally conforms to EPA requirements.

Issues: None

E. Stage II Vapor Recovery Systems: (§ 705)

Because there is no CTG requirement for Stage II at this time, this section will describe the District's Stage II regulation.

Applicability:

- Transfer of gasoline to any vehicle from any stationary storage container;

- Gasoline dispensing facilities with 3 or less dispensing nozzles are exempt;

- One nozzle may not comply (at owner's discretion) except where there are no self-service islands.

#### Level of Control

- vapor-tight seal and vapor-tight vapor return.

- operated and maintained to prevent the discharge of gasoline vapors

- displaced vapor from fuel tank directed to a vapor-balance system, a 96% efficient vacuum process or a 90% efficient system other than a vacuum system

#### Compliance

Compliance testing is not specified. No method of determining if the system is being operated and maintained is stated.

Issues: The lack of specific compliance test procedures makes enforcement and compliance monitoring difficult but not impossible.

#### 5.3.3 Refinery Emissions and Petroleum Liquid Storage

The District's regulations include control measures for storage tanks and refinery leaks. A major portion of the tank regulations are devoted to control measures for external floating roof tanks. The District has indicated that they do not have any external floating roof tanks (only underground storage is allowed for flammable liquids within the District) and no refineries. The District may be attempting to use these regulations to control emissions from sources other than those for which they were originally intended. For example, they define the term "Petroleum Refinery Complex" very broadly to include such things as bulk plants. Evidently, they will attempt to apply leak detection requirements from refinery equipment to bulk plants.

Petroleum liquid storage in non-CTG type tanks is addressed in Item E of this section.

A. Petroleum Liquid Storage in Fixed Roof Tanks:

The District's regulation has one section (701) devoted to the storage of petroleum products in any type of tank. It specifically addresses pressurized tanks and external floating roof tanks. It includes general provisions for controlling emissions from any tank. It does not specifically address fixed roof tanks nor does it contain many of the provisions suggested by EPA for fixed roof tanks. It appears that the District may not have or allow the type of fixed roof tank intended to be regulated by EPA; therefore, this does not appear to be a significant issue.

Issue: None.

B. Petroleum Liquid Storage in External Floating Roof Tanks: (701.2-701.12)

Summary: As previously noted, there are no apparent sources in the District which are covered by this regulation. Nonetheless, the revised regulations for external floating roof tanks are generally consistent with EPA guidelines and there are no obvious issues except for determining how the District intends to use this regulation. If the District intends to apply these requirements to a type of storage tank other than the type intended it may prove to be inadequate.

Issue: It should be determined how the District intends to use this regulation and to what sources it may apply.

### C. Leaks from Refinery Equipment (§ 702)

Summary: The District's regulation meets all EPA requirements except that the test method should be updated. The CTG method has been upgraded to correct for problems discovered during implementation. The preferred method is now Method 21, 40 CFR Part 60.

Since the District does not have any petroleum refineries, it is not clear exactly how they intend to use this regulation. The definition "petroleum refinery complex" is very broad -- certainly much broader than the EPA's suggested definition of "petroleum refinery". EPA's definition was limited to facilities which produce petroleum products. The District's definition also includes facilities engaged in conveying or distributing petroleum products. Based on this broad definition and conversations with the District, it appears that the regulation will be applied to sources such as gasoline bulk terminals and plants or other facilities that may be involved in the transportation and/or distribution of petroleum products. This application goes beyond EPA's intent but there appears to be no obvious problem with this approach.

It should be noted that the District does not have a regulation which covers leaks from vapor control systems such as those used at bulk plants or terminals or service stations. Normally, this type of leak check requirement is included with regulatory provisions covering leaks from gasoline tank trucks. DC's regulations for gasoline tank trucks are included as part of their Stage I regulations (§ 704) but they do not cover leaks from vapor control systems. The suggested regulations for vapor control systems are not as comprehensive or specific with regard to many components (e.g., valves & compressors) found at these facilities compared to requirements for leaks at refineries. Evidently, the District feels that these procedures are more appropriate for affected sources in the nonattainment area.

Issues: None.

### D. Refinery Vacuum Producing Systems, Separators and Process Units

The District has certified that no sources are known to exist in the nonattainment area.

#### E. Petroleum Liquid Storage in Non-CTG Tanks (§ 701)

Section 701, Storage of Petroleum Products, requires pressure tanks, external floating roof tanks with controls or vapor controls on all other tanks.

Item B addresses that part of the regulation which deals with external floating roof tanks. This item addresses pressure tanks (§ 701.1) and other tanks (§ 701.1 & 701.13).

##### Applicability:

- Tanks greater than 40,000 gallons capacity
- Storage of gasoline or any petroleum distillate having a vapor pressure of 1.5 lbs/in. 2 or greater

##### Level of Control:

- Pressure tank maintaining working pressure at all times which prevents discharge to atmosphere
- External floating roof tank controls (see Item B of this part)
- A vapor recovery system that prevents the discharge of gases and vapors to the atmosphere and gas tight tank gauging and sampling devices.

##### Compliance:

- External floating roof tanks. See Item B of this part.
- Other tanks - no methods are referenced.

##### Issues:

Except by evaluating equipment design, it is not evident how compliance is determined for other tanks. Test methods and procedures to determine compliance should be specified.

#### 5.3.4 Surface Coating and Graphic Arts (DC)

There are no CTG category specific regulations for printing and coating in DC. The District has certified that no sources are known to exist in the nonattainment area for the following source categories:

- A. Can Coating
- B. Coil Coating
- C. Paper Coating
- D. Fabric and Vinyl Coating
- E. Coating of Automobiles and Light Duty Trucks
- F. Metal Furniture Coating
- G. Insulation of Magnetic Wire
- H. Large Appliance Coating
- I. Coating of Miscellaneous Metal Parts
- J. Flatwood Paneling
- K. Graphic Arts

#### 5.3.5 Other Round I and II CTG VOC Categories

##### A. Solvent Metal Cleaning

Summary: The District's regulation is generally consistent with EPA guidelines.

Issues: None.

##### B. Cutback Asphalt (§ 709)

Summary: The regulation is generally consistent with EPA guidelines except that:

1. The prohibition is limited to April through September in lieu of Director's discretion to use cutback asphalt where temperatures are less than 50°F.

2. Roofing is specifically excluded (not specifically addressed by EPA guidance).

3. The Mayor is given much broader authority to grant exemptions than suggested by EPA.

Issues: The differences are not significant except for the considerable discretion given to the Mayor to grant exemptions. An historical evaluation of variances granted should be undertaken to determine if significant increases in VOC emissions may have occurred as a result of exercising the exemption procedure. It is also not clear if exemptions are processed as variances (§ 103) or some other procedure. No procedure is indicated under this Section (§709).

C. Manufacture of Synthesized Pharmaceutical Products

The District has certified that no sources in this category are known to exist in the nonattainment area.

D. Manufacture of Pneumatic Rubber Tires

No regulations exist.

The District has certified that no sources in this category are known to exist in the nonattainment area.

E. Perchloroethylene Dry Cleaning Systems (§ 707)

Summary: The District's regulation is consistent with EPA guideline requirements.

Issues: Determine if the regulation actually applies to any specific source..

5.3.6 Round III CTG Sources

The District has certified that no large petroleum dry cleaners; sources manufacturing high density polyethylene, polystyrene and polypropylene resins; natural gas/gasoline process plants; or SOCM (fugitive or air oxidation) sources are located in the nonattainment area. However, they have proposed regulations for large petroleum dry cleaners. The District has indicated that the petroleum dry cleaning operations within the District are smaller than those addressed by the CTG but that they have opted to regulate these smaller sources. It is also presumed that these regulations at a minimum might effect any new source locating in the District if it is below Part D or PSD applicability levels.

Petroleum Dry Cleaners (§ 706)

Applicability:

- Petroleum solvent washers, dryers, solvent filters, settling tanks, vacuum stills, and other containers and conveyors of petroleum solvent at petroleum solvent dry cleaning facilities.

- Hardship exemption at Director's discretion.

### Level of Control

#### - For dryers

1. 3.5 lbs. or less VOC per 100 lbs. (dry wt.) of articles cleaned; or
2. dryer remains closed and the recovery phase continues until recovered solvent flow rate of 50 milliliters/min. is attained.

#### - For petroleum solvent filtration systems

1. 1.0 lbs. or less VOC per 100 lbs. (dry wt.) of articles dry cleaned, before exposure to the atmosphere and disposal, or
2. Cartridge filtration system and drain filter cartridges in sealed housing for 8 hrs. or more before removal.

- Solvent vacuum still: store wastes to minimize VOC emissions.

- Repair leaks within 3 working days following the arrival of parts; order parts within 3 working days.

### Compliance:

- Recording weight of VOC emitted and calculations
- Methods 1, 2 & 25A 40 CFR Part 60
- Recording dry weight of articles cleaned
- Owner verification that solvent recovery flow rate at termination of recovery phase is no greater than 50 mil/min. (1 time procedure over 2 week period, 50% or greater of number of loads monitored).
- ASTM Method D322-80 for VOC in filtration waste and calculations.

### 5.3.7 Non-CTG VOC Regulations

The District has no major (> 100 T/Y) non CTG sources for which regulations are required because of the catch-all provisions in § 700. These regulations require an 85% reduction at any source that emits more than 40 lbs/day of



solvent (non-photochemically reactive) into the atmosphere or 15 lbs/day of photochemically reactive solvent (Rule 66 type definition). A discussion of § 700 can also be found at 5.3.1.B. Applicability. This regulation has proven to be inappropriate and unworkable for some sources like the Bureau of Engraving and Printing. The District has, therefore, proposed regulations for this type of source. It has also proposed regulations for other minor sources. This section describes these regulations and comments on any perceived issues. No EPA guidance or model regulations exist which cover this type of source.

A. Storage of Petroleum Products in Pressurized and Other Non-CTG Tanks: (§ 701) - Proposed Revision

See Item 5.3.3. E of this report.

B. Stage II Vapor Recovery: (§ 705) - Approved

See Item 5.3.2. E of this report.

C. Engraving and Plate Printing: (§ 710) - Proposed

Applicability: any printing unit/printing operation within SIC 2753. This includes intaglio, offset lithography, letterset, letterpress, flexography (non-CTG) and gravure (non-CTG) presses.

Level of Control: See Tables 5-1A & 5-1B and the following

- minimize ink use or intaglio presses by routing ink cylinders or other techniques

- 90% reduction of VOC emission from any heat set oven by add-on controls except where water-based inks are used

- good work practices

Compliance:

- ASTM D-2364-81 for VOC content

- inspections

Issues:

Type of Printing Unit	VOC Content of Ink Shall Not Exceed This Percent After December 31 Of The Year Stated				VOC Content of Wiping Solution Shall Not Exceed This Percent After December 31 Of The Year Stated				VOC Content of Dampening Solution Shall Not Exceed This Percent After December 31 Of The Year Stated			
	1984	1985	1986	1987	1984	1985	1986	1987	1984	1985	1986	1987
Heatset intaglio	40	35	32	30	100	100	1	1	Not applicable			
Non-heatset paperwipe intaglio	5	5	5	5	Not applicable				Not applicable			
Non-heatset cylinder-wipe intaglio	25	20	15	12	1	1	1	1	Not applicable			
Offset lithography												
Heatset	40	40	40	40	Not applicable				25	20	17	15
Non-heatset	35	35	35	35	Not applicable				25	23	21	20
Letterset	40	40	40	40	Not applicable				Not applicable			
Letterpress	30	30	30	30	Not applicable				Not applicable			
Flexography	65	65	65	65	Not applicable				Not applicable			
Gravure	25	18	15	12	Not applicable				Not applicable			

NOTES:

1. The percentage VOC content is by weight and applies to the inks and solutions as contained in the storage wells (fountains) of the printing unit. THE VOC CONTENT DOES NOT INCLUDE WATER.

2. The percentage VOC content shall be determined in accordance with Procedure B of test method ASTM D-2369-81; in lieu of testing the formulated inks and solutions, the individual components of the formulations may be tested and the VOC content of the formulations may be calculated therefrom.

3. THE PERCENTAGE WATER CONTENT SHALL BE DETERMINED IN ACCORDANCE WITH TEST METHOD ASTM D-3792-79 OR TEST METHOD ASTM D-4017-81.

Table 5.1A Engraving and Plate Printing in DC

Table 5.1B  
IMPACT OF CONTROL MEASURES ON PRESSES AT BEP

Pt #	Sec #	Press #	Number & Type	VOC Emissions, T/yr		
				Before RACT	After RACT	Reduction
01	1 & 2	101, 102, 103, 105 201-206 & 111-118	18 paperwipe intaglios	29.28	29.28	0.00
02	4, 5 & 10	110, 210, 310, 401- 404, 410 & 501-504	12 cylinder wipe intaglios	129.64	94.88	34.77
03	6	601	1 7-color heatset gravure	66.12	7.93	58.19
04	7	701 (B)	1 3-color heatset intaglio	24.59	8.28	16.31
05	7	702 (A)	1 8-color heatset intaglio/gravure	30.63	6.73	23.90
06	9	901 (C)	1 3-color heatset intaglio	52.10	13.48	38.63
07	9	902 (D)	1 9-color heatset intaglio/offset	20.37	5.31	15.06
08	COPE & Flatbed	001, 004-006, 008, 013-016, 11, 060-062, 065-067, 074-076, 080 & 081	21 letterpresses	4.67	4.67	0.00
09	Offset	031, 032, 036 & 038-041	7 sheetfed offsets	6.93	5.85	1.08
10	Offset	042 & 043	2 6-color heatset web offsets	(144.14)*	(26.70)*	(117.44)*
11	8	801 & 803	2 heatset intaglios	13.53	5.79	7.74
Total			67. presses	377.86	182.20	195.68

\*Not presently operated; potential emissions and reductions not included in plant totals.

The compliance levels were apparently based on one source, the Bureau of Engraving and Printing. Because of the special nature of their operation (currency, certificates, bonds and stamps) this level of control may not be appropriate for other sources.

D. Pumps and Compressors: (§ 711)

Applicability: Any pump or compressor handling VOC

Level of Control: Mechanical seals or equivalent

Compliance: Not specified

Issues: Evidently inspections to confirm that seals are in place are possible. No significant issues are evident.

E. Waste Gas Disposal from Ethylene:

Producing Plant

Applicability: Waste gas streams from ethylene producing plants, or sources using ethylene as a raw material where emissions are greater than 20 lbs/24 hrs.

Level of Control: Waste gas burned at 1,300° F for 0.3 seconds or longer in direct flame after burner or equivalent method.

Compliance: Method not specified

Issues: A compliance method should be specified. In addition, ethylene may be used as a raw material in the manufacture of polyethylene which is a Round III CTG category. The distinction between the applicability of this regulation and the Round III CTG requirement should be clarified.

F. Waste Disposal from Vapor Blow-Down:

System

Applicability

- Vapor blow-down systems that emit hydrocarbon gases into the atmosphere.
- Does not apply to accidental or emergency releases.

Level of Control: Smokeless flares or an equally effective control device.

Compliance: No method specified

Issues: It is not clear what sources may be affected by this regulation or how compliance will be determined. In addition the terms "accidental or emergency releases" are not defined.

#### 5.4 Maryland

Maryland's regulations for VOC sources apply to the Baltimore metropolitan area of the State, which includes Baltimore City and the counties of Baltimore, Anne Arundel, Carroll, Harford and Howard (area III), and the Washington metropolitan area of the State which includes the counties of Montgomery and Prince Georges. The VOC regulations consist of the following:

- COMAR 10.18.01 - General Administrative Provision
- COMAR 10.18.06.06 - Volatile Organic Compounds: General emission standard, Prohibition and restrictions
- COMAR 10.18.11 - Control of petroleum production and petroleum products
- COMAR 10.18.13 - Control of Gasoline and volatile organic compound storage and handling.
- COMAR 10.18.17 - Alternative Compliance Emission Standards (Not Federally approved)
- COMAR 10.18.21 - Volatile organic compounds from specific processes

##### 5.4.1 General Provision:

The general provision can be found in COMAR 10.18.01, 10.18.06.06 and 10.18.21.02. The latter section deals primarily with the coating industry and manufacturing industries for which RACT criteria has been published.

##### A. Alternative Control Measures: (\$ 10.18.17-Not Federally Approved)

Summary: This proposed section appears to be a combination of generic and nongeneric bubble provisions. It requires EPA approval via a SIP revision only if an installation included in the bubble is not in compliance with an approved SIP and proposes an extended compliance schedule or it contains an installation subject to a Federal enforcement action. Of concern here is the first condition, unless an installation included in the bubble meets both criteria, EPA approval is not required.

The regulation does not include any specified method stating how alternate control levels will be established or judged. The only stated requirement is that it be at least as stringent as any applicable new source review requirement. Although the regulation seems to imply that the resultant alternative control measures be equivalent or more stringent than RACT requirements, this is not stated.

The regulation is also limited to coating, graphic arts and general VOC sources (see 10.18.06.06B) located in designated nonattainment areas. It does not apply to refinery leaks, petroleum liquid storage, gasoline marketing activities or other RACT categories covered by CTG's.

Issues: The regulation is not specific enough to qualify as a generic bubble. It does not adequately define the universe of changes to federally approved SIP requirements that will be considered nor does it indicate how the bubble will be evaluated to determine if it is equivalent or more stringent than SIP requirements. The regulation also fails to establish RACT requirements stated in the SIP as a minimum base as is the case for new source review requirements where applicable.

B. Applicability (§§ 10.18.06.06, 10.18.11.01, 10.18.13.02, and 10.18.21.02)

Summary: There is no generic applicability section per se. Applicability and exemption criteria are included with each source category regulation; however, in most cases source applicability criteria based on size is not included. The result is that in many cases, Maryland's regulations have broader applicability than suggested by EPA. However, the definition of installation in the approved SIP is a problem since it appears to be aimed more at pieces of process equipment rather than the facility as a whole. (See 5.4.1G for additional discussion) In practice, the state has at times used deficient definitions to conclude that RACT regulations were not applicable.

Issues: The deficient definition of installation (i.e., source) is a major problem in determining the applicability of RACT regulations. The State's practice of determining applicability on a case by case basis (sometimes by individual process, sometimes by total facility emissions) accents the problem.

#### C. Averaging Time

Summary: Averaging time is not addressed in the RACT regulations. The only reference to an averaging time is in § 10.18.17, Alternative Control Measures (see Item A in this part). In that section, 24 hours is the maximum averaging time.

Issues: None

D. Breakdowns, Malfunctions and Operation Changes  
(§ 10.18.01.07)

Summary: The regulation is generally consistent with EPA guidelines. However, one interesting potential issue was noted. Exempted from reporting requirements where a federally approved SIP requirement had been violated were sources who may be subject to a different requirement through an approved plan, departmental order, consent order or a permit. Presumably, this would include both construction and operating permits. It should be clear that no unilateral state action can change a federally approved SIP requirement. State approved plans, orders, and permits which are not consistent with the federally approved SIP must be submitted as a SIP revision for EPA approval.

Issues: Federally approved SIP requirements must be satisfied. Any violation of a SIP requirement should be reported.

E. Circumvention (§ 10.18.01.06)

Summary: The regulation contains language similar to that suggested by EPA.

Issues: None.

F. Compliance Schedules

Summary: The regulation contains no general sections concerning compliance schedules. In fact, compliance schedules are not included with most source category regulations. It would appear that all sources without RACT in place would technically be in violation of the requirement as of the day the regulations became effective. Compliance programs and schedules would then have to be developed for each source on a case-by-case basis.

Issues: Although this procedure is a bit unusual, there is no significant problem. It should be noted that DCOs could only be issued based on the effective date of the regulation since it is the same as the final compliance date of the regulation.



G. Definition of Terms (§§ 10.18.01.01, 10.18.13.01 & 10.18.21.01)

Summary: The definitions generally conform to EPA's requirements. They can be found in the first paragraph of applicable sections. Two definitions, however, may be a problem. The first is the term installation. It seems to address individual sources of air pollution (e.g., article, machine, equipment, etc.) more than a facility. In fact, the State has opted to interpret this term on a case-by-case basis. The interpretation of this term is extremely critical in determining the applicability of Maryland's catch-all regulation for VOC sources (§ 10.18.06.06) which is one of the few subparts which states emission based applicability criteria. Maryland appeared to be using this regulation to control major (> 100 t/y) non-CTG facilities but a narrow, source specific interpretation of the rule would tend to break a major facility into small parts which may then escape review.

The second problem is the definition of VOC. Like other Region III states, Maryland uses the old Round I CTG definition of VOC based on a vapor pressure cutoff. The Round II definition or NSPS definition were never adopted. As a result the current Maryland definition effectively exempts some photochemically reactive compounds from control. (See Section 2.1.7).

Issue: The term installation should be clarified. If the narrow, source specific interpretation is used, there is a need for Maryland to develop regulations for those major facilities not covered by CTG's. The definition of VOC must also be changed to meet EPA requirements.

H. Equivalency Provisions (various locations)

Summary: Maryland's regulations are similar to EPA guidance and share the same problem as most other SIP's. EPA did not intend for this type of regulation to be a generic rule; that is, States do not have authority to change a SIP requirement without EPA approval. The regulation, as written, seems to imply that the State has unilateral authority to make the decision without EPA approval.

Issues: The extent of the State's discretion in approving equivalent control methods should be clarified.

I. Inspection, Maintenance and Operating Procedures

No regulatory language similar to that suggested by EPA could be located in Maryland's regulation. This does not appear to be a major problem.

J. Test Methods and Procedure (§ 10.18.01.04)

Summary: The regulations cite Air Management Administration Technical Memorandum 83-05, "Stack Test Methods for Stationary Sources". This technical memorandum (TM) includes EPA Reference Method 25. No other VOC test methods are cited. Section 10.18.21.02D cites the Maryland State Air Quality Programs TM 78-012, "Interim Test Methods for Determination of VOC Content of Surface Coating." This latter TM contains the ASTM methods cited in EPA Reference Method 24. These two test methods are acceptable and consistent with EPA guidance. To the extent that compliance test methods and procedures were stated in the text of the regulations for a specific source category, that method was compared to EPA's recommended procedures. Differences are addressed under that part of this report which deals with the specific source category.

Issues: None at this time.

K. Monitoring, Recordkeeping and Reporting (§ 10.18.01.05)

Summary: This section only states Maryland's authority to review source records. There are no general source recordkeeping requirements which require a source to collect data and maintain records which will document compliance with the regulations. Since Maryland regulations do not appear to allow an averaging time this may not be an insurmountable issue.

Issue: Strong consideration should be given to include either a general provision requiring recordkeeping which is sufficient to document compliance with the regulation or specific recordkeeping requirements under each source category covered by the regulation.

5.4.2 Gasoline Marketing

Maryland's regulations in this category are significantly less stringent than EPA guidelines and RACT requirements. Primary areas of concern are applicability criteria and questionable definitions especially for the term gasoline. Maryland's definition follows (§ 10.18.13.01 B):

"Gasoline" means a petroleum distillate, or alcohol, or their mixtures, having a true vapor pressure within the range of 1.5 to 11 pounds per square inch, that is used as a fuel for internal combustion engines.

EPA defines gasoline as any petroleum distillate having a Reid vapor pressure (i.e., absolute pressure) of 4 pounds per square inch or better. Maryland's definition is more stringent in one respect; its range begins at 1.5 lbs/in.<sup>2</sup> rather than 4 lbs/in.<sup>2</sup>. But it is less restrictive in that it places an upper limit to the range. Many gasolines now use lighter, more volatile petroleum products to increase the octane rating. This also raises the vapor pressure to values which may exceed Maryland's upper limit. This cap, therefore, may exclude those gasoline products which are most volatile and need to be controlled. The definition also restricts itself to gasoline "that is used as a fuel for internal combustion engines." Although this may not, in fact, be a major relaxation, it is unnecessarily restrictive, and may allow certain facilities to escape regulation.

#### A. Bulk Gasoline Plants

Summary: Maryland has no regulations for this type of facility per se. It has a regulation controlling loading operations at loading racks (§ 10.18.13.04A) but limits applicability to facilities which have a throughput exceeding 40,000 gal./day for existing systems or 20,000 gal/day for new systems. The definition of a bulk plant is a gasoline storage or distribution facility with an average daily throughput of less than 20,000 gal/day. The State, therefore, has effectively precluded regulation of this RACT source category. Although the term bulk plant is defined and used in § 10.18.13.05, gasoline leaks from tank trucks and vapor control systems in Areas III and IV, this section only affects the bulk plants which need vapor control systems. Since, by the throughput applicability criteria under loading racks, these facilities are not required to have vapor control systems, this latter section has no effect. In its August 12, 1980 SIP approval notice (40 CFR 53466) EPA stated that the vapor recovery provisions of the Maryland regulations do not represent RACT and should not be approved. However, EPA had previously promulgated regulations (38 FR 34252, 1973) which were subsequently amended and these rules, in combination with Maryland's rules, are considered RACT. Unfortunately, EPA's efforts to enforce RACT regulations are aimed at major sources. Since bulk plants tend to be minor sources, it is doubtful whether these Federal requirements are being implemented.

Issues: Bulk gasoline plants are Round I RACT sources. Both of Maryland's nonattainment areas are obviously post 1982 attainment areas. The State must have adequate RACT regulations for this source category and enforce them. Otherwise, EPA must take direct action to ensure that the Federal Standards are satisfied.

B. Bulk Gasoline Terminals (§ 10.18.13.04A)

Summary: The same sections of Maryland's regulations which potentially affect bulk plants also affect bulk terminals. EPA defines bulk terminals as gasoline storage or dispensing facilities with a throughput greater than 20,000 gal/day. Maryland's loading rack regulations do not apply to sources with a throughput less than or equal to 40,000 gal/day unless they are new sources (20,000 gal day). Obviously, Maryland's regulations are significantly less restrictive than normally required by EPA.

Maryland's regulations also fail to specify an efficiency and mass emission rate for the vapor control system, fail to require that all vapors be directed to the vapor control system and fail to specify the good work practices suggested by EPA.

Issues: The regulations have major deficiencies with regard to applicability and level of control required. They are very ineffective and may be totally unenforceable with regard to the effectiveness of controls. EPA's rule making, previously discussed in 'A' above, may help but would require direct EPA implementation and enforcement.

C. Leaks from Gasoline Trucks and Vapor Collection Systems: (§ 10.18.13.05)

Summary: There is no requirement for gasoline tank trucks to load at facilities with vapor control systems. Given the significant deficiencies noted under bulk plants and terminals (A & B above), there is serious concern for the viability and effectiveness of Maryland's gas marketing program. VOC emissions from Stage I and tank trucks may be controlled as required but the vapors may be emitted to the atmosphere at the truck loading facilities.

The tank regulation and vapor recovery testing procedure are satisfactory.

Issue: The procedures are adequate but the effect of significant deficiencies in bulk plant and terminal controls may negate a significant potential benefit.

D. Stage I Vapor Control Systems at Gasoline Service Stations: (§ 10.18.13.04B)

Summary: Except for the applicability criteria the regulations are generally consistent with EPA's guidelines. With regard to applicability, EPA suggested that all tanks

installed prior to January 1, 1979 with a 2,000 gallon capacity or greater and all tanks constructed after December 31, 1978 with a 550 gallon capacity or greater, be subject to the regulation. Maryland has two different sets of criteria for existing small tanks and new small tanks. Neither term is defined but a construction date after January 1, 1973 is mentioned in the text for new small tanks. There is, therefore, a possibility that the criteria could overlap. For the existing small tanks, Maryland allows an exemption based on throughput; that is, if there is less than a 20,000 gal/mon. throughput the tank is exempt. For new tanks, Maryland exempts tanks under 5,000 gallons in capacity. Both exemptions (but, in particular, the latter) make Maryland's Stage I regulations considerably less stringent than EPA suggested.

Issues: The effect of these exemptions based on source inventory information should be determined. If a significant benefit can be realized by tightening the applicability criteria to agree with EPA requirements, corrective action should be considered. In light of previous deficiencies noted in other gasoline marketing activities discussed in this section, Maryland's gasoline marketing control plan as a whole deserves a careful and thorough reevaluation. It appears that potentially major reductions in VOC emissions have been allowed to escape reasonable control as the result of questionable regulatory language and applicability criteria.

#### 5.4.3 Refinery Emissions and Petroleum Liquid Storage

##### A. Petroleum Liquid Storage in Fixed Roof Tanks (§ 10.18.13.03A)

Summary: Maryland's regulations for "closed top tanks" do not include recordkeeping and compliance determination procedures. Otherwise, the regulation is consistent with EPA guidelines for fixed roof tanks.

Issues: The regulations should be revised to include provisions for visual inspection of the floating roof and recordkeeping which includes inspection reports, either average monthly storage temperature or true vapor pressure, and throughput.

B. Petroleum Liquid Storage in External Floating Roof Tanks: (§ 10.18.13.03B)

Summary: Maryland's regulation for "Open Top Tanks" meets all federal requirements for external floating roof tanks.

Issues: None

C. Leaks from Refinery Equipment: (§ 10.18.11.04C)

Summary: The regulation meets all Federal requirements.

Issues: None.

D. Refinery Vacuum Producing Systems, Wastewater Separators and Process Units: (§ 10.18.06.06C)

Summary: The regulation only addresses "VOC water separators". No regulations covering vacuum producing systems and process unit turnarounds were found.

The separator regulation contains applicability criteria not specified in the Federal guidelines (i.e., 200 gal/day or more VOC with true vapor pressure of 1.5 lb/in.<sup>2</sup> or more). It also specifies a control option, a vapor recovery system, not suggested by Federal guidance along with the usual equivalency provision. These differences do not appear to be significant since the criteria should be satisfied by a typical refinery wastewater stream and the specified alternate control measure is acceptable (if economically and technically feasible).

Issues: As these regulations affect post 1982 attainment areas, they should address all RACT categories for which EPA has issued CTG's. Regulations are required for vacuum producing systems and process turnarounds if these refinery processes are located within the nonattainment areas.

5.4.4 Surface Coating and Graphic Arts (§ 10.18.21)

State standards for this category are generally consistent with Federal guidelines with a few exceptions. Recordkeeping requirements are vague but may not cause a major compliance problem since continuous compliance is indicated (no averaging time is specified). Normal inventory and usage information on coatings and inks coupled with a chemical analysis of

each coating as used should be adequate in most cases. Maryland also tended to round their compliance coating standards to the first decimal place which brings up the question as to whether a zero is understood in the second decimal place or whether the source allowed to round off.

Test methods for this section are determined by the Maryland State Air Quality Program TM 78-012, "Interim Test Methods for Determination of VOC Content of Surface Coatings." This method is equivalent to EPA Reference Method 24. Maryland TM 83-05 includes EPA Reference Method 25 for VOC stack testing. No other test methods are specified.

The regulation also uses the term "pounds per gallon of coating applied (minus water)". There is nothing in the regulation which suggests that equivalency or bubble calculations will be done on a solids applied basis as required by EPA.

A. Can Coating: (§ 10.18.21.04)

Summary: The regulation is generally consistent with EPA guidelines.

Issues: None

B. Coil Coating: (§ 10.18.21.05)

Summary: The regulation is generally consistent with EPA guidelines.

Issues: None

C. Paper Coating: (§ 10.18.21.07)

Summary: The regulation is generally consistent with EPA guidelines.

Issues: None

D. Fabric and Vinyl Coating: (§ 10.18.21.07)

Summary: The regulations are generally consistent with EPA guidelines.

Issues: None

E. Automobile and Light Duty Truck Manufacturing:  
(§ 10.18.21.03)

Summary: The regulation includes a prime coat standard which is more stringent than EPA guidelines (1.2 vs. 1.9 lbs.

VOC/gal). There is also a standard for the Primer Surfacer (2.8 lb. VOC/gal.) which is covered by Federal guidelines as a prime coat (1.9 lbs. VOC/gal). The only existing source potentially subject to the criteria (GM-Baltimore) no longer uses this process. Otherwise, the regulation is consistent with EPA guidelines.

Issues: None.

F. Metal Furniture Coating: (§ 10.18.21.08)

Summary: The regulation is generally consistent with EPA Guidelines.

Issues: None

G. Insulation of Magnetic Wire:

No regulations. The State has certified that no sources in this category are located in the non-attainment areas.

H. Large Appliance Coating: (§ 10.18.21.06)

Summary: The regulation is generally consistent with EPA guidelines.

Issues: None.

I. Coating of Miscellaneous Metal Parts: (10.18.21.13)

Summary: The regulations include a number of exemptions not included in the EPA guidelines. These exemptions are:

1. Finishing and refinishing metal structures to be used under water;
2. Finishing or refinishing the exterior of erected metal buildings or similar structure;
3. Finishes and primers specified by the U.S. Department of Defense and similar state agencies for combat-related equipment; and,
4. Before July 1, 1987, coatings cured in excess of 325°F which are subsequently drawn more than 35% locally in a forming operation and then reheated above 250° to cure another coating applied after the drawing operation.



These exemptions appear to be quite unique and their impact on emissions and reasonableness is not readily evident. However, the exemption for military coatings appears to be unwarranted. The Defense Department has been attempting to revise its standards, where appropriate. Many compliance coatings are now accepted by DOD. Even in the event that they are not, positive controls may be appropriate. The exemption is too broad as written.

The regulation is also more stringent in two areas. The exemption for the customized painting of motor vehicles has been reduced from 35 to 20 vehicles and no provisions are included for air dried and forced warm air dried coatings. Presumably, this omission would subject coatings used in these operations to the more stringent "standard" limit (3.0) if the coating did not qualify as a clear coat.

The regulation also has a very precise definition of clear coat, unlike the EPA guidelines, but does not indicate what standard a coating which would qualify as both a clear coat and extreme performance coating would satisfy (4.3 or 3.5 lbs VOC/gal., respectively).

The overall 80% reduction required by EPA guidance (90% efficient incinerator) where LST is not used, is not stated.

Issue: The effect of the unique exemptions in Maryland's regulation should be evaluated to determine its scope and impact. Consideration should be given to eliminating the exemption for DOD coatings. It would also be preferable for the regulation to clearly state the control efficiencies required by add-on controls.

#### J. Coating of Flat-Wood Paneling:

The State has certified that no sources in this category are located in the nonattainment areas.

#### K. Graphic Arts Systems:

Summary: Maryland's regulation is consistent with EPA guidance with respect to applicability, add-on control requirements and high solids ink requirements. However, the water-borne ink requirement is much less stringent than EPA's guidelines. It states that inks that have VOC concentrations up to 25% by volume if mixed with water are in compliance. A very literal interpretation would conclude that the 25% is the volume of the entire ink--not just the volatile fraction. EPA's guidance concludes that a water-borne ink is in compliance if the volatile portion contains 25% or less VOC and 75% or more water.

The regulation also requires an 85% reduction in VOC emissions for "web printing" which is generally defined as publication printing accomplished by lithographic or letter-press methods. The applicability criteria for "web printing" is 15 lbs. VOC/day except that "web printing" having a hot-air high-velocity dryer and condensing electro-static precipitator control device installed before January 1, 1979 is exempt.

Issues: An interpretation of the waterborne exemption is required to confirm its meaning. If the volume percentage indicated is based on the total volume of ink and not the volatile fraction (water & VOC) then the regulation would be considerably less stringent than EPA guidelines, and may even be less stringent than add-on control requirements.

#### 5.4.5 Other Round I and II CTG Categories

##### A. Solvent Metal Cleaning: (§ 10.18.21.09)

Summary: The regulation requires compliance with Maryland State Air Quality Programs TM 78-010, "Solvent Metal Cleaning". This document was not readily available as of this writing. It will be obtained and evaluated at a later date.

Issues: To be determined.

##### B. Cutback Asphalt: (§ 10.18.11.02)

Summary: Maryland's regulation tends to track the EPA guidelines except that:

1. It only addresses the use and application of cutback asphalt and does not address the production of the material.

2. It has made those potential exemptions, which EPA suggested with the director's approval, automatic; that is, the director's approval is not required.

3. The ambient temperature exemption has been changed to an exemption from October 15 to April 15. These changes tend to weaken the regulation but they do not appear to be of sufficient concern to warrant a change.

Issues: No significant issues.

##### C. Manufacture of Synthesized Pharmaceutical Products: (§ 10.18.21.14)

Summary: The regulation is generally consistent with EPA guidelines except that:

1. It allows a slightly higher base emission criteria (40 lbs/day vs. 33 lbs/day).

2. It does not address compliance tests and procedures.

Issues: The lack of a specific compliance method could be a problem. The appropriate compliance test or procedure should be stated. The base emission criteria should be 33 lbs/day.

D. Manufacture of Pneumatic Rubber Tires:

The State has certified that no sources in the category are located in the nonattainment area.

E. Perchloroethylene Dry Cleaning Systems: (§ 10.18.21.12)

Summary: The regulation is generally consistent with EPA guidelines.

Issues: None.

5.4.6 Round III CTG Sources

Maryland has certified that the following Round III source categories are not located in the nonattainment areas.

1. Large Petroleum Dry Cleaning
2. Manufacture of High Density Polyethylene, Polystyrene and Polypropylene Resins
3. Natural Gas/Gasoline Processing Plant
4. SOCM I Leaks
5. SOCM I Air Oxidation Processes

No information is available on VOC storage but it is believed that this category will be applicable once published by EPA.

5.4.7 Non-CTG Regulations

A. Volatile Organic Compounds (§ 10.18.06.06)

Applicability:

- Installations or buildings constructed before May 12, 1972 which emit more than 200 lbs/day VOC.
- Installations or buildings constructed after May 12, 1972 that emit more than 20 lbs/day VOC.

- Exemptions: tar heaters, coke ovens, ventilation systems with VOC concentrations less than the TLV for human health exposure.

Level of Control: Reduce discharge of VOC by 85% or more.

Compliance Method: Not specified.

Issues: The lack of a compliance method and the lack of a definition for installation makes this regulation difficult to enforce. Also the exemption language is not clear. Most ventilation systems are operated to maintain TLV levels. It appears that the intent was to control ventilation systems which, if not for their operation, would be evacuating areas with concentrations above the TLV.

It appears that Maryland has used this section to control major (> 100 t/y) non-CTG sources. But at times the deficient definition of installation, or a narrow interpretation of this term as a particular article or piece of equipment, has caused problems. The interpretation of the term installation in this way may allow major sources to escape review by dividing them into pieces of equipment which do not qualify for control by themselves under this section.

This section is no substitute for source specific regulations for major non-CTG sources (also see discussion in 5.4.1.G).

#### B. Paint and Adhesives

Maryland has submitted to EPA a regulation for sources which manufacture or apply paint and adhesives (non-CTG). Submission is anticipated in the near future. The regulation is currently being reviewed by EPA.

5.5 Pennsylvania - the Pennsylvania Department of Environmental Resources (PADER) is the responsible air pollution control agency in Pennsylvania. However, PADER has delegated its responsibility to local agencies in Philadelphia and Allegheny (Pittsburgh Area) counties. Each Agency has its own regulations which are addressed individually in this section.

5.5.1 Pennsylvania Department of Environmental Resources  
(DER)

This section addresses DER's regulations. These regulations cover all VOC sources located in Pennsylvania nonattainment areas except for Allegheny County. This area is addressed in separate provisions of the Pennsylvania SIP which were promulgated especially for this area. The local regulatory agencies are primarily responsible for enforcing VOC SIP requirements in Philadelphia and Allegheny Counties.

DER's VOC Regulations are codified in Sections 129.51 through 129.70 of Title 25, Rules and Regulations Part 1, DER; Subpart C, Protection of Natural Resources, Article 111, Air Resources of the Pennsylvania Code.

5.5.1.1 General Provisions (PA)

A. Alternate Controls: (§ 129.53 & 128):

Summary: The regulation includes a generic bubble for the coating and graphic arts categories (§ 129.53). The bubble is based on solids as applied and provides for averaging times between 1 and 24 hours. It also allows for bubbles across CTG categories.

The bubble provision under § 128 is available to all sources who do not qualify for the provisions under § 129.53. The § 128 bubble must be submitted as a SIP revision and generally conforms to EPA requirements.

Issue: The generic bubble (§ 129.53) regulation does not prohibit credits for controls in place prior to the SIP baseline on the effective date of the regulation. Although the wording of the regulation indicates that DER may exercise some discretion, in practice it may be difficult to disapprove a bubble based on these pre-SIP reductions. This, as a result, could significantly reduce the amount of VOC control anticipated by the SIP by allowing paper reductions. It is also not clear how much discretion the State has when considering certain types of reductions (e.g. transfer efficiency credits) in determining the adequacy of the bubble. These issues must be addressed and resolved. If they cannot be resolved, the regulation should be considered deficient.

B. Applicability: (§ 129.52 & 129.54)

Summary: The regulations for the coating industry are applicable to all sources that potentially emit 500 lbs. VOC per day or 50 tons VOC/year throughout the state (ie., urban & rural nonattainment areas and attainment areas). An exemption is also provided for seasonal operation of auxiliary incineration equipment regardless of the type of fuel used.

Issue: EPA generally requires rural areas to control emission from all 100 ton/year Round I and II CTG sources and post '82 urban areas to regulate all Groups I and II CTG sources with VOC emissions greater than 15 lb./day (approx. 2.7 tons/year) or 3 lb./hour and 100 ton/year non CTG sources. DER's regulations, therefore, are more stringent than required for rural areas but considerably more lax with regard to urban areas. Because some of the urban areas may not attain the ozone standard by 1987, this policy should be reexamined. Existing Pennsylvania policy tends to define potential emissions in a way that equates it to actual emissions. This tends to further aggravate the issue. Considerable additional reductions in VOC emissions may be available by adjusting this applicability criterion. EPA does allow for an exemption for the seasonal operation of natural gas fired afterburners. DER's exemption is much broader since it does not condition the exemption to the use of natural gas only.

An issue has also developed concerning whether trailers should be subject to the same exemption as custom automobile and truck coating operation; that is, a facility is exempt if it produces less than 35 cars and/or trucks per day. This issue is discussed in detail in Section 5.5.1.4 I of this report.

C. Averaging Time:

Summary: DER's regulations require continuous compliance except where a bubble is in place (See 'A' above).

Issue: None

D. Breakdown, Malfunctions and Operation Changes:

Summary: No equivalent language is provided. EPA's policy considers breakdowns, malfunctions and operational changes as SIP violations but encourages enforcement discretion where such a problem is beyond the control of the owner or operator.

Issue: None

E. Circumvention: (§ 121.9)

Summary: DER's language is slightly different but consistent with EPA's suggested provisions.

Issue: None

F. Compliance Schedules: (§ 129.66)

Summary: In general, DER allows more time for compliance than suggested by EPA; up to one year longer for LST to a few months for add-ons. The increments of progress and other language is fairly consistent with EPA guidance.

Issue: Since the time frames allowed for in the SIP have passed (not including DCO provisions) this is not a critical issue. However, DER should be advised that "expeditious" compliance from an enforcement standpoint should not be based on the lax schedules in the SIP.

G. Definition of Terms: (§ 121.1)

Summary: DER's regulations do not use many of the terms defined in EPA's model regulations; however, the regulation itself tends to be more concise than EPA's. Generally, the terms defined are adequate for the regulation as written. There are two exceptions. The first exception is the definition of "clear coat" which allows a significant relaxation to some miscellaneous metal parts coating sources using "clear" extreme performance coatings. The second is the definition of VOC which in part defines VOC in terms of vapor pressure. (See Section 2.1.7)

Issue: The "clear coat" question is addressed under miscellaneous metal parts, Section 5.5.1.4 I. The definition of VOC must be changed to conform to EPA guidance.

H. Equivalency Provisions: [§ 129.51(a) and 129.52(b)(2)] ✓

Summary: The regulation is generally consistent with EPA's suggested language. There is, however, a generic problem concerning the latitude State agencies have in making equivalency decisions which is discussed in Section 2.1 of the report. It should be noted that DER's regulations clearly determine equivalency on a solids as applied basis. However, the formula provided for determining the equivalency fails to consider the density on which the standard was based. To be technically correct, it should first be determined what the standard should be using EPA's standard (7.36 lbs. VOC per gal. of solvent). The actual density of the solvent used at the source should be used to determine compliance with this standard.

Issue: The formula for determining equivalency should be corrected as indicated above.

I. Inspection, Maintenance and Operating Procedures:

Summary: These suggested requirements would have the source properly inspect, operate and maintain control equipment. This includes provisions for appropriate manuals, records and trained operators. No similar language was found in the DER regulation.

Issue: It is preferable to have the suggested language, but this is not a major flaw.

J. Test Methods and Procedures: (§ 139)

Summary: DER's regulations are generally consistent with EPA's suggested model regulations; however, NSPS reference methods have been established since then which should now be included in the reqs. The NSPS methods are essentially the same in principle to CTG methods, but do include certain improvements and clarifications which improve accuracy or precision.

Issue: The methods and procedures section (§ 139) should be revised to reflect the publication of NSPS methods.

K. Monitoring, Recordkeeping and Reporting:

Summary: No general sections could be located in DER's regulations which adequately address these items. It is not clear what would be required for bubbles processed under § 129.53. This section requires that the bubble be enforceable and allows up to a 24-hour averaging time. Some source specific regulations do include recordkeeping/reporting requirements and are addressed under the section which deals with that particular source category.

Issue: At a minimum, recordkeeping and monitoring should be required to adequately demonstrate compliance with the regulations.

5.5.1.2 Gasoline Marketing Activities (PA)

A. Bulk Gasoline Plants (§ 129.60 and 129.62):

Summary: The regulations are generally consistent with Federal requirements for urban nonattainment areas except that tank trucks with capacity less than 250 gallons are exempt. Exemptions are also provided in rural nonattainment areas for the loading of gasoline into tanks at bulk plants with throughput less than 12,000 gal/day and the loading of gasoline from bulk plants with a throughput less than 16,000 gal/day. DER's regulation also requires a vapor recovery system, where the bulk plant uses storage tanks greater than 40,000 gallons in capacity. The system must meet the same requirements as bulk terminals. No recordkeeping/reporting requirements are specifically required.



Issue: It does not appear that these exemptions are significant. However, this appearance could be negated if a large number of small tank trucks (250 gallons or less) are filled in the urban nonattainment areas. A survey should be conducted to determine if such transfer represent a significant VOC emission source in these areas.

B. Bulk Gasoline Terminals (§ 129.59 and 129.62):

Summary: The regulations are generally consistent with Federal requirements except that an exemption is provided for tank trucks with less than a 250 gallon capacity. The regulation does not specify the vapor control system alternatives indicated in the model regulations but does include the same maximum emission rate specified by EPA. The regulation does not differentiate between bulk terminals which may be located in rural or urban areas. No specific recordkeeping/reporting requirements are indicated.

Issue: Differences do not appear to be significant; however, this appearance could be negated if a large number of small tank trucks (250 gallons or less) are filled in urban areas. A survey should be conducted to determine if such transfers represent a significant VOC emission source in these areas.

C. Leaks from Gasoline Tank Trucks and Vapor Collection Systems: (§ 129.62 in part)

Summary: Regulations are very similar to EPA's suggested language except that an exemption is provided for tank trucks with less than 4,800 gallons capacity. Recordkeeping and reporting are required. Records must be maintained for one year instead of the two years suggested by Federal guidance.

Issue: The exemption could be significant.

D. Stage I Vapor Control Systems at Gasoline Service Stations: (§ 129.57, 129.61 and 129.62)

Summary: Regulations limit vapor control system options to a vapor tight return line. Exemptions are provided for tanks less than 2,000 gallons and facilities with annual throughput less than 60,000 gallons. No specific recordkeeping/reporting requirements are indicated.

Issue: Exemptions, in particular the throughput exemption, could make the regulation considerably less stringent than Federal requirements.

### 5.5.1.3 Refinery Emissions and Petroleum Liquid Storage

#### A. Petroleum Liquid Storage in Fixed Roof Tanks: (§ 129.56)

Summary: DER's regulations meet requirements for control technique, compliance testing and reporting requirements. It does include an exemption which EPA did not include for fixed roof tanks (but did recommend for external floating roof tanks). This is not considered a major problem. Equivalent control with an 80% efficient vapor recovery system is allowed but the CTG suggests that a floating roof with seals is 90% efficient.

Issue: Equivalency provision are less stringent (80% efficient) than suggested by CTG (90% efficient).

#### B. Petroleum Liquid Storage in External Floating Roof Tanks: (§ 129.56)

Summary: DER's regulations meet all Federal requirements except that it allows for the use of an 80% efficient vapor recovery system. The CTG indicates that 90% is attainable with a floating roof.

Issue: Equivalency provision are less stringent (80% efficient) than required by CTG (90% efficient).

#### C. Leaks from Refinery Equipment: (§ 129.58)

Summary: DER's regulation is generally consistent with EPA requirements except that visual inspection of pump seals is done on a monthly basis instead of weekly.

Issue: No significant issues.

#### D. Refinery Vacuum Producing Systems, Separators and Process Units (§ 129.55)

Summary: DER's regulations are generally consistent with EPA requirements except that no provisions for recordkeeping and compliance testing/inspection exist.

Issue: No recordkeeping requirements or compliance procedures.

5.5.1.4 Surface Coating and Graphic Arts

A. Can Coating: (\$ 129.52)

Summary: Consistent with EPA requirements.

Issue: None.

B. Coil Coating: (\$ 125.52)

Summary: Consistent with EPA requirements.

Issue: None.

C. Paper Coating: (\$ 129.52)

Summary: Consistent with EPA requirements.

Issue: None.

D. Fabric and Vinyl Coating: (\$ 129.52)

Summary: Consistent with EPA requirements.

Issue: None.

E. Automobile and Light Duty Trucks: (\$ 129.52)

Summary: Consistent with EPA requirements.

Issue: None.

F. Metal Furniture Coating: (\$ 129.52)

Summary: Consistent with EPA requirements.

Issue: None.

G. Insulation of Magnetic Wire: (\$ 129.52)

Summary: Consistent with EPA requirements.

Issue: None.

H. Large Appliance Coating: (\$ 129.52)

Summary: Consistent with EPA requirements.

Issue: None.

## I. Coating of Miscellaneous Metal Parts: (§ 129.52)

Summary: In general DER's regulation conforms to EPA requirements; however, there are some potentially significant deviations:

1. DER's definition of clear coat allows clear extreme performance coatings a considerable relaxation from suggested EPA requirements (4.3 lb/gal instead of 3.5). As a result, 55% more VOC emissions are allowed under DER regulation for the application of clear high performance coatings.

2. DER's regulation also allows the use of 4.3 lb/gal coatings for locomotives and heavy truck top coats, hopper car and tank car interiors, and pail and drum interiors. This variance from the CTG/model regulation suggested limits is technically acceptable for all of these categories except the top coating of heavy duty trucks. For that category it represents a significant relaxation which allows for a 55% increase in VOC emissions from this coating operation compared to EPA suggested levels. The regulation also does not specifically include solvent washing (purging of spray guns) or require CEM as suggested by the regulations.

3. Although correspondence with DER indicates that they consider truck trailers not to be trucks, it has become evident that in practice they may in fact do the opposite. By considering trailers as trucks two significant relaxations occur. First, the 35 vehicle per day applicability exemption comes into play and second, the standard would be relaxed from 3.5 to 4.3 lbs. VOC per gal. of coating. This interpretation is not supported by coating of miscellaneous metal parts CTG or EPA's model regulations.

Issue: The amount of extreme performance clear coat and heavy duty truck top coat applied in Pennsylvania is not known; therefore, the impact of this relaxation on air quality can not be readily determined. The 55% increase in VOC emitted per volume of applied solids makes this issue potentially significant.

## J. Coating of Flatwood Paneling:

No regulation - Pennsylvania has certified that no RACT sources in this category are located in the State.

K. Graphic Arts: (§ 129.67)

Summary: DER's regulations are generally consistent with EPA's model regulation except that recordkeeping and CEM are not addressed. The regulation does appear to require continuous compliance (i.e., all complying inks or positive controls); therefore, compliance can be determined by source testing.

Issue: Minor variations do not appear to be a major problem.

5.5.1.5 Other Round I and II CTG Categories

A. Solvent Metal Cleaning: (§ 129.63)

Summary: DER's regulations are generally consistent with EPA's guidance except that there is no requirement to install control devices on cold cleaning facilities where solvent volatility is greater than 0.6 lb/in.<sup>2</sup> (measured at 100°F) or if the solvent is heated above 120°F.

Issue: The significance of this variance has not been determined.

B. Cutback Asphalt: (§ 129.64)

Summary: DER's regulations differ from EPA's suggested requirements in the following ways:

1. Mixing and storage of cutback asphalt was initially banned (4/30/80 to 5/1/82) except under certain circumstances. After 4/30/82 the prohibition only affects use and application, not mixing and storage;
2. Exemptions are automatic; that is, they do not require the directors approval;
3. Temperature exemption (below 50° F) has been replaced with a seasonal variance (October 31 to April 30);
4. Penetrating coat exemption has been expanded to include tack coat, dust palliative, or precoating of aggregate.
5. An additional exemption for skin patching is also provided under "certain circumstances."
6. A table indicating the maximum % solvent in asphalt emulsions is also indicated.

Issue: Although the regulation is similar to EPA's model regulation, there are a significant number of seemingly minor changes. The total impact of these changes is not evident.

C. Manufacture of Synthesized Pharmaceutical Products: (§ 129.68)

Summary: DER's regulations are very similar to EPA's guidance except that an 85% control efficiency is specified for air dryers and production exhaust systems instead of 90% as suggested by EPA and CEM is not specified for add-ons.

Issue: The deviations do not appear to be significant.

D. Manufacture of Pneumatic Rubber Tires: (129.69)

Summary: DER's regulation generally complies with EPA's suggested requirements except as follows:

1. A maximum VOC content is specified for green tire water-based spray (5%).

2. There is a general exemption for facilities that reduce their VOC emissions from all regulated sources to 72.9gm. (0.161 lbs) per tire. This represents an approximate 66% reduction in VOC emissions. The method of control is not specified. EPA suggested that efficiencies greater than 75% are possible.

Issue: The significance of the deviation is not readily evident but should be investigated.

E. Perchloroethylene Dry Cleaning Systems

State regulations have not been federally approved. Although EPA proposed exemption of perchloroethylene as a VOC in September 1985, no final action is anticipated. Therefore, EPA expects to regulate perchloroethylene as a VOC.

5.5.1.6 Round III CTG Sources

Pennsylvania has certified that the following Round III source categories are not located within ozone nonattainment areas in Pennsylvania:

1. Large Petroleum Dry Cleaning
2. Natural Gas/Gasoline Processing Plants

Pennsylvania has submitted Round III regulations or proposed operating permits as SIP revisions for sources in the following categories:

1. Manufacture of High Density Polyethylene, Polystyrene and Polypropylene Resins
2. SOCMF Fugitive Emissions
3. SOCMF Air Oxidation

These regulations/permits are currently under review by EPA to determine conformance with RACT/CTG requirements.

5.5.1.7 Non CTG VOC Regulations (§ 129.65)

A. Ethylene Production Processes:

Applicability: Any ethylene production process.

Level of Control: All waste gases incinerated at no less than 1300° F for at least 0.3 seconds; gases from vapor blow-down systems must be burned by smokeless flares.

Compliance: No specific method for determining compliance or recordkeeping requirement is indicated.

Issue: To be enforceable, the facility should be equipped with a continuous temperature recording device and have some indicator of flue gas flow rates. Testing and calibration procedure should also be required to verify operating parameters. A review of process design and on-site inspection to determine if all waste gases are properly connected to control devices should also be required.

B. Other Non CTG VOC Sources:

Pennsylvania has submitted RACT regulations for the following non CTG categories:

1. Sulfonate manufacturing
2. Surface Coating of Wood Cabinets and Furniture.

These regulations are currently under review by EPA.

### 5.5.2 Allegheny County Pennsylvania - Bureau of Air Pollution Control

Allegheny County has promulgated its own VOC source regulations. They are very similar to Pennsylvania DER's regulations except for minor word changes. However, an independent evaluation of each part of the regulation was done and is included here.

#### 5.5.2.1 General Provisions (Allegheny County)

##### A. Alternate Controls: (§ 506)

Summary: The regulations include a general bubble for the coating and graphic arts categories. The bubble is based on a solids applied basis and provides for averaging times between 1 and 24 hours. It also allows for bubbles across CTG categories.

Issue: The regulation does not prohibit credits for controls in place prior to the SIP baseline. Although the wording of the regulation indicates that Allegheny County may exercise some discretion, in practice it may be difficult to disapprove a bubble based on the old credits. This, as a result, would significantly reduce the amount of control anticipated by the SIP.

##### B. Applicability:

Summary: The regulations for the coating industry are applicable to all sources that have the potential to emit 500 lbs. VOC per day or 50 tons VOC per year. An exemption is also provided for seasonal operation incineration equipment regardless of the type of fuel used.

Issue: EPA requires that most Round I and II CTG sources with VOC emissions greater than 15 lbs/day (approx. 2.7 tons/yr) or 3 lbs/hr and 100 tons/yr non CTG sources to have RACT. Allegheny County's regulations are considerably less stringent than this requirement. If attainment of the ozone standard is not realized by 1987, this threshold criteria should be reexamined. Considerable additional VOC reductions may be available by adjusting this applicability criteria.

EPA does allow for an exemption for the seasonal operation of natural gas-fired afterburners. Allegheny County's exemption is much broader since it does not condition the exemption on the use of natural gas only.



C. Averaging Time:

Allegheny County's regulations require continuous compliance.

D. Breakdown, Malfunctions and Operation Changes:

Summary: The regulations are consistent with EPA guidance.

Issue: None.

E. Circumvention: (§ 108)

Summary: Allegheny County's regulation deals primarily with dilution techniques and is not as broad in applicability as that suggested by EPA.

Issue: The difference does not result in a significant problem.

F. Compliance Schedules: (§ 512)

Summary: In general, Allegheny County allows more time for compliance than suggested by EPA, up to one year longer for LST to a few months for add-ons. The increments of progress and other language is fairly consistent with EPA guidance.

In addition, Section 512(G) allows for schedule extensions through December 31, 1986. (It is not clear if this is part of the federally approved SIP.) The extension provisions appear to provide for extensions with DCO's or source specific SIP revisions.

Issues: The status and effect of the extension provisions in § 512(G) should be clarified. This provision could represent a considerable relaxation of Federal requirements.

The prolonged schedule in other parts of § 512 do not appear to be a critical issue since the time frames allowed for in the SIP have passed. However, Allegheny County should be advised that "expeditious" compliance from an enforcement standpoint should not be based on these lax schedules in the SIP.

G. Definition of Terms: (§ 101)

Summary: Allegheny County's regulations do not use many of the terms defined in EPA's model regulations; however, the regulation tends to be more concise than EPA's. Generally, the terms defined are adequate for the regulation as written. There are two exceptions. The first exception is the definition of "clear coat" which allows a significant relaxation to some miscellaneous metal parts coating sources using "clear" extreme performance coatings. The second is the definition of VOC which in part defines VOC in terms of vapor pressure (See section 2.1.7).

Issue: The "clear coat" question is addressed under miscellaneous metal parts, Section 5.5.2.4(I). The definition of VOC must be changed to conform to EPA guidance.

H. Equivalency Provisions: (§ 501)

Summary: The regulation is generally consistent with EPA's suggested language. There is, however, a generic problem which is discussed in Section 2.13 of the report. It should be noted that Allegheny County's regulations determine equivalency on a solids as applied basis. However, the formula provided for determining the equivalency fails to consider the density on which the standard was based. To be technically correct, it should first be determined what the standard should be using EPA's standard density (7.36 lbs. VOC per gal. of solvent). The actual density of the solvent used at the source should then be used to determine compliance with the standard.

ISSUE: The formula for determining equivalency should be revised as indicated above.

I. Inspection, Maintenance and Operating Procedures: (§ 503)

Summary: The suggested requirements would have the source properly inspect, operate and maintain (including appropriate records) control equipment. Allegheny County's provisions are not as specific as the suggested language but do require that compliance techniques shall be properly installed, maintained and operated consistent with good air pollution practice.

Issue: None.

J. Test Methods and Procedures: (§ 605)

Summary: Test methods and procedures are consistent with EPA requirements.

Issue: None.

K. Monitoring, Recordkeeping and Reporting:

Summary: No general sections could be located in Allegheny County's regulations which adequately address these items. It is not clear what recordkeeping would be required for bubbles processed under § 506. This section requires that the bubble be enforceable and allows up to a 24-hour averaging time. Some source specific regulations do include recordkeeping/reporting requirements and are addressed under the section which deals with that particular source category.

Issue: Minimum recordkeeping and monitoring requirements should be stated as a demonstration of compliance.

5.5.2.2 Gasoline Marketing Activities (Allegheny County)

A. Bulk Gasoline Plants: (§ 508)

Summary: The regulation is generally consistent with Federal requirements for urban nonattainment areas except that tank trucks with capacity less than 250 gallons are exempt. No recordkeeping is specifically required for bulk plants. The regulation also requires a vapor recovery system, where the bulk plant uses storage tanks greater than 40,000 gallons in capacity. The system must meet the same requirements as bulk terminals.

Issue: It does not appear that the exemption is significant. However, if a large number of small tank trucks (250 gallons or less) are filled in the County, the impact could be considerable. A survey should be conducted to determine if such transfer represents a significant VOC emission source in the County.

B. Bulk Gasoline Terminals: (§ 508)

Summary: The regulation is generally consistent with Federal requirements except that an exemption is provided for tank trucks with less than a 250 gallon capacity. No specific recordkeeping/reporting requirements are indicated.

Issues: As is the case with bulk plants, the exemption for 250 gallon capacity tank trucks does not appear to be significant. However, if a large number of small (250 gallon or less) tank trucks are filled in the County, the impact could be considerable. A survey should be conducted to determine if such transfers represent a significant VOC emission source in the County.

C. Leaks from Gasoline Tank Trucks and Vapor Collection Systems: (§ 508)

Summary: The regulation is very similar to EPA's suggested language except that an exemption is provided for tank trucks with less than 4,800 gallons capacity. Record-keeping and reporting are required. Records must be maintained for one year instead of the two years suggested by Federal guidance.

Issue: The exemption could be a significant relaxation.

D. Stage I Vapor Control Systems at Gasoline Service Stations: (§ 508)

Summary: Exemptions are provided for tanks less than 2,000 gallons and facilities with annual throughput less than 60,000 gallons. No specific recordkeeping/reporting requirements are indicated.

Issues: Exemptions, especially the throughput exemption could make the regulation considerably less stringent than Federal requirements.

5.5.2.3 Refinery Emissions and Petroleum Liquid Storage

A. Petroleum Liquid Storage in Fixed Roof Tanks: (§ 507)

Summary: Allegheny County's regulation meets Federal requirements for control techniques, compliance testing and reporting. It does include an exemption which EPA did not include for fixed roof tanks (but did recommend for external floating roof tanks). This is not considered a major problem. Equivalent control with an 80% efficient vapor recovery system is allowed but the CTG suggests that a floating roof tank with seals is 90% efficient.

Issue: Equivalency provisions may be less stringent than suggested by the CTG.

B. Petroleum Liquid Storage in External Floating Roof Tanks: (§ 507)

Summary: The regulation meets all Federal requirements except that it allows for the use of an 80% efficient vapor recovery system. The CTG indicates that 90% is attainable with a floating roof.

Issue: Equivalency provision may be less stringent than required by CTG.

C. Leaks from Refinery Equipment

Allegheny County has certified that no RACT sources in this category are located in the County.

D. Refinery Vacuum Producing Systems, Separators and Process Units:

Allegheny County has certified that no RACT sources in this category are located in the County.

5.5.2.4 Surface Coating and Graphic Arts

The general provision for this section provide for daily line-by-line recordkeeping but lack specificity.

A. Can Coating: (\$ 505)

Summary: Consistent with EPA requirements.

Issue: None.

B. Coil Coating: (\$ 505)

Summary: Consistent with EPA requirements.

Issue: None.

C. Paper Coating: (\$ 505)

Issue: None

Summary: Consistent with EPA requirements.

D. Fabric and Vinyl Coating: (\$ 505)

Summary: Consistent with EPA requirements.

Issue: None.

E. Automobile and Light Duty Trucks: (\$ 505)

Summary: Consistent with EPA requirements.

Issue: None.

F. Metal Furniture Coating: (\$ 505)

Summary: Consistent with Federal requirements.

Issue: None.

G. Insulation of Magnetic Wire: (\$ 505)

Summary: Consistent with Federal requirements.

Issue: None.

H. Large Appliance Coating: (\$ 505)

Summary: Consistent with Federal requirements.

Issue: None.

I. Coating of Miscellaneous Metal Parts: (\$ 505)

Summary: In general, Allegheny County's regulation conforms to EPA requirements; however, there are some potentially significant deviations:

1. Allegheny County's definition of clear coat allows extreme performance coatings a considerable relaxation from suggested standards (4.3 lb/gal instead of 3.5 lb/gal). As a result 55% more VOC emissions are allowed under Allegheny County's regulation for the application of clear extreme performance coatings.

2. Allegheny County's regulation also allows the use of 4.3 lb VOC/gal coatings for locomotives and heavy truck top coat, hopper car and tank car interiors, and pail and drum interiors. This variance from the CTG/model regulation suggested limits is technically acceptable for all of these categories except the top coating of heavy duty trucks. For that category it represents a significant relaxation which allows for a 55% increase in VOC emissions from this coating operation compared to EPA suggested levels. The regulation also does not specifically include solvent washing (purging of spray guns) or require CEM as suggested by the regulations.

Issue: The amount of extreme performance clear coat and heavy duty truck top coat applied in Allegheny County is not known; therefore, the impact of the relaxation on air quality cannot

be readily determined. The 55% increase in VOC emitted per volume of applied solids makes the issue potentially significant.

J. Coating and Flatwood Paneling:

Allegheny County has certified that no RACT sources in this category are located in the County.

K. Graphic Arts: (§ 531)

Summary: Allegheny County's regulations are generally consistent with EPA's model regulation except that record-keeping and CEM are not addressed. The regulation does appear to require continuous compliance (i.e., all complying inks or positive controls); therefore, compliance can be determined by source testing.

Issue: Minor variations do not appear to be a major problem.

5.5.2.5 Other Round I & II CTG Categories

A. Solvent Metal Cleaning: (§ 509)

Summary: Allegheny County's regulation is generally consistent with EPA's guidance except that there is no requirement to install control devices on cold cleaning facilities where solvent volatility is greater than 0.616/in.<sup>2</sup> (measured at 100° F) or if the solvent is heated above 120° F.

Issue: The significance of this variance has not been determined.

B. Cutback Asphalt: (§ 510)

Summary: Allegheny County's differ from EPA's suggested requirements in the following ways:

1. Mixing and storage of cutback asphalt is not prohibited, only use and application is actually prohibited.

2. Exemptions are automatic; that is, they do not require the director's approval.

3. Temperature exemption (below 50° F) has been replaced with a seasonal variance (October 31 to April 30).

4. The penetrating coat exemption has been expanded to include tackcoat, dust palliative, or precoating of aggregate.

5. A table indicating the maximum % solvent in asphalt emulsions is also included.

Issue: Although the regulation is similar to EPA's model regulation, there are a significant number of seemingly minor changes. The total impact of these changes is not evident.

C. Manufacture of Synthesized Pharmaceutical Products:

Allegheny County has certified that no sources in this category are located in the County.

D. Manufacture of Pneumatic Rubber Tires:

Allegheny County has certified that no sources in this category are located in the County.

E. Perchloroethylene Dry Cleaning Systems: (§ 532)

Allegheny County's regulations have not been Federally approved. Although EPA proposed exemption of perchloroethylene as a VOC in September 1985, no final action is anticipated. Therefore, EPA expects to regulate perchloroethylene as a VOC.

5.5.2.6 Round III CTG Sources

Allegheny County has certified that the following Round III source categories are not located in the ozone nonattainment area.

1. Large Petroleum Dry Cleaners
2. Manufacture of High Density Polyethylene, polystyrene and Polypropylene resins
3. Natural Gas/Gasoline Processing Plants

Allegheny County submitted regulations for SOCOMI fugitive emissions and a SIP revision which would incorporate an operating permit for a SOCOMI Air Oxidation source on June 8, 1987. This regulation and permit are under review by EPA.

5.5.2.7 Non CTG VOC Regulations (§ 511)

A. Ethylene Production Processes:

Applicability: Any ethylene production process.

Level of Control: All waste gases incinerated at no less than 1300° F for at least 0.3 seconds; gases from vapor blowdown systems must be burned by smokeless flares.

Compliance: No specific method for determining compliance or recordkeeping requirements are indicated.

Issues: To be enforceable, the facility should be equipped with a continuous temperature recording device and have some indicator of flue gas flow rates. Testing and calibration procedures should also be required to verify operating parameters. A review of process design and on-site inspection to determine if all waste gases are properly connected to control devices should also be required.



## B. Other Non CTG VOC Sources:

The final rule approval for the Pennsylvania Ozone SIP (50 FR 7776, 2/26/85) indicates that EPA accepted a demonstration by Allegheny County that RACT was in place for two non CTG sources. These sources were PPG Industries (Paint and resin manufacturing) and U.S.S. chemical polyester manufacturing. No information could be located on this determination. With regard to the U.S.S. chemical plant (now ARISTECK Chemical Corp.) this plan appears to be subject to Round III CTG for air oxidation which is now being evaluated by EPA.

### 5.5.3 Philadelphia Air Management Service

Philadelphia has not promulgated its own regulations for CTG VOC sources. Instead, the City uses and enforces Pennsylvania's regulations within the boundaries of the City. The only exception is non CTG VOC regulations for certain sources which were promulgated in the early 70's. These regulations appear to be similar "Rule 66" and for the most part are superseded by the Rounds I and II VOC regulations.

#### 5.5.3.1 General Provisions - Pennsylvania

See Section 5.5.1.1.

#### 5.5.3.2 Gasoline Marketing Activities

See Section 5.5.1.2.

#### 5.5.3.3 Refinery Emissions and Petroleum Liquid Storage

See Section 5.5.1.3.

#### 5.5.3.4 Surface Coating and Graphic Arts

See Section 5.5.1.4.

#### 5.5.3.5 Other Round I & II CTG Categories

See Section 5.5.1.5.

#### 5.5.3.6 Round III CTG Sources

Philadelphia Air Management Services has certified that the following Round III source categories are not located in Philadelphia :

1. Manufacture of High Density Polyethylene, Polystyrene and Polypropylene Resins

2. Natural Gas/Gasoline Processing Plants

#### 5.5.3.7 Non CTG Source Regulations (need evaluation)

## 5.6 Virginia

Virginia's regulations for VOC are codified as Commonwealth of Virginia State Air Pollution Control Board Regulations for the Control and Abatement of Air Pollution. General provisions relating to VOC sources can be found in Part I - Definitions, and Part IV - Special Provisions. Part IV includes a subpart which is titled Emission Standards for Gaseous Pollutants. This subpart includes: § 4.52 - Hydrocarbon Emissions, which applies to AQCR 7 only (Northern Virginia - Washington, D.C. area) and generally include provisions for non-CTG sources; § 4.54 - Volatile Organic Compound Emissions (General), which includes additional general provisions and source specific requirements for solvent metal cleaning and VOC storage; § 4.55 - Volatile Organic Compound Emissions - Coating Industry; § 4.56 - Volatile Organic Compound Emissions - Petroleum Industry; and § 4.57 - Volatile Organic Compound Emissions - Miscellaneous Industry. Other important VOC requirements are included as appendices. These include Appendix M - Control Technology Guidelines for Volatile Organic Compound Emissions; Appendix N - Compliance Schedules; and Appendix P - Volatile Organic Compound Emissions Control Areas.

The provisions of § 4.52 (area 7 only) are in the process of being deleted from Virginia's regulation. This section predates the Group I CTG regulations and appears to be based "Rule 66" type requirements. It also tends to duplicate (as far as applicability is concerned) subsequent VOC regulations adopted by Virginia and approved by EPA. As a result § 4.52 will not be considered in this report.

Virginia has also reformulated its regulations but EPA has not yet approved these changes. The regulatory citations used here refer to the Federally approved SIP. For the convenience of those who are now using the reformatted regulations, a regulation reorganization guide is provided at the end of this section (Table 5-2). This table indicates the old or new section/rule numbers.

### 5.6.1 General Provisions (VA)

#### A. Alternate Controls: [§ 4.55(b)]

There are no federally approved general regulations for alternate controls (bubbles) in the Virginia SIP. However, Virginia's regulations do include State provisions for plant-wide Emissions Reduction Plans in § 4.55(b).

B. Applicability: (Part IV - Various Sections)

Summary: The regulations are generally applicable to all sources that emit 7.3 tons/yr, 40 lbs/day and 80 lbs/hr or more VOC. This is less stringent than suggested Federal requirements which apply to sources with 15 lb/day (approximately 2.7 tons/yr) or 3 lbs/hr or greater VOC emissions.

An exemption is also provided for the seasonal operation of incinerators/afterburners (November through March) regardless of the type of fuel used. EPA's guidance provides for a seasonal exemption for natural gas-fired afterburners only.

Issue: Virginia's regulations are generally more lax than Federal suggested requirements with regard to general applicability and the seasonal exemption for incinerators and afterburners. This applicability criteria should be reevaluated for post 1987 attainment areas to determine if significant additional reductions can be realized if Federal guidelines are followed.

C. Averaging Time: [\$ 4.55 (a)(7)]

Summary: Virginia's regulations only mention an averaging time with regard to the coating industry. The regulation specifies the emission standards for that section (coating industry) shall be the daily averages for all colors for each process.

Issue: None.

D. Breakdown, Malfunction and Operation Changes: (\$ 2.34)

Summary: Virginia's regulations generally meet the intent of EPA guidance. However, the facility is not required to report shutdown/breakdown of air pollution control equipment or malfunctions which result in excess emissions if they are less than one hour in duration. Scheduled shutdown exceeding 1 hour requires notification of the board 24 hours in advance of the event. Malfunctions and breakdowns which exceed one hour must be reported to the Board within 4 hours (daytime business hours). Specific criteria which must be satisfied to consider the event as no violation are included. One of these criteria states that a variance application must be submitted which is subsequently granted by the Board.

Issue: The provisions of the regulation are generally satisfactory. However, there is some concern about the 1 hour exemption. Sources which frequently experience short term malfunctions have no obligation to report these problems. Although the regulation requires the source, including all control and monitoring equipment, to be maintained and operated consistent with good air pollution control practices, the absence of reporting and recordkeeping requirements on short term malfunctions may conceal significant problems.

E. Circumvention: (§ 2.07)

Summary: Virginia's language is slightly different but consistent with EPA's suggested provisions.

Issue: None.

F. Compliance Schedules: (§ 4.02(f) and Appendix N)

Summary: § 4.02 states that compliance schedules are required, specifies the conditions for alternate schedules, and delineates the Board's authority. However, the actual compliance schedules for various source categories, including increments of progress are included in Appendix N. § 4.02(f)(6) requires that alternate compliance schedules be as expeditious as practicable and not extend beyond December 31, 1987.

Virginia's compliance schedules comply with EPA's increments of progress but are considerably more lax with regard to scheduling. In all cases from 6 to 14 months extra time has been allowed for compliance.

Issue: Although the schedules tend to be lax, the maximum final compliance dates have all been passed. Except for noting that those sources who are still not in compliance have had a considerable amount of time to comply and that these schedules should not be used as examples of expeditious compliance, there appears to be no significant issue here.

G. Definition of Terms: (§ 1.02)

Summary: Virginia's regulations do not use some of the terms defined in EPA's model regulations. Generally, the terms that are defined are adequate for the regulation as written. There is some variance between Virginia's and EPA's definition of certain terms; however, in most cases this is not a significant problem. One exception is the definition of "clear coat" which allows a significant relaxation to some miscellaneous metal parts coating sources using "clear" extreme performance coatings. Another important difference is the definition of VOC. Virginia's definition includes an exemption based on vapor pressure and, therefore, is less stringent than EPA's recommended definition (See 2.1.7).

Issue: The "clear coat" question is addressed under miscellaneous metal parts, Section 5.6.4(I) of this report. The definition of VOC must be changed to ensure the full effectiveness of the regulations and provide for national consistency.

#### H. Equivalency Provisions: (Appendix M)

Summary: Virginia's regulation places all control technologies used for VOC sources into Appendix M. The specific subsections in the regulation addressing a specific source category generally refer the reader to Appendix M to select an appropriate control strategy to meet the emission/material/process standard stated in the body of the regulation. This format, however, weakens the regulation in that control requirements tend to be "suggested" as things that should be done rather than being clear regulatory requirements. It may be difficult to enforce this suggested requirement since a source may be able to argue convincingly that the control technique specified in Appendix M is not required.

Appendix M in Virginia's regulation appears to be consistent with EPA requirements. There is, however, a generic problem concerning the latitude state agencies have in making equivalency decisions which is discussed in Section 2.1.8 of this report. No specific language could be located in Virginia's regulation which clearly indicates if equivalency is determined on a solids as applied basis.

Issue: Virginia's policy on using a solids applied basis to determine equivalency must be confirmed.

#### I. Inspection, Maintenance and Operating Procedures:

Summary: Test methods and procedures are based on EPA guideline documents. They should be upgraded to be consistent with revised test methods and procedures as indicated in Appendix 3.19 of this report.

Issue: It is preferable to have the suggested language but this is not a major flaw.

#### J. Test Methods and Procedures: (§ 4.03)

Summary: This section indicates that the "appropriate reference method" or "applicable test method" be used. There is also a reference to "testing guidelines as approved by the Board" but no specific test methods or procedures are part of the regulations. The Board also appears to have considerable discretion to modify or substitute for the "appropriate test method."

Issue: Test methods and procedures should be upgraded as indicated.

K. Monitoring, Recordkeeping and Reporting: [§ 4.05(e)]

Summary: Monitoring, recordkeeping and reporting are only required "upon the request of the Board." There are no general regulatory requirements for a VOC source to document compliance with the appropriate standard. However, the Board does have the authority to require each source to maintain and generate such data to document compliance on a case-by-case basis.

Issue: The absence of specific regulatory language and requirements for monitoring, recordkeeping and reporting coupled with provisions for daily averaging is a major flaw. The State may be able to correct this by establishing requirements on a case-by-case basis or by modifying the regulations. In the latter case, actual detailed requirements could be specified in an appendix to the regulations or a referenced support manual or guideline.

5.6.2 Gasoline Marketing (VA)

A. Bulk Gasoline Plants: [§ 4.56(e)]

Summary: Virginia's regulations for bulk plants are considerably less stringent than Federal requirements. Deficiencies are as follows:

1. A 77% reduction is required (CTG suggests 90% is appropriate).

3. An exemption is provided for facilities with average daily throughput less than 4,000 gal/day for the most recent 12-month period.

4. Does not include language which specifically prohibits gasoline spillage, discharge to sewers, storage in open containers or any other procedure which would result in evaporation.

Issue: The regulation represents a considerable relaxation for CTG RACT requirements. Virginia's regulation should be revised to be consistent with EPA guidelines.

B. Bulk Gasoline Terminals: [§ 4.56(b)]

Summary: Virginia's regulation does not specify the 90% efficiency suggested by the CTG but does include a maximum mass emission rate consistent with guidelines. The regulation also does not include language which specifically prohibits gasoline spillage, discharge to sewers, storage in open containers or any other procedure which would result in evaporation.

Issue: The regulation should be revised to include the specific language suggested by the CTG and model regulations.

C. Leaks from Gasoline Tank Trucks: [§ 4.56(f)]

Summary: Virginia's regulations appear to be significantly less stringent than EPA guidance. This includes some unique wording which may provide large loop holes.

1. The regulation applies to tank trucks/account trucks which "exclusively" service regulated bulk plants and terminals and service stations. Evidently trucks which may service both regulated and non-regulated facilities are not subject to the control requirements.

2. Hatches on trucks must be closed "except" when submerged fill pipe, with vapor balance, or top loading vapor recovery method is used. EPA/CTG guidelines require that the hatches be closed at all times during loading operations.

3. The regulation allows for up to 45 days (if ordering repair parts), well beyond EPA's suggested 15 days, for repairs needed after failing a certification test.

4. The owner is not required to notify the director in advance of a certification test as suggested by EPA.

Issue: As written, the regulations appear to allow for significant loopholes in control requirements as indicated above. Corrections must be made.

D. Stage I Vapor Control Systems at Gasoline Service Stations:  
[§ 4.56(d)]

Summary: Virginia's regulations are less stringent than EPA guidelines as follows:

1. An exemption is provided for all tanks less than 2,000 gallons in capacity. Model regulations limit this exemption to only tanks constructed prior to January 1, 1979; otherwise the exemption is for tanks less than 250 gallons in capacity.

2. An exemption is provided for facilities with an average daily throughput less than 20,000 gal/month for the most recent 12 months.

3. Transfers made to storage tanks used "predominantly" for fueling mobile farm equipment are exempted by the regulation. EPA's guidance limits this exemption to tanks of less than 550 gallons capacity equipped with submerged fill pipes.

Issues: The regulation is less stringent than EPA's suggested requirements. The impact of these relaxations should be evaluated with regard to the potential affect on VOC emissions. The regulation should be revised if significant additional VOC reductions can be obtained.

5.6.3 Refinery Emissions and Petroleum Liquid Storage

A. Petroleum Liquid Storage in Fixed Roof Tanks: [§ 4.56(g)]

Summary: Requirements are identical to Federal requirements except that recordkeeping and compliance testing are not addressed. However, since the regulation does not include an exemption for tanks containing liquids with true vapor pressure less than 1.5psi, the lack of recordkeeping may not be as critical as otherwise would be expected.

Issue: The lack of visual inspection requirements and recordkeeping (includes inspection reports) could make the requirements difficult to enforce on a continuous basis.

B. Petroleum Liquid Storage in External Floating Roof Tanks:  
[§ 4.56(h)]

Summary: The regulations are generally consistent with EPA requirements. It does not allow EPA suggested exemptions for certain petroleum liquids with a true vapor pressure less than 4 psia and has a lower limit for exempting tanks holding crude oil and condensate prior to lease custody transfer



(400,000 gal vs. 420,000 gal). The differences tend to make Virginia regulation slightly more stringent than EPA's model regulation. The only minor flaw is that it fails to specify the length of time records are to be maintained.

Issue: There are no major issues.

C. Leaks from Refinery Equipment:

Summary: The leak criteria stated in the regulation are consistent with EPA suggested criteria; however, the regulation does not specifically require the same recordkeeping and monitoring program required by EPA. The total absence of specific regulatory language requiring a monitoring program and reporting and test procedures makes the regulation potentially ineffective.

Issue: The regulation should be revised to clearly state RACT monitoring program, recordkeeping and reporting requirements.

D. Refinery Vacuum Producing Systems, Separators and Process Units: [§ 4.56(e)]

Summary: Virginia's regulation meets all Federal requirements. In addition it specifies a minimum control efficiency of 95%.

Issue: None.

5.6.4 Surface Coating and Graphic Arts: (§ 4.55)

Section 4.55(a) includes general provisions and exemptions for the coating industry. As noted under General Provisions, Applicability [5.6.1(B)], Virginia's regulations are less stringent than EPA suggested criteria. Virginia's regulations also provide for 24-hour averaging of all colors which is consistent with current EPA policy but a relaxation from model regulation suggested criteria. However, no recordkeeping requirements are specified. This is a major problem where an averaging time is being used.

A. Can Coating: [§ 4.55(f)]

Summary: Consistent with EPA requirements

Issue: No specific category issues.

B. Coil Coating: [§ 4.55(g)]

Summary: Consistent with EPA requirements.

Issue: No specific category issue.

C. Paper Coating: [§ 4.55(h)]

Summary: Consistent with EPA requirements.

Issue: No specific category issue.

D. Fabric and Vinyl Coating: [§ 4.55(h) and (i)]

Summary: Consistent with EPA requirements.

Issue: No specific category issues.

E. Automobile and Light Duty Trucks: [§ 4.55(e)]

Summary: The regulations are generally consistent with EPA requirements except for compliance coating criteria for prime and topcoat operations. For prime coat operations, Virginia's requirement is 3.2 lbs. VOC per gallon of coating compared to EPA's requirement of 1.9 lbs. VOC per gallon of coating. This allows for a 220% increase in VOC emissions on an applied solids basis. For topcoat Virginia's standard is 4.8 lbs. VOC per gallon of coating and EPA requirement is 2.8 lb VOC per gallon of coating. This allows for a 305% increase in VOC emissions on an applied solids basis.

Issue: Virginia's regulations for prime and topcoat are significantly less stringent than RACT. However, the only automobile and light duty truck plant in Virginia that is subject to this regulation is located in the Norfolk area. Although attainment in this area is marginal, no SIP call has been made and the area is now legally considered attainment. This issue is not significant as long as a SIP call is not made in the Norfolk area.

F. Metal Furniture Coating: [§ 4.55(j)]

Summary: Consistent with EPA requirements.

Issue: No specific category issue.

G. Insulation of Magnetic Wire: [§ 4.55(d)]

Summary: Consistent with EPA requirements.

Issue: No specific category issue.

H. Large Appliance Coating: [§ 4.55(c)]

Summary: Consistent with EPA requirements.

Issue: No specific category issue.

I. Coating of Miscellaneous Metal Parts: [§ 4.55(k)]

Summary: Virginia's regulation covers SIC categories 40 (railroad transportation) and 41 (transit passenger transportation), in addition to those categories listed in EPA's model regulation. The regulation also does not include the exemptions provided in the model regulation. Therefore, with regard to applicability, Virginia's regulations for this category are more stringent than EPA's model regulations.

However, there is one relaxation from EPA's suggested definitions. Virginia's definition of "clear coat" allows clear extreme performance" coatings a considerable relaxation from EPA's 3.5 lb VOC per gallon of coating standard. Instead they may be considered as a clear coat which has a 4.3 lb VOC per gallon of coating criteria. As a result 55% more VOC emissions are allowed under Virginia's regulation (on a solids applied basis) than suggested by EPA. The regulation also does not specifically include solvent washing (purging of spray guns) or require CEM as suggested by the model regulation.

Issue: The amount of extreme performance clear coat applied in Virginia non attainment (RACT) areas is not known; therefore, the impact of this relaxation on air quality can not be readily determined.

The absence of specific language on spray gun purging may not be critical, since it is not specifically excluded. However, we should clarify Virginia's position on this matter.

The absence of CEM requirements may be important given Virginia's lack of adequate recordkeeping requirements.

J. Coating of Flatwood Paneling: [§ 4.55(e)]

Summary: Consistent with EPA requirements.

Issue: No category specific issue.

K. Graphic Arts: [§ 4.55(m)]

Summary: Virginia's requirements for add-on controls are consistent with EPA requirements. However, there are no equivalent requirements to EPA's suggested standards for low solvent inks. EPA required that waterborne inks that have a volatile component consisting of 75% or more water and 25% or less VOC be considered RACT. Virginia's regulations are significantly less stringent than EPA's for the rotogravure and flexographic packaging industry (65% and 60% reduction respectively). EPA's criteria for waterborne is consistent with its requirements for reduction in the rotogravure publication industry (i.e. 75%) since the hooding and capture efficiency issues limiting RACT efficiencies for the packaging industry are not relevant when using waterborne formulations.

Virginia's regulation also fails to indicate how percent reduction in VOC emissions are to be determined when determining compliance for a printing process using waterborne coatings and inks. The regulation is difficult (if not impossible) to enforce unless a specific methodology to determine compliance is developed.

Issue: Virginia's regulations for packaging printing sources using low solvent formulations is significantly less stringent than EPA requirements and may be unenforceable since no specific method of determining compliance is indicated. The total lack of recordkeeping requirements adds significantly to this problem.

#### 5.6.5 Other I & II CTG Categories

##### A. Solvent Metal Cleaning: [§ 4.54(c)]

Summary: Virginia's regulations are generally consistent with EPA requirements.

Issue: None.

##### B. Cutback Asphalt: [§ 4.57(b)]

Summary: The regulation generally tracks Federal requirements except that exemption provisions are standardized (i.e., do not require Director's approval). The ambient temperature exemption has been changed to an exemption during the months of November through March. Provisions are also provided to allow the user to demonstrate that there are no VOC emissions from the asphalt under conditions of normal use. The regulations specifically exclude heated asphalt cement when used as a component in asphaltic concrete mixing or for priming in surface treatment. The yearly average of VOC in all emulsified asphalts may not exceed 6%.

Issue: The significance of the variations from EPA model regulations could not be determined.

C. Manufacture of Synthesized Pharmaceutical Products: [§ 4.57(c)]

Summary: Virginia's regulations are generally consistent with EPA's suggested guidance except that the exemptions for storage tanks of less than 2,000 gallons and for VOCs with a vapor pressure less than 4.1 psia are provided. EPA's model regulations contain similar language, however, EPA's language exempted tanks less than 2000 gallons in capacity provided that the vapor pressure was less than 4.1 psia. That is, the conditions of EPA's exemption are accumulative and not separate exemptions. Virginia's language would allow an exemption for all 2,000 gallon or less tanks regardless of the VOCs vapor pressure and all tanks storing VOCs with vapor pressure less than 4.1 psia.

Issue: Virginia has indicated that there are no sources subject to this rule in the State. Therefore, the impact of the State exemptions is nil.

D. Manufacture of Pneumatic Rubber Tires: [§ 4.57(d)]

Summary: Virginia's regulation is generally consistent with EPA requirements.

Issue: None.

E. Perchloroethylene Dry Cleaning Systems [§ 4.57(e)]

Summary: Virginia's regulation is consistent with EPA guidelines.

Issue: None.

5.6.6 Round III CTG Sources

Virginia has certified that the following Round III Sources Categories are not located in ozone nonattainment areas in the State.

1. Large Petroleum Dry Cleaning
2. Manufacture of High Density Polyethylene, Polystyrene and Polypropylene Resins.
3. Natural Gas/Gasoline Processing Plants
4. SOCM I Air Oxidation Processes
5. SOCM I Fugitive Emissions.

#### 5.6.7 Non - CTG Regulations

The following source types have been identified as non - CTG sources with emission greater than 100 tons per year in the Richmond nonattainment area.

1. Aluminum Foil Manufacturing
2. Tobacco Processing
3. Fiber manufacturing
4. Lithographic Printing

Virginia is actively developing source specific regulations for the categories above and has submitted draft regulations to EPA. The third source type may have been subject to new source review and the need for a RACT rule is being evaluated.

COMMONWEALTH OF VIRGINIA  
STATE AIR POLLUTION CONTROL BOARD  
REGULATIONS FOR THE CONTROL AND ABATEMENT OF AIR POLLUTION

REGULATORY REFORM PROGRAM  
REGULATION REORGANIZATION GUIDE

OLD SECTION/RULE NUMBER	TITLE [NEW TITLE - IF ANY]	NEW SECTION/RULE NUMBER
<u>Part I</u>	<u>DEFINITIONS</u>	Part I
<u>Part II</u>	<u>GENERAL PROVISIONS</u>	Part II
§ 2.01	Applicability	§ 120-02-01
§ 2.02	Establishment of Regulations and Orders	§ 120-02-02
§ 2.03	Enforcement of Regulations and Orders	§ 120-02-03
§ 2.04	Hearings and Proceedings	§ 120-02-04
§ 2.05	Variances	§ 120-02-05
§ 2.06	Local Ordinances	§ 120-02-06
§ 2.07	Circumvention	§ 120-02-07
§ 2.08	Severability	§ 120-02-08
§ 2.09	Appeals	§ 120-02-09
§ 2.10	Right of Entry	§ 120-02-10
§ 2.11	Conditions on Approvals	§ 120-02-11
§ 2.12	Procedural Information and Guidance	§ 120-02-12
§ 2.13	Delegation of Authority	§ 120-02-13
§ 2.14	Considerations for Approval Actions	§ 120-02-14
§ 2.15 - 2.29	Reserved	§ 120-02-15 - 120-02-29
§ 2.30	Availability of Information	§ 120-02-30
§ 2.31	Registration	§ 120-02-31
§ 2.32	Control Programs	§ 120-02-32

OLD SECTION/RULE NUMBER	TITLE [NEW TITLE - IF ANY]	NEW SECTION/RULE NUMBER
§ 2.33	Permits - New and Modified Sources	§ 120-08-01
§ 2.34	Facility and Control Equipment Maintenance or Malfunction	§ 120-02-34
<u>Part III</u>	<u>AMBIENT AIR QUALITY STANDARDS</u>	Part III
<u>Part IV</u>	<u>EXISTING AND CERTAIN OTHER SOURCES</u>	Part IV
§ 4.01	Applicability	§ 120-04-01
§ 4.02	Compliance	§ 120-04-02
§ 4.03	Emission Testing	§ 120-04-03
§ 4.04	Monitoring	§ 120-04-04
§ 4.05	Notification, Records and Reporting	§ 120-04-05
Rule EX-1	OPEN BURNING	Rule 4-40
Rule EX-2	VISIBLE EMISSIONS AND FUGITIVE DUST/ EMISSIONS	Rule 4-1
Rule EX-3	PARTICULATE EMISSIONS FROM FUEL BURNING EQUIPMENT [FUEL BURNING EQUIPMENT]	Rule 4-8
Rule EX-4	PARTICULATE EMISSIONS FROM MANUFACTURING OPERATIONS [GENERAL PROCESS OPERATIONS]	Rule 4-4
§ 4.40	General Manufacturing Operations [General Process Operations]	Rule 4-4
§ 4.41(a)	Petroleum Refining Catalytic Cracking Units [Petroleum Refinery Operations]	Rule 4-11
§ 4.41(b)	Hot Mix Asphalt Plants [Asphalt Plants]	Rule 4-10
§ 4.41(c)	Chemical Fertilizer Manufacturing Plants [Chemical Fertilizer Manufacturing Operations]	Rule 4-12
§ 4.41(d)	Pulp and Paper Mills [Kraft Pulp Mills]	Rule 4-13
§ 4.41(e)	Sand, Gravel and Crushed Stone Operations [Sand and Gravel Processing Operations and Stone Quarrying and Processing Operations]	Rule 4-14



OLD SECTION/RULE NUMBER	TITLE [NEW TITLE - IF ANY]	NEW SECTION/RULE NUMBER
§ 4.41(f)	Coal Thermal Drying Operations of a Coal Preparation Plant [Coal Preparation Plants]	Rule 4-15
§ 4.41(g)	Air Table Operations of a Coal Preparation Plant [Coal Preparation Plants]	Rule 4-15
§ 4.41(h)	Portland Cement Plants	Rule 4-16
§ 4.41(i)	Wood Products Manufacturing Plants [Woodworking Operations]	Rule 4-17
§ 4.41(j)	Secondary Metal Operations [Primary and Secondary Metal Operations]	Rule 4-18
§ 4.41(k)	Lightweight Aggregate Plants [Lightweight Aggregate Process Operations]	Rule 4-19
§ 4.41(l)	Feed Manufacturing Plants [Feed Manufacturing Operations]	Rule 4-20
Rule EX-5	GASEOUS POLLUTANTS	Deleted
§ 4.50	Combustion Installations and Process Equipment	Deleted
§ 4.51(a)	General Source Operations [General Process Operations]	Rule 4-4
§ 4.51(b)	Combustion Installations [General Process Operations]	Rule 4-4
§ 4.51(c)	Sulfuric Acid Plants [Sulfuric Acid Production Units]	Rule 4-21
§ 4.51(d)	Process Gas Streams [General Process Operations]	Rule 4-4
§ 4.51(e)	Sulfur Recovery Operations	Rule 4-22
§ 4.51(f)	Kraft Pulp Mills	Rule 4-13
§ 4.51(g)	Lightweight Aggregate Processes [Lightweight Aggregate Process Operations]	Rule 4-19
§ 4.51(h)	Non-Ferrous Smelters [Primary and Secondary Metal Operations]	Rule 4-18
§ 4.52(a)	General	Deleted
§ 4.52(b)	Effluent Water Separators	Deleted

OLD SECTION/RULE NUMBER	TITLE [NEW TITLE - IF ANY]	NEW SECTION/RULE NUMBER
§ 4.52(c)	Volatile Organic Compound Storage Facilities	Deleted
§ 4.52(d)	Volatile Organic Compound Bulk Loading Facilities	Deleted
§ 4.52(e)	Gasoline Transfer at Storage Facilities	Deleted
§ 4.52(f)	Gasoline Transfer at Service Stations	Deleted
§ 4.52(g)	Storage Vessel Filling	Deleted
§ 4.52(h)	Pumps and Compressors	Deleted
§ 4.52(i)	Waste Gas Disposal Operations	Deleted
§ 4.52(j)	Liquid Organic Compound Coating Operations	Deleted
§ 4.52(k)	Architectural Coating Operations	Deleted
§ 4.52(l)	Disposal of Liquid Organic Compounds	Deleted
§ 4.53	Nitric Acid Manufacturing Plants [Nitric Acid Production Units]	Rule 4-23
§ 4.54(a)	General	Deleted
§ 4.54(b)	Reserved	Deleted
§ 4.54(c)	Solvent Metal Cleaning Operations	Rule 4-24
§ 4.54(d)	Volatile Organic Compound Disposal Operations	§ 120-04-02 F
§ 4.54(e)	Incinerators/Afterburners	§ 120-04-02 G
§ 4.54(f)	Storage Tank Filling [Volatile Organic Compound Storage and Transfer Operations]	Rule 4-25
§ 4.54(g)	Volatile Organic Compound Storage - Fixed Roof Tanks [Volatile Organic Compound Storage and Transfer Operations]	Rule 4-25
§ 4.54(h)	Volatile Organic Compound Storage - Floating Roof Tanks [Volatile Organic Compound Storage and Transfer Operations]	Rule 4-25
§ 4.55(a)	General	Deleted

OLD SECTION/RULE NUMBER	TITLE [NEW TITLE - IF ANY]	NEW SECTION/RULE NUMBER
§ 4.55(b)	Plant-Wide Emission Reduction Plans	Deleted
§ 4.55(c)	Large Appliance Coating Lines	Rule 4-26
§ 4.55(d)	Magnet Wire Coating Lines	Rule 4-27
§ 4.55(e)	Automobile and Light Duty Truck Coating Lines	Rule 4-28
§ 4.55(f)	Can Coating Lines	Rule 4-29
§ 4.55(g)	Metal Coil Coating Lines	Rule 4-30
§ 4.55(h)	Paper and Fabric Coating Lines	Rule 4-31
§ 4.55(i)	Vinyl Coating Lines	Rule 4-32
§ 4.55(j)	Metal Furniture Coating Lines	Rule 4-33
§ 4.55(k)	Miscellaneous Metal Parts and Products Coating Application Systems	Rule 4-34
§ 4.55(l)	Flatwood Paneling Coating Application Systems	Rule 4-35
§ 4.55(m)	Graphic Arts Printing Processes	Rule 4-36
§ 4.56(a)	General	Deleted
§ 4.56(b)	Gasoline Loading at Bulk Terminals [Petroleum Liquid Storage and Transfer Operations]	Rule 4-37
§ 4.56(c)	Miscellaneous Petroleum Refinery Sources [Petroleum Refinery Operations]	Rule 4-11
§ 4.56(d)	Transfer of Gasoline at Gasoline Dispensing Facilities [Petroleum Liquid Storage and Transfer Operations]	Rule 4-37
§ 4.56(e)	Gasoline Bulk Loading at Bulk Plants [Petroleum Liquid Storage and Transfer Operations]	Rule 4-37
§ 4.56(f)	Tank Trucks/Account Trucks and Vapor Collection Systems [Petroleum Liquid Storage and Transfer Operations]	Rule 4-37
§ 4.56(g)	Petroleum Liquid Storage - Fixed Roof Tanks [Petroleum Liquid Storage and Transfer Operations]	Rule 4-37

OLD SECTION/RULE NUMBER	TITLE [NEW TITLE - IF ANY]	NEW SECTION/RULE NUMBER
§ 4.56(n)	Petroleum Liquid Storage - Floating Roof Tanks [Petroleum Liquid Storage and Transfer Operations]	Rule 4-37
§ 4.56(i)	Petroleum Refinery Fugitive Emissions [Petroleum Refinery Operations]	Rule 4-11
§ 4.57(a)	General	Deleted
§ 4.57(b)	Asphalt Paving Operations	Rule 4-39
§ 4.57(c)	Synthesized Pharmaceutical Products Manufacturing Plants [Synthesized Pharmaceutical Products Manufacturing Operations]	Rule 4-5
§ 4.57(d)	Pneumatic Rubber Tire Manufacturing Plants [Rubber Tire Manufacturing Operations]	Rule 4-6
§ 4.57(e)	Dry Cleaning Operations (Perchloroethylene) [Dry Cleaning Systems]	Rule 4-38
Rule EX-6	ODOR	Rule 4-2
Rule EX-7	INCINERATORS	Rule 4-7
Rule EX-8	COAL REFUSE DISPOSAL AREAS	Deleted
Rule EX-9	COKE OVENS	Rule 4-9
Rule EX-10	MOBILE SOURCES	Rule 4-41
<u>Part V</u>	<u>NEW AND MODIFIED SOURCES</u>	Part V
§ 5.01	Applicability	§ 120-05-01
§ 5.02	Compliance	§ 120-05-02
§ 5.03	Performance Testing	§ 120-05-03
§ 5.04	Monitoring	§ 120-05-04
§ 5.05	Notification, Records and Reporting	§ 120-05-05
Rule NS-1	VISIBLE EMISSIONS AND FUGITIVE DUST/ EMISSIONS	Rule 5-1
Rule NS-2	ODOROUS EMISSIONS	Rule 5-2
Rule NS-3	ENVIRONMENTAL PROTECTION AGENCY STANDARDS OF PERFORMANCE FOR NEW STATIONARY SOURCES	Rule 5-5

OLD SECTION/RULE NUMBER	TITLE [NEW TITLE - IF ANY]	NEW SECTION/RULE NUMBER
Rule NS-4	STATIONARY SOURCES	Rule 5-4
<u>Part VI</u>	<u>HAZARDOUS AIR POLLUTANT SOURCES</u>	Part VI
§ 6.01	Applicability	§ 120-06-01
§ 6.02	Compliance	§ 120-06-02
§ 6.03	Emission Testing	§ 120-06-03
§ 6.04	Monitoring	§ 120-06-04
§ 6.05	Notification, Records and Reporting	§ 120-06-05
Rule HP-1	ENVIRONMENTAL PROTECTION AGENCY NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS	Rule 6-1
Rule HP-2	HAZARDOUS AIR POLLUTANTS [NON-CRITERIA POLLUTANTS]	Rule 4-3/Rule 5-3
<u>Part VII</u>	<u>AIR POLLUTION EPISODES</u>	Part VII
<u>Part VIII</u>	<u>PERMITS - MAJOR STATIONARY SOURCES AND MAJOR MODIFICATIONS PREVENTION OF SIGNIFICANT DETERIORATION AREAS OR NONATTAINMENT AREAS</u> [PERMITS FOR NEW AND MODIFIED SOURCES]	Part VIII
§ 8.01	Permits - Major Stationary Sources and Major Modifications Locating in Prevention of Significant Deterioration Areas	§ 120-08-02
§ 8.02	Permits - Major Stationary Sources and Major Modifications Locating in Nonattainment Areas	§ 120-08-03
<u>APPENDICES</u>		
A.	Abbreviations	A
B.	Air Quality Control Regions (AQCR)	B
C.	Urban Areas	C
D.	Forest Management and Agricultural Practices	D
E.	Guidelines for Operation of Coal Refuse Disposal Areas [Public Participation Guidelines]	Deleted and Replaced by New E

OLD SECTION/RULE NUMBER	TITLE [NEW TITLE - IF ANY]	NEW SECTION/RULE NUMBER
F.	Delegation of Authority	F
G.	Standard Metropolitan Statistical Areas (SMSA)	G
H.	Air Quality Maintenance Areas (AQMA)	H
I.	EPA Regulations - Referenced Documents	Deleted
J.	Emission Monitoring Procedures for Existing, New and Modified Sources [Emission Monitoring Procedures for Existing Sources]	J
K.	Nonattainment Areas	K
L.	Prevention of Significant Deterioration Areas	L
M.	Control Technology Guidelines for Volatile Organic Compound Emissions	Deleted
N.	Compliance Schedules	N
O.	Forest Fire Law of Virginia	O
P.	Volatile Organic Compound Emissions Control Areas	P
None	Interpretation of Emission Standards Based on Process Weight-Rate Tables	Q
None	New and Modified Sources Permit Exemption Levels	R

## 5.7 West Virginia

Currently, West Virginia does not have any ozone non-attainment areas. Formerly, West Virginia's Air Quality Control Region IV (Putnam County, Kanawha County and Valley Magisterial District of Fayette County) was an ozone nonattainment area but was redesignated as an attainment area on November 9, 1981 (46 FR 55261). As a result, RACT VOC source regulations are in place for only three categories: Regulation XXI, Storage of Petroleum Liquids in Fixed Roof Tanks; Regulation XXIII, Bulk Gasoline Terminals; and, Regulation XXIV, Petroleum Refinery Sources. Each individual category has its own specific regulation which includes definitions, applicability, level of control, registration, permits, inspection, reports and testing, compliance programs and schedules, variances, exemptions, and alternate control programs.

### 5.7.1 General Provisions

#### A. Alternative Controls: (§ 4.04)

Summary: Section 4.04 of each RACT regulation provides for alternate compliance plans. The provisions generally track EPA guidance which was intended to provide the regulatory framework for evaluating and submitting a bubble proposal. However, EPA's guidance clearly states that the proposal would not become effective until approved by EPA as a SIP revision. West Virginia's regulation does not address this point and, in fact, implies that the West Virginia Air Pollution Control Commission has unilateral authority to approve the change.

Issue: It must be determined if any agreement or understanding exists between EPA and the State concerning the need for SIP revisions to undergo EPA approval.

#### B. Applicability (§ 2 and § 4)

Summary: For the three RACT regulations evaluated applicability criteria were consistent with EPA policy.

Issue: None.

#### C. Averaging Time:

Summary: Averaging time is not addressed and would not appear to be a significant issue for those RACT categories covered by West Virginia regulations. The only exception to this would be in the context of an alternate control plan, especially where other categories of sources are involved in an emission trade.

Issue: None

D. Breakdown, Malfunction and Operation Changes: (§ 9)

Summary: Malfunctions are addressed in Section 9, Variance, of each regulation. The regulation does not require notification, per se, when a malfunction or breakdown occurs but offers variances up to 10 days (and longer, if major equipment failure). It implies a notification procedure since sources are encouraged to apply for the variance. In deciding the approvability of the variance, the State will inevitably exercise its enforcement discretion. However, the regulation does not define what an unavoidable malfunction, breakdown or equipment failure is. It is highly desirable that the regulation clearly require notification by the source in the event of a malfunction, but this does not appear to be a critical problem.

Issues: None.

E. Circumvention:

Summary: No provisions similar to EPA guidance are evident. Such language would be helpful but its absence does not represent a critical flaw.

Issues: None.

F. Compliance Schedules: (§ 8)

Summary: No compliance schedules or increments of progress are stated. Compliance programs and schedules are suggested by the source and must be approved by the Commission. In the event that a schedule and program is not suggested, the Commission may establish them. Since the area is now attainment and no major sources appear to be in violation, the absence of specific compliance schedules is not a major problem.

Issues: None.



G. Definition of Terms: (§ 3)

Summary: The States' definitions are generally consistent with EPA guidelines, except for definition of VOC.

Issues: None unless the area becomes nonattainment again. Then the definition of VOC must be corrected.

H. Equivalency Provisions: (§ 4)

Summary: Equally effective controls as those specified as RACT are allowed at the Commission's discretion. The extent of the Commission's discretion or a definition of equivalent is not provided.

Issues: The State should be advised that it does not have unilateral authority to change a requirement in a federally approved SIP. The extent of the State discretion in these matters should be defined.

I. Inspection, Maintenance and Operating Procedures:

Summary: No language similar to that suggested in EPA guidelines is evident. Such requirements are highly desirable but their absence does not represent a critical flaw.

Issues: None.

J. Test Methods and Procedures: (§ 7)

Summary: No specific test methods or procedures are stated in the regulations. Sampling and analysis "in a manner approved by the Director" is required when the Director requires a test.

Issues: Test methods should be stated. The regulations may prove extremely difficult to enforce by EPA if the Director does not approve the test method. See the section on each source category for additional evaluation.

K. Monitoring, Recordkeeping and Reporting:

Summary: There are no general requirements. Source specific requirements may be included under level of control (§ 4) or inspection, reporting, and testing (§ 7), as appropriate. The adequacy of these source specific requirements are evaluated under each source category as addressed in the sections of this report which follow.

Issue: None

### 5.7.2 Gasoline Marketing

#### A. Bulk Gasoline Plants:

No regulations.

#### B. Bulk Gasoline Terminals: (Reg. XXIII)

Summary: The regulation states the same maximum mass emission rate as suggested by EPA (80 mg/l) but does not require a 90% efficient absorber or condensor system when this type of equipment is used. The regulation also fails to state specific inspection and leak test requirements. Visual inspection of the equipment and leak monitoring during transfer as specified in the Round II Tank Truck CTG was recommended. It should be noted that bulk terminals are Round I CTG sources. The overall effectiveness of this regulation is also doubtful given that there are no other gas marketing requirements in West Virginia (i.e., no Stage I or tank truck requirements).

Issues: Compliance test methods and procedures should be specified.

#### C. Leaks from Gasoline Tank Trucks and Vapor Collection Systems:

No regulations.

#### D. Stage I Vapor Control Systems at Gasoline Service Stations:

No regulations.

### 5.7.3 Refinery Emissions and Petroleum Liquid Storage

#### A. Petroleum Liquid Storage in Fixed Roof Tanks (Reg. XXI):

Summary: The regulation does not specify a minimum tank size or vapor pressure for applicability; therefore, they are more stringent than EPA requirements. The State's regulation also allows for the use of a vapor recovery system but does not specify an efficiency for the system. EPA regards the internal floating roof system as being 90% efficient. Record-keeping requirements are consistent with EPA guidelines.

Issues: It would be preferable if these regulations would specify a 90% efficiency for equivalency and vapor recovery system. There are no significant issues.

B. Petroleum Liquid Storage in External Floating Roof Tanks:

No regulations.

C. Leaks from Refinery Equipment:

No regulations.

D. Refinery Vacuum Producing Systems, Separators and Process Units: (Req. XXIV)

Summary: The State regulation is consistent with EPA requirements.

Issues: None.

5.7.4 Surface Coating and Graphic Arts

No regulations.

5.7.5 Other Round I and II CTG VOC Categories

No regulations.

5.7.6 Round III Regulations .

Not applicable.

5.7.7 Non-CTG Regulations

Not applicable.



## 6.0 Recommendations

The issues identified in this report generally fall within five (5) categories. These categories are: applicability; equivalency; recordkeeping; compliance testing and procedures; and enforceability. The remedies available to resolve these problems will vary on a case by case basis. The possible remedies include: SIP calls/SIP revisions; cooperative efforts between EPA and the States to resolve issues under existing SIP authority; and direct EPA action.

### 6.1 SIP calls/SIP revisions

Since many current ozone nonattainment areas in Region III will not attain the national ambient air quality standard for ozone by December 31, 1987, the deadline in the Clean Air Act, SIP calls in early 1988 appear to be inevitable. All the issues identified in this report can and should be addressed in the SIP call/SIP revision process. However, it shall be noted that considerable time will be required to fully develop and approve new plans and regulations.

Although some of the issues identified may be resolveable through other means, many problems do require a change in the existing SIP. Issues involving the definition of terms (e.g. the definition of VOC), specific applicability criteria or questionable language in the SIP itself can only be corrected by revising the SIP.

### 6.2 Cooperative Interim Corrective Action

A number of issues involve interpretation of the SIP or failure to exercise existing SIP authority. Interpretation issues would include Pennsylvania's method of determining potential emissions or actual emissions for applicability purposes, Maryland's case by case judgement on what qualifies as an installation, or interpreting the States' authority with regard to equivalency provisions. These kinds of issues could be partially resolved or mitigated by revising State policy and/or procedures to ensure that their interpretation and implementation of the existing VOC RACT regulations is more consistent with EPA's policy and guidance.

Recordkeeping issues are an excellent example of States having the authority to require needed information but being reluctant to act. These issues also affect the enforceability of the regulations since the absence of source specific records which can be used to determine the compliance status of the source (especially for coating and graphic arts facilities using low solvent technology) is a major problem when attempting to enforce the regulations. All Region III States have the authority to require recordkeeping on a case by case basis. It is also highly probable that this could be done generically for a certain type or category of source.

It is recommended that EPA enter into discussions with State agencies to address this type of issue as soon as possible and not wait for a SIP call/SIP revision to take corrective action. The State EPA agreement and the State grant processes appear to be suitable existing vehicles which could be used to implement this cooperative effort. This procedure should bring about more timely corrective action and resultant VOC emission reductions.

#### 6.3 Direct EPA Action

Direct EPA actions such as the issuance of § 114 letters to require sources to maintain adequate records or the development and issuance of Federal Implementation Plans (FIPS) should be considered only if other corrective action fails. Section 114 procedures and other enforcement tools are more aimed at individual source problems not generic problems for a class of sources. The development and processing of FIPS could be very labor intensive and cumbersome. Also experience indicates that the States must be committed to implementing the plan if full implementation and a high degree of effectiveness is to be realized.

#### 6.4 Rule Effectiveness Study

Region III is beginning the process of evaluating the effectiveness of VOC RACT regulations. This is the logical second step following the completion of this study. The rule effectiveness study should build on the information presented here and attempt to demonstrate the gains that could be realized by a more vigorous application of the regulations. It is recommended the VOC rule effectiveness study be implemented as soon as possible and every reasonable effort be made to obtain State cooperation in this endeavor.

#### 6.5 Non-Major Sources

Many VOC sources tend to be non-major (i.e. emit less than 100 tons per year). This is especially true where RACT requirements have been fully implemented for larger sources. The success of any program to limit VOC emissions must address the non-major ("B") sources. It is important that applicability criteria in SIPs provide for control consistent with EPA guidance and that EPA take a more active role in tracking compliance at these sources. The significant violator program has concentrated on large sources. EPA has developed and will be attempting to implement a "B" source compliance strategy in FY 1988. It is recommended that Region III fully implement this strategy to the extent possible.

Appendix 1.0

Summary of State VOC Regulation



# **Summary of State VOC Regulations**

Control Programs Development Division

**U.S. ENVIRONMENTAL PROTECTION AGENCY**  
Office of Air and Radiation  
Office of Air Quality Planning and Standards  
Research Triangle Park, North Carolina 27711

April 1985

# DISCLAIMER

This report was furnished to the U.S. Environmental Protection Agency by GCA Corporation, GCA/Technology Division, Chapel Hill, North Carolina 27514, in fulfillment of Contract No. 68-02-3892, Work Assignment No. 10. This document has been reviewed by the Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, and approved for publication. Approval does not signify that the contents necessarily reflect the views and policies of the Environmental Protection Agency. Every attempt has been made to make this publication as complete and accurate as possible; however, it does not constitute a legal compilation of Federally approved regulations. The reader should refer to The Code of Federal Regulations and to the appropriate State or local regulations for official interpretations.

Publication No. EPA-450/2-85-003

## INTRODUCTION

The Clean Air Act Amendments of 1977 require each State in which there is an ozone nonattainment area to adopt and submit a revised State Implementation Plan (SIP) that meets the requirements of Section 110 and Part D of the Act. The SIP must contain volatile organic compound (VOC) regulations that reflect the application of Reasonably Available Control Technology (RACT) to stationary sources for which control technique guidelines (CTGs) published by the U.S. Environmental Protection Agency (EPA) apply. This document summarizes the VOC regulations States have adopted that apply RACT to 29 industrial source categories for which EPA has published CTGs. In some cases, States have developed regulations for stationary sources where CTGs do not apply. These regulations also have been summarized. In most cases, the State regulations summarized are current as of August 1, 1984. There are, however, some regulations included in the State summaries, such as some of the VOC regulations for California, that are current as of January 1, 1985.

The 29 industrial source categories for which EPA has issued CTGs have been divided into three groups depending on the CTG publication date. Group I includes 15 source categories for which CTGs were published prior to January 1978. Group II includes 9 source categories for which CTGs were published between January 1978 and January 1979. Group III includes 5 source categories for which the CTG publication date was after January 1979. Table 1 lists the source category, CTG, EPA Number, and NTIS Number for the 29 source categories.

As mentioned above some States have adopted regulations for non-CTG sources. Examples of these regulations include case-by-case RACT provisions, emissions limitations and/or equipment and operating requirements for architectural coatings, aerospace coatings, semiconductor manufacturing, and ethylene production plants.

Table 2 presents the scope of each State's regulation of VOCs for Group I, II, and III CTG source categories as well as non-CTG sources. The format of Table 2 is designed to facilitate comparison of VOC regulations on a State-by-State basis. The symbols used in each category represent the status of the VOC regulation for each source type within each State. The key symbols used in Table 2 are as follows:

- - an EPA approved regulation exists for the source category,
- - no EPA approved regulation exists for the source category,
- ⊖ - no regulation exists because there are no sources in the nonattainment area,

- - no regulation exists because all sources in the nonattainment area are less than 100 TPY,
- - regulations are under development for this source category,
- ☆ - regulations for this source category are pending approval by EPA,
- ★ - regulations for this source category are deficient and are not consistent with the CTG.

Table 3 summarizes the VOC regulations required by States according to area type and regulation category. Nonextension urban areas not currently requiring revised SIPs are summarized in Table 4; and States with their corresponding rural nonattainment areas are presented in Table 5. States listed in Tables 4 and 5 only have the basic requirements to control stationary sources in CTG Groups I and II with an applicability cutoff of 100 tons per year. Urbanized areas that did not attain in 1982 and have requested extensions from 1982 to 1987 are listed in Table 6. These states, as indicated in Table 3, are required to have Groups I, II, III, other 100 tons per year, and additional measures VOC control. The 1984 and 1985 SIP call areas are presented in Tables 7 and 8, respectively. These State or local agencies are required to submit revised SIPs during the subject year because of nonattainment of sources requiring VOC control. Table 9 lists the states classified as attainment areas for ozone. Table 10 provides a listing of VOC compounds exempted from regulation by the States.

Of the 50 State and 5 local air pollution regulatory agencies surveyed by this study, 13 States are classified as ozone attainment areas and therefore do not require CTG Groups I, II, or III regulations. The remaining 42 State/local agencies all have some level of VOC regulatory activity. The extent of regulating VOC emissions by these agencies was found to vary from controlling VOC emissions for Group I sources from 3 source categories to controlling VOC emissions from all (15) source categories. State and local agency regulation of CTG Group II source categories varied from controlling none of the potential VOC emission sources to all. There were significantly more State and local VOC regulations requiring EPA approval, revisions to conform with CTGs, or under development in Group II than were found in Group I. State and local regulations for CTG Group III source categories were found to vary significantly on a national basis. Only six (14 percent) of the State or local agencies were found to have any Group III rules. One State agency was found to be developing regulations for all industrial source categories in CTG Group III. State and local regulation of other VOC sources also varied. Of the 42 agencies requiring some VOC control, 20 (48 percent) have regulations limiting VOC emissions from 1 to 14 industrial sources. Those "other" sources included, for example, RACT case-by-case, architectural coatings, ethylene production plants, aerospace coatings, and bubbles.

As previously stated, the 1977 Federal Clean Air Act required States to develop and submit revisions to the State Implementation Plan (SIP) for each ozone nonattainment area to provide sufficient emission reductions to demonstrate attainment of the ambient standard for ozone. The U.S. Environmental Protection Agency (EPA) has specified as required by the Clean Air Act that the SIP revisions for areas designated as not attaining the ozone standard should contain, as a minimum, regulations for controlling VOC emissions from stationary sources. These regulations must provide for the implementation of RACT. To assist the States in defining RACT, the EPA's Office of Air Quality Planning and Standards (OAQPS) prepared a series of VOC CTG documents (Groups I, II, and III). Individual stationary source categories are addressed by the documents. Since EPA cannot publish CTGs for all affected VOC source categories, States will have to develop regulations using information sources other than CTGs. States with SIPs showing attainment by the end of 1982 must contain emission control regulations covering CTG Groups I and II. States unable to show attainment of the ozone standard by 1982 were granted extensions for attainment up to 1987. Revised SIPs were required to be submitted to EPA by July 1, 1982. In addition, the 1982 ozone SIP policy required regulation development for Group III CTG categories and for all other non-CTG VOC sources that have a potential to emit 100 tons per year (T/yr) or more. Should a State determine that it cannot attain the ozone standard by December 31, 1987, then extraordinary measures including the control of non-CTG VOC sources less than 100 T/yr will be required. Through the Clearinghouse, experience implementing control programs for these source categories and those in CTG Groups I, II, and III will be shared.

Finally, a number of areas without extensions have been found to not have attained the ozone standard by 1982. These areas will be required to modify their SIPs to include CTG Group III regulations and the other post-1982 SIP requirements. The following tables reflect VOC regulation requirements for state ozone nonattainment areas.

TABLE 1. CONTROL TECHNIQUES GUIDELINES FOR GROUPS I, II, III.<sup>1</sup>

Source Category	Control Techniques Guideline	EPA Number	NTIS Number	Date
Group I:				
Surface coating of automobiles and light-duty trucks	Control of Volatile Organic Emissions from Existing Stationary Sources, Volume II: Surface Coating of Cans, Coils, Paper, Fabrics, Automobiles, and Light-Duty Trucks	EPA-450/2-77-008	PB 272445	May 1977
Surface coating of cans	Control of Volatile Organic Emissions from Existing Stationary Sources, Volume II: Surface Coating of Cans, Coils, Paper, Fabrics, Automobiles, and Light-Duty Trucks	EPA-450/2-77-008	PB 272445	May 1977
Surface coating of metal coils	Control of Volatile Organic Emissions from Existing Stationary Sources, Volume II: Surface Coating of Cans, Coils, Paper, Fabrics, Automobiles, and Light-Duty Trucks	EPA-450/2-77-008	PB 272445	May 1977
Surface coating of paper products	Control of Volatile Organic Emissions from Existing Stationary Sources, Volume II: Surface Coating of Cans, Coils, Paper, Fabrics, Automobiles, and Light-Duty Trucks	EPA-450/2-77-008	PB 272445	May 1977
Surface coating of fabrics	Control of Volatile Organic Emissions from Existing Stationary Sources, Volume II: Surface Coating of Cans, Coils, Paper, Fabrics, Automobiles, and Light-Duty Trucks	EPA-450/2-77-008	PB 272445	May 1977

(continued)

Table 1. (Continued)

Source Category	Control Techniques Guideline	EPA Number	NTIS Number	Date
Surface coating of metal furniture	Control of Volatile Organic Emissions from Existing Stationary Sources, Volume III: Surface Coating of Metal Furniture	EPA-450/2-77-032	PB 278257	December 1977
Surface coating of magnet wire	Control of Volatile Organic Emissions from Existing Stationary Sources, Volume IV: Surface Coating of Insulation of Magnet Wires	EPA-450/2-77-033	PB 278258	December 1977
Surface coating of large appliances	Control of Volatile Organic Emissions from Existing Stationary Sources, Volume V: Surface Coating of Large Appliances	EPA-450/2-77-034	PB 278259	December 1977
Fixed-roof petroleum storage	Control of Volatile Organic Emissions from Storage of Petroleum Liquids in Fixed Roof Tanks	EPA-450/2-77-036	PB 276749	December 1977
Bulk gasoline plants	Control Volatile Organic Emissions from Bulk Gasoline Plants	EPA-450/2-77-035	PB 276722	December 1977
Tank truck gasoline loading terminals	Control of Hydrocarbons from Tank Truck Gasoline Loading Terminals	EPA-450/2-77-026	PB 275060	December 1977
Gasoline service stations Stage I control	Design Criteria for Stage I Vapor Control Systems-Gasoline Service Stations	N/A	Not available from NTIS <sup>2</sup>	November 1975
Miscellaneous refinery Sources	Control of Refinery Vacuum Producing Systems, Wastewater Separators, and Process Unit Turnarounds	EPA-450/2-77-025	PB 275662	October 1977
Cutback asphalt	Control of Volatile Organic Compounds from Use of Cutback Asphalt	EPA-450/2-77-037	PB 278185	December 1977

(continued)

TABLE 1. (continued)

Source Category	Control Techniques Guideline	EPA Number	NTIS Number	Date
Solvent metal cleaning	Control of Volatile Organic Compound Emissions from Solvent Metal Cleaning	EPA-450/2-77-022	PB 274557	November 1977
Group II:				
Leaks from petroleum refinery equipment	Control of Volatile Organic Compound Leaks Petroleum Refinery Equipment	EPA-450/2-78-026	PB 286150	June 1978
Surface coating of miscellaneous metal parts and products	Control of Volatile Organic Emissions from Existing Stationary Sources, Volume VI: Metal Parts and Products	EPA-450/2-78-015	PB 286157	June 1978
Surface coating of flat wood paneling	Control of Volatile Organic Emissions from Existing Stationary Sources Volume VII: Factory Surface Coating of Flat Wood Paneling	EPA-450/2-78-032	PB 286199	June 1978
Manufacture of synthesized pharmaceutical products	Control of Volatile Organic Emissions from Manufacture of Synthesized Pharmaceutical Products	EPA-450/2-78-029	PB 290580	December 1978
Manufacture of pneumatic rubber tire	Control of Volatile Organic Emissions from Manufacture of Pneumatic Rubber Tires	EPA-450/2-78-030	PB 290557	December 1978
Graphic arts-rotogravure and flexography	Control of Volatile Organic Emissions from Existing Stationary Sources, Volume VIII: Graphic Arts-Rotogravure and Flexography	EPA-450/2-78-033	PB292490	December 1978

(continued)



TABLE 1. (continued)

Source Category	Control Techniques Guideline	EPA Number	NTIS Number	Date
Petroleum liquid storage in external floating roof tanks	Control of Volatile Organic Emissions from Petroleum Liquid Storage in External Floating Roof Tanks	EPA-450/2-78-047	PB 290579	December 1978
Perchloroethylene dry cleaning systems	Control of Volatile Organic Emissions from Perchloroethylene Dry Cleaning Systems	EPA-450/2-78-050	PB 290613	December 1978
Leaks from gasoline tanks trucks and vapor collection systems	Control of Volatile Organic Compound Leaks from Gasoline Tank Trucks and Vapor Collection Systems	EPA-450/2-78-051	PB 290568	December 1978
Group III:				
Large petroleum dry cleaners	Control of Volatile Organic Compound Emissions from Large Petroleum Dry Cleaners	EPA-450/3-82-009	PB 83-124875	September 1982
Manufacture of high density polyethylene, polypropylene, and polystyrene resins	Control of Volatile Organic Compound Emissions from Manufacture of High Density Polyethylene, Polypropylene, and Polystyrene Resins	EPA-450/83-008	PB 84-134600	November 1983
Natural gas/gas processing plants	Control Volatile Organic Compound Equipment Leaks from Natural Gas/Gasoline Processing Plants	EPA-450/2-83-007	PB 84-161520	December 1983
SOCHI fugitive emissions	Control of VOC Fugitive Emissions from Synthetic Organic Chemical, Polymer, and Resin Manufacturing Equipment	EPA-450/3-83-006	PB 84-189372	March 1984
	Fugitive Emission Sources of Organic Compounds. Additional Information on Emissions, Emission Reductions, and Costs	EPA-450/3-82-010	PB 82-217126	April 1982

(continued)

Table 1. (Continued)

Source Category	Control Techniques Guideline	EPA Number	NTIS Number	Date
SOCMI - Air Oxidation	Control Technique Guideline Document- VOC Emissions from Air Oxidation Process in the Synthetic Organic Chemical Manufacturing Industry.	EPA-450/3-84-015	Not available	December 1984

1 These documents can be obtained through the:  
National Technical Information Service (NTIS)  
U.S. Department of Commerce  
5205 Port Royal Road  
Springfield, Virginia 22161  
Telephone No. to order documents through NTIS: (703) 487-4600

2 A copy of this document can be obtained through:  
Chemical and Petroleum Branch  
Emissions Standards and Engineering Division  
U.S. Environmental Protection Agency  
MD-13  
Research Triangle Park, N.C. 27711  
Telephone No. (919) 541-5571

## TABLE 2.

**KEY**

TABLE 2.  
STATE SUMMARY OF VOC REGULATIONS  
CTG GROUPS I, II  
REGIONS VI-X

KEY	VOC REGULATIONS	VI				VII				VIII				IX				X									
		ARKANSAS	LOUISIANA	NEW MEXICO	OKLAHOMA	TEXAS	IOWA	KANSAS	MISSOURI (KC)	MISSOURI (ST. L)	NEBRASKA	COLORADO	MONTANA	NORTH DAKOTA	SOUTH DAKOTA	UTAH	WYOMING	ARIZONA	CALIFORNIA—BAY AREA	CALIFORNIA—SAN DIEGO	CALIFORNIA—SOUTH COAST	HAWAII	NEVADA	ALASKA	IDAHO	OREGON	WASHINGTON
○ NO REGULATIONS; NO SOURCES IN NONATTAINMENT AREA	GROUP I • SURFACE COATING —CANS —COILS —PAPER —FABRICS —AUTOS/LIGHT-DUTY TRUCKS —METAL FURNITURE —MAGNET WIRE —LARGE APPLIANCES • PETROLEUM LIQUIDS IN FIXED-ROOF TANKS • BULK TERMINALS • BULK PLANTS • SERVICE STATIONS—STAGE 1 • PETROLEUM REFINERIES (MISCELLANEOUS SOURCES) • CUTBACK ASPHALT • SOLVENT METAL CLEANING (DEGREASERS)																										
● NO REGULATIONS; SOURCES ARE 4100 TPD																											
● EPA APPROVED REGULATION																											
★ REGULATION NOT CONSISTENT WITH CTG																											
☆ APPROVAL PENDING																											
□ UNDER DEVELOPMENT																											

KEY

- NO REGULATIONS
- NO REGULATIONS; NO SOURCES IN NONATTAINMENT AREA
- NO REGULATIONS; SOURCES ARE <100 TPY
- EPA APPROVED REGULATION
- ★ REGULATION NOT CONSISTENT WITH CTG
- ☆ APPROVAL PENDING
- UNDER DEVELOPMENT

TABLE 2.

**KEY**

11 TABLE 2.  
STATE SUMMARY OF VOC REGULATIONS  
CTG GROUP III AND OTHER RELATED REGULATIONS  
REGIONS VI-X

[illegible]

TABLE 3. VOC REGULATIONS REQUIRED BY VARIOUS STATES

Areas	Group I	Group II	Group III	Other Sources >100 TPY	Additional Measures
Urbanized ozone Nonattainment Non- extension areas not presently subject to a SIP Call (Table 4)	X (>100 TPY)	X (>100 TPY)	-	-	-
Rural nonattainment (Table 5)	X (>100 TPY)	X (>100 TPY)	-	-	-
Urbanized areas requesting extensions beyond 1982 (Table 6)	X	X	X	X	<sup>1</sup> X
1984 & 1985 SIP Call Areas (Tables 7 & 8)	X	X	X	X	<sup>1</sup> X
<sup>2</sup> Urbanized ozone ex- tension areas not likely to attain by 1987	X	X	X	X	X
States classified as attainment areas for ozone (Table 9)					
VOC compounds exempted from regulation by States (Rule 66 Status) (Table 10)					

<sup>1</sup>  
If necessary to attain by 1987.

<sup>2</sup>  
EPA is in the process of determining those additional measures that may be required of such areas.

TABLE 4. URBANIZED OZONE NONATTAINMENT NON-EXTENSION  
AREAS NOT PRESENTLY SUBJECT TO A SIP CALL

=====		
EPA Region	State <sup>a</sup>	Non-extension Area
II	NY	Albany Co., Schenectady Co.
III	PA	Cumberland Co., Dauphin and Perry Counties
IV	FL	Duval Co, Hillsborough, Orange, and Pinellas Counties
	GA	Muscogee County
	NC	Mecklenburg County
	TN	Hamilton and Knox Counties
V	IN	Marion County
	MI	Clinton, Eaton, Genesee, Ingham, Kent, and Ottawa Counties
	OH	Delaware, Franklin, Greene, Lucas, Mahoning, Miami, Montgomery, Preble, Stark, and Trumbell Counties
VI	AR	Pulaski County
	LA	Jefferson Parish, Orleans and St. Bernard Parishes
	TX	Nueces County
X	WA	Tacoma County

<sup>a</sup>

All areas are counties, except Louisiana (parishes).



TABLE 5. RURAL NONATTAINMENT AREAS

EPA Region	State	Nonattainment Area <sup>a</sup>
I	ME	Androscoggin, Cumberland, Franklin, Kennebec, Knox, Lincoln, Oxford, Sagadahoc, Somerset, Waldo, York
	NH	Belknap, Cheshire, Hillsborough, Merrimack, Rockingham, Strafford, Sullivan
II	NY	Cloumbia, Dutchess, Greene, Orange, Putnam, Rensselaer, Saratoga, Ulster
III	PA	Adams, Bedford, Berks, Blair, Bradford, Cambria, Cameron, Carbon, Centre, Clarion, Clearfield, Clinton, Columbia, Crawford, Elk, Erie, Fayette, Forest, Franklin, Fulton, Greene, Huntington, Indiana, Jefferson, Juniata, Lancaster, Lawrence, Lebanon, Lycoming, McKean, Mercer, Mifflin, Monroe, Montour, Northumberland, Pike, Schuylkill, Snyder, Somerset, Sullivan, Susquehanna, Tioga, Union, Venango, Warren, Wayne, Wyoming, York
IV	AL	Etowah, Russell
	GA	Coweta, Douglas, Fayette, Henry, Paulding, Rockdale
	KY	Boyd
	SC	York
	TN	Bradley, Maury, Roane, Rutherford, Sullivan, Sumner, Williamson, Wilson
V	IL	Macoupin, Williamson

<sup>a</sup>

All areas are counties, except Louisiana (parishes).

TABLE 5. (Continued)

EPA Region	State	Nonattainment Area <sup>a</sup>
V	MI	Allegan, Barry, Bay, Berrien, Branch, Calhoun, Cass, Gratiot, Hillsdale, Huron, Ionia, Jackson, Kalamazoo, Lapeer, Lenawee, Livingston, Marquette, Midland, Monroe, Montcalm, Muskegon, Saginaw, St. Clair, St. Joseph, Sanilac, Shiawassee, Tuscola, Van Buren, Washtenaw, Ashtabula, Clark, Clinton, Columbia, Geauga, Jefferson, Licking, Sheboygan
VI	LA	Ascension, Beauregard, Bossier, Caddo, Calcasieu, Grant, Iberville, Lafayette, Pointe Coupee, St. Charles, St. James, St. John the Baptist, St. Mary, West Baton Rouge
	TX	Brazoria, Galveston, Gregg, Jefferson, Orange, Victoria
VII	KS	Douglas
IX	CA	Butte, Imperial, Kings, Madera, Merced, Sutter, Tulare, Yuba
X	OR	Jackson, Marion, Polk

<sup>a</sup>

All areas are counties, except Louisiana (parishes).

TABLE 6. URBANIZED AREAS REQUESTING EXTENSIONS BEYOND 1982

EPA Region	State	Metropolitan Area	County
I	CT	Statewide	Fairfield, Hartford, Litchfield, Middlesex, New Haven, New London, Tolland, Windham
	MA	Statewide	Barnstable, Berkshire, Bristol, Dukes, Essex, Franklin, Hampden, Hampshire, Middlesex, Nantucket, Norfolk, Plymouth, Suffolk, Worcester
II	NJ	Statewide	Atlantic, Bergen, Burlington, Camden, Cape May, Cumberland, Essex, Gloucester, Hudson, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Passaic, Salem, Somerset, Sussex, Union, Warren
	NY	New York City	Bronx, Kings, Nassau, New York, Queens, Richmond, Rockland, Suffolk, Westchester
III	DE	Wilmington	New Castle
	DC	Washington	District of Columbia
	MD	Baltimore	Anne Arundel, Baltimore, Carroll, Harford, Howard, Baltimore City
		Washington	Montgomery, Prince George's
	PA	Pittsburgh	Allegheny, Armstrong, Beaver, Butler, Washington, Westmoreland
		Philadelphia	Bucks, Chester, Delaware, Montgomery, Philadelphia
		Allentown	Lehigh, Northampton
IV	VA	Washington	Arlington, Fairfax, Loudoun, Prince William
	KY	Cincinnati, Louisville	Boone, Campbell, Kenton, Jefferson
V	IL	Chicago	Cook, DuPage, Kane, Lake, McHenry, Will
		St. Louis	Madison, Monroe, St. Clair
	IN	Louisville	Clark, Floyd
		Chicago	Lake, Porter
	MI	Detroit	Macomb, Oakland, Wayne
	OH	Cincinnati	Butler, Clermont, Hamilton, Warren
		Cleveland	Cuyahoga, Lake, Lorain, Medina
	WI	Milwaukee	Kenosha, Milwaukee, Ozaukee, Racine, Waukesha

(Continued)

TABLE 6. (Continued)

EPA Region	State	Metropolitan Area	County
VI	TX	Houston	Harris
VII	MO	St. Louis	Franklin, Jefferson, St. Charles, St. Louis County and City
VIII	CO	Denver	Adams, Arapahoe, Boulder, Denver, Douglas, Jefferson
	UT	Salt Lake City	Davis, Salt Lake
IX	CA	San Francisco Bay Area	San Mateo, Alameda, Contra Costa; Marin, Napa, San Francisco, Santa Clara, Yolo
		North Central Coast	Solano, Sonoma, Stanislaus
		Stockton	Monterey, San Benito, Santa Cruz, San Joaquin
		South Coast	San Joaquin
		Santa Barbara	Orange, San Bernadino, Los Angeles, Riverside
		Fresno	Santa Barbara
		Ventura-Oxnard	Fresno
		Sacramento	Ventura
		San Diego	Sacramento, El Dorado, Solano, Placer
X	OR	Portland	San Diego
	WA	Seattle	Clackamas, Multnomah, Washington
		Vancouver	King, Pierce, Snohomish
			Clark

TABLE 7. 1984 SIP CALL AREAS

EPA Region	State	Area	Reason
III	PA	Scranton (Lackawanna Co.) Wilkes Barre (Luzerne Co.)	Violation Std. in Scranton 81-82
	VA	Richmond City-Henrico Co. Chesterfield Co.	Violation 83
IV	AL	Jefferson Co.	Violation 81-83
	FL	Dade Co.	Violation 81-82
		Broward Co.	Violation 81-82
		Palm Beach Co.	Violation 81-82
	GA	Atlanta Metropolitan Area	Violation 81-83
		Clayton Co.	Violation 81-83
		Cobb Co.	Violation 81-83
		Coweta Co.	Violation 81-83
		Dekalb Co.	Violation 81-83
		Douglas Co.	Violation 81-83
		Fayette Co.	Violation 81-83
		Fulton Co.	Violation 81-83
		Gwinnett Co.	Violation 81-83
		Henry Co.	Violation 81-83
		Paulding Co.	Violation 81-83
		Rockdale Co.	Violation 81-83
	TN	Memphis - Shelby Co.	Violation 83
V	IN	St. Joseph Co.	Failure to submit RACT
		Elkhart Co.	Failure to submit RACT
	OH	Portage Co. Summit Co.	Violation 81-83 Violation 81-83
VI	LA	Baton Rouge	Violation 83
	OK	Tulsa Co.	Violation 83
	TX	Dallas Co.	Violation 83
		Denton Co.	Violation 83
Tarrant Co.		Violation 83	
El Paso Co.		Violation 83	
IX	AZ	Maricopa Co.	Violation 82
	CA	Kern Co.	Violation 82
	NV	Clark Co.	Violation 82-83

TABLE 8. 1985 SIP CALL AREAS

EPA Region	State	Area	Reason
VII	MO	Kansas City Metro. area	Violation 83-84
		Clay Co.	Violation 83-84
		Jackson Co.	Violation 83-84
		Platte Co.	Violation 83-84
	KS	Johnson Co.	Violation 83-84
		Wyandotte Co.	Violation 83-84

TABLE 9. STATES CLASSIFIED AS ATTAINMENT FOR OZONE - VOC  
REGULATIONS ARE NOT REQUIRED

EPA Region	State
I	Vermont
III	West Virginia
IV	Mississippi
V	Minnesota
VII	Iowa Nebraska
VIII	Montana North Dakota South Dakota Wyoming
IX	Hawaii
X	Alaska Idaho





TABLE 10. EXEMPTIONS OF COMPOUNDS BY STATE

EPA Region	State	1,1,1 a	CFC-113 b	CFC-11 c	CFC-12 d	CFC-22 e	FC-23 f	CFC-114 g	CFC-115 h	Comments
I	CT	X	X	X						CC & OTVD only
	ME	X	X	X						
	MA	X	X	X						
	NH	X	X	X						
	RI	X	X	X						
II	VT	O	O	O						No exemptions Attainment
	NJ	X	X	X						Octamethylcyclotetrasiloxane also exempt
	NY	X	X	X						
	(City & Upstate)									
	DE	X	X	X						
III	DC	X	X	X						
	MD	X	X	X						
	PA	X	X	X						
	VA	X	X	X						
	WV	O	O	O						No exemptions Attainment
IV	AL	X	X	X						
	FL	X	X	X						
	GA	X	X	X						
	KY	X	X	X						
	MS	O	O	O						Only exemptions are for methane and ethane Attainment
V	NC	X	X	X						Acetonitrile also exempt
	SC	X	X	X						
	TN	X	X	X						
	IL	X	X	X						
	IN	X	X	X						
	MI	X	X	X						
	OH	X	X	X						
	MN	O	O	O						Only exemptions are for methane and ethane Attainment
	WI	X	X	X						

(Continued)

TABLE 10. Continued

EPA Region	State	Chemical										Comments
		<sup>a</sup> 1,1,1 2 2	<sup>b</sup> CHCl <sub>3</sub>	<sup>c</sup> CFC-113	<sup>d</sup> CFC-11	<sup>e</sup> CFC-12	<sup>f</sup> CFC-22	<sup>g</sup> FC-23	<sup>h</sup> CFC-114	<sup>i</sup> CFC-115		
VI	AR	X	X	X		X	X	X	X	X	Solvent metal cleaning operations not regulated	
	LA	X	X	+								
	IN	+	+	+								
	OK	X	X	X		X		X	X	X		
VII	TX	X	X	X	X	X	X	X	X	X	Attainment Attainment	
	KS	X	X	X		X		X	X	X		
	MO	X	X	X		X		X	X	X		
	IA	O	O	O	O	O	O	O	O	O		
VIII	NE	O	O	O	O	O	O	O	O	O	Attainment Attainment Attainment Attainment	
	CO	X	X	X	X	X	X	X	X	X		
	MT	O	O	O	O	O	O	O	O	O		
	ND	O	O	O	O	O	O	O	O	O		
IX	SD	O	O	O	O	O	O	O	O	O	Attainment Attainment Attainment Attainment	
	UT	X	X	X	X	X	X	X	X	X		
	WY	O	O	O	O	O	O	O	O	O		
	AZ	X	X	X								
X	CA	X	X	X							Attainment No exemptions Attainment Attainment	
	HA	O	O	O	O	O	O	O	O	O		
	NV											
	AK	O	O	O	O	O	O	O	O	O		
	ID	O	O	O	O	O	O	O	O	O	Attainment Attainment	
	OR	X	X	X		O		O	O	O		
	WA	X	X	X								

<sup>a</sup> 1,1,1-Trichloroethane (methyl chloroform)  
<sup>b</sup> Methylene chloride  
<sup>c</sup> Trichlorotrifluoroethane (CFC-113)  
<sup>d</sup> Trichlorofluoromethane  
<sup>e</sup> Dichlorodifluoromethane  
<sup>f</sup> Chlorodifluoromethane  
<sup>g</sup> Trifluoromethane  
<sup>h</sup> Dichlorotetrafluoroethane  
<sup>i</sup> Chloropentafluoroethane

X Exempt  
O Attainment; no VOC regs.  
+ No solvent cleaning regs.

REGION III

Delaware

District of Columbia

Maryland

Pennsylvania

Virginia

West Virginia

NOTE: The entire State of West Virginia has been classified as an attainment area for ozone. The State has regulations for three source categories. These are included as additional information for the reader.

DELAWARE

Regulation No. XXIV Control of Volatile Organic Compound Emissions

- Section 1. General provisions
- Section 2. Petition for alternative control (reserved)
- Section 3. Disposal of volatile organic compounds (reserved)
- Section 4. Gasoline dispensing facilities - Stage I
- Section 5. Delivery vessels
- Section 6. Bulk gasoline plants
- Section 7. Bulk gasoline terminals
- Section 8. Petroleum liquid storage
- Section 9. Surface coating operations
- Section 10. Miscellaneous petroleum refinery sources
- Section 11. Solvent metal cleaning
- Section 12. Cutback asphalt
- Section 13. Dry cleaning
- Section 14. Petroleum refinery component leaks
- Section 15. Rotogravure and flexographic printing
- Section 16. Manufacture of synthesized pharmaceutical products

STATE: DELAWARE

ATTAINMENT DATE: 1987

GEOGRAPHIC COVERAGE: New Castle County

## GENERAL EXEMPTIONS:

- 1) Sources emitting <10 lb/day, except solvent metal cleaning sources; 2) sources of methane, ethane, trichlorotrifluoroethane, methyl chloroform or methylene chloride; 3) sources located in Kent or Sussex Counties; and 4) conforming sanitary landfills.

Category	Reg. No.	State Limit or Requirement	Exemptions	EPA Action	Comments
Auto & Light Duty Truck Surface Coating	XXIV Section 9	1b VOC/gal (minus water) Effective Yr 78-83 83 84 85	Coating lines emitting <40 lb/day per facility	Approval	
		<u>Lacquer Coatings</u>			
		Prime coat	1.2		
		Surfacer	3.0		
		Topcoat	5.0		
		Final repair	6.5		
		<u>Enamel Coatings</u>			
		Prime coat/ surfacer	4.2		
		Topcoat	3.4		
		Final repair	1.4		
Surface Coating Cans				Approval	The State has certified that no facilities are known to exist in the nonattainment area.
Surface Coating Metal Coils	XXIV Section 9.3	2.6 lb VOC/gal (minus water) - effective 1982	Coating lines emitting <40 lb/day per facility	Approval	
Surface Coating Paper	XXIV Section 9.3	2.9 lb VOC/gal (minus water) - effective 1982	Coating lines emitting <40 lb/day per facility	Approval	

STATE: DELAWARE

Category	Reg. No.	State Limit or Requirement	Exemptions	EPA Action	Comments
Surface Coating Fabrics	XXIV Section 9.3	Fabric - 2.9 lb VOC/gal (minus water) Vinyl - 3.8 lb VOC/gal (minus water) both effective 1982	Coating lines emitting <40 lb/day per facility	Approval	
Surface Coating Metal Furniture	XXIV Section 9.3	3.0 lb VOC/gal (minus water) - effective 1978	Coating lines emitting <40 lb/day per facility	Approval	
Surface Coating Large Appliances	XXIV Section 9.3	2.8 lb VOC/gal (minus water) - effective 1982	Same as Surface Coating Metal Furniture		
Surface Coating of Insulation of Magnet Wire		No regulation		Approval	State has certified that no facilities are known to exist in the nonattainment area
Petroleum Liquids in Fixed Roof Tanks	XXIV Section 8	Floating roofs with seals, no visible holes in seals, or equivalent control  Covers on all openings	<40,000 gallon tanks and petroleum liquids with <1.5 psia true vapor pressure.	Approval	

STATE: DELAWARE

Category	Reg. No.	State Limit or Requirement	Exemptions	EPA Action	Comments
Bulk Gasoline Plants	XXIV Section 6	Submerged fill and vapor balance or equivalent control >90% efficient Vapor-tight requirement <100% LEL of propane when measured at periphery of potential leak Repair within 5 days of leak detection Pressure requirements		Approval	
Gasoline Loading Terminals	XXIV Section 7	Vapor recovery system, emissions limited to 80 mg/liter, and other specific requirements Test procedures to determine compliance. Compliance with tank truck pressure relief settings <100% LEL propane when measured at periphery of potential leak. Repair within 5 days of leak detection		Approval	
Service Stations Stage I	XXIV Section 4	Vapor balance or recovery system >90% efficient Vapor-tight delivery vessel and collection line.	Tanks with a capacity of <2000 gal.	Approval	

STATE: DELAWARE

Category	Reg. No.	State Limit or Requirement	Exemptions	EPA Action	Comments
Miscellaneous Refinery Sources	XXIV Section 10	Controls on vacuum producing systems, covers on wastewater separators, and other specific provisions. Controlled depressurization of a process unit to 5 psig or less prior to a process unit turnaround		Approval	
Solvent Metal Cleaning	XXIV Section 11	Requirements similar to CTG - Cold cleaning facilities - Open top vapor degreasers - Conveyorized degreasers Test procedures to determine compliance		Approval	
Cutback Asphalt	XXIV Section 12	Use of cutback asphalt is prohibited from May 1 to September 30, and otherwise, only in emergency situations Solvent constituents of emulsified asphalt $\leq 7\%$ by volume		Approval	
Refinery Leaks	XXIV Section 14	Test and record leaks with conc. $>10,000$ ppm Repair and retest leaking components as soon as possible but $<15$ days Monitoring - yearly, quarterly, weekly, within 24 hrs. when leak observed, relief valve vented, and after repair	VOC liquid with vp $\leq 0.1$ psia	Approval	
Surface Coating of Miscellaneous Metal Parts	XXIV Section 9	If incineration system used, must oxidize 90% of VOC to CO <sub>2</sub> and H <sub>2</sub> O. Overall VOC reduction efficiency $>80\%$ Drying (Forced Air) 3.5 lb VOC/gal (minus water) Extreme Performance 3.5 lb VOC/gal (minus water) All Others 3.0 lb VOC/gal (minus water)	Coating lines emitting $<40$ lb/day per facility	Approval	



Category	Reg. No.	State Limit or Requirement	Exemptions	EPA Action	Comments
Surface Coating of Flatwood Paneling	-	No regulation	-	-	-
Pharmaceutical Manufacture	XXIV Section 16	<p>Surface condensers or equivalent control - specific provisions Exhaust systems and air dryers emit VOC reduced:</p> <p>&gt;90% if &gt;330 lb/day emissions  &lt;15 lb/day if &lt;330 lb/day emissions</p> <p>Requirements for storage tanks:</p> <ul style="list-style-type: none"> <li>- pressure/vacuum conservation vents</li> <li>- enclose processes with exposed liquid surfaces</li> <li>- cover in-process tanks</li> </ul> <p>Repair leaks as soon as possible  Test procedures to determine compliance</p>	Sources of VOC emit <15 lb/day	Approval	
Rubber Tire Manufacturer	-	No regulation	-	-	-
Graphic Arts	XXIV Section 15	<p>Inks:</p> <ul style="list-style-type: none"> <li>- Waterborne - &lt;25% organic solvent and &gt;75% water</li> <li>- High solids - &gt;60% non-volatile material (minus water)</li> </ul> <p>Fume capture and add-on control system such that VOC reduced</p> <ul style="list-style-type: none"> <li>- &gt;75% from publication rotogravure</li> <li>- &gt;65% from packaging rotogravure</li> <li>- &gt;60% from flexography</li> </ul>	<7.7 tons ink/year	Approval	Alternate Emission Reduction Plan is available

Category	Reg. No.	State Limit or Requirement	Exemptions	EPA Action	Comments
Petroleum Liquid Storage-Floating Roof Tank	XXIV Section 8	<p>If external, must have a rim-mounted secondary seal which covers entire primary seal; few exceptions are noted</p> <p>All openings covered and with a projection below liquid surface</p> <ul style="list-style-type: none"> <li>- No visible holes, tears, openings</li> <li>- Intact, uniform</li> <li>- &gt;1/8 in gap accumulate to <math>\leq 1.0</math> in 2/ft</li> </ul> <p>Routine inspections required</p>	<40,000 gal capacity with liquid with TVP <0.5 psia	Approval	
Drycleaning - Perchloroethylene	XXIV Section 13	<p>Maintenance requirements:</p> <ul style="list-style-type: none"> <li>- Immediate repair of leaks</li> <li>- &lt;24 lb VOC/100 lb wet waste from diatomaceous earth filters</li> <li>- &lt;60 lb VOC/100 lb wet waste from solvent stills</li> <li>- Filters drained <math>\geq 24</math> hrs before discarding</li> </ul> <p>Exhaust vented through control device-emit <math>\leq 100</math> ppm VOC before dilution</p> <p>Required testing to determine compliance</p>		Approval	

STATE: DELAWARE

Category	Reg. No.	State Limit or Requirement	Exemptions	EPA Action	Comments
Gasoline Tank Trucks	XXIV Sections 4-5	<p>Section 4:</p> <ul style="list-style-type: none"> <li>- No detectable leaks</li> <li>- Pressure change restrictions</li> <li>- &lt;100% LEL of propane at periphery of potential leak source</li> <li>- 15 days to repair leaks</li> </ul> <p>Section 5:</p> <ul style="list-style-type: none"> <li>- Vapor-tight requirement</li> <li>- Loading only at bulk gasoline terminals or plants</li> <li>- Vapor balance system requirements</li> <li>- Operating permits, testing for certification and to determine compliance</li> </ul>	Certified delivery vessel to <2000 gal tanks	Approval	

DISTRICT OF COLUMBIA

Section 8-2:707 Control of Organic Compounds

- (a) Storage of petroleum products
- (b) Volatile organic compounds or gasoline loading into tank trucks, trailers and railroad tank cars
- (c) Volatile organic compounds or gasoline transfer vapor control
- (d) Control of evaporative losses from the filling of vehicular fuel tanks
- (e) Dry cleaning operation
- (f) Organic solvents
- (g) Pumps and compressors
- (h) Waste gas disposal from ethylene producing plant
- (i) Waste gas disposal from vapor blow-down system
- (j) Solvent cleaning (degreasing)
- (k) Asphalt operations

STATE: DISTRICT OF COLUMBIA  
 ATTAINMENT DATE: 1987 (based on 0.08 ppm)  
 GEOGRAPHIC COVERAGE: Washington, DC

GENERAL EXEMPTIONS: 1,1,1-Trichloroethane, Freon 113, methylene chloride

Category	Reg. No.	State Limit or Requirement	Exemptions	EPA Action	Comments
Auto & Light Duty Truck Surface Coating					
Surface Coating Cans					
Surface Coating Metal Coils					
Surface Coating Paper					
Surface Coating Fabrics		No regulations		Approval	District has certified that no sources are known to exist in the nonattainment area.
Surface Coating Metal Furniture					
Surface Coating Large Appliances					
Surface Coating of Insulation of Magnet Wire					
Miscellaneous Refinery Sources					
Petroleum Liquids in Fixed Roof Tanks	8-2:707(a)	Floating roof, or vapor control system; if VP $\leq$ 11.0 psia  Gas-tight gauging and sampling devices	Tanks <40,000 gallons Distillate with VP <1.5 psia	Approval	SIP covers storage of petroleum products and is applicable to Fixed Roof Tanks, Bulk Gasoline Plants and Gasoline Loading Terminals.

Category	Reg. No.	State Limit or Requirement	Exemptions	EPA Action	Comments
Bulk Gasoline Plants	8-2:707(a) 8-2:707(b)	Loading of trucks or trailers: vapor recovery system with 90% efficiency. Loading arm must have vapor collecting adaptor. There shall be a vapor tight seal between adaptor and hatch.  Pressure tank, floating roof, or vapor recovery system.		Approval	SIP covers storage of petroleum products and is applicable to Fixed Roof Tanks, Bulk Gasoline Plants and Gasoline Loading Terminals.
Gasoline Loading Terminals	8-2:707(a) 8-2:707(b)	Same as Bulk Gasoline Plants		Approval	
Service Stations Stage I	8-2:707(d)	Submerged fill pipe, and vapors displaced must be collected by a vapor recovery system with at least 90% efficiency		Approval	SIP requires Stage II Controls as well
Solvent Metal Cleaning	8-2:707(j)	Cold cleaners - similar to CTG OTVD - similar to CTG ConveyORIZED degreasers - similar to CTG		Approval	
Cutback Asphalt	8-2:707(k)	Prohibited use from April through September	Except in specific circumstances where the Mayor makes the decision to allow its use.	Approval	

STATE: DISTRICT OF COLUMBIA

Category	Reg. No.	State Limit or Requirement	Exemptions	EPA Action	Comments
Refinery Leaks					
Surface Coating of Miscellaneous Metal Parts					
Surface Coating of Flatwood Paneling		No regulations			
Pharmaceutical Manufacture					
Rubber Tire Manufacture					
Graphic Arts					
Petroleum Liquid Storage- Floating Roof Tank					
Drycleaning- Perchloroethylene					
Gasoline Tank Trucks	8-2:707(c)	Vapor-tight vapor return system Trucks refilled only at facilities where 90% VOC vapors displaced during refilling Testing for compliance with leak standards; subsequent certification Vapor-tight requirement		Approval	Containers with <2,000 gal installed prior to promul- gation of this paragraph, provided, said containers equipped with submerged fill pipes Transfers to storage tanks equipped with floating roofs or equivalent Transfer to containers <250 gal.

Category	Reg. No.	State Limit or Requirement	Exemptions	EPA Action	Comments
Service Stations- Stage II	8-2:707(d)	"Vapor-tight vapor return system", vapor-tight seal required. Specific requirements for fill nozzle, vapor return line, gasoline dispensing system		Approval	
Petroleum Dry Cleaners	8-2:707(e)	<85% reduction of uncontrolled organic emissions Incineration used as control: >90% carbon oxidized to CO <sub>2</sub>	Perchloroethylene, 1,1,1-trichloroethane, or saturated halogenated hydrocarbons Emit <3 lb/hr and <15 lb/day	Approval	
Organic Solvents	8-2:707(f)	Photochemically reactive solvents: <15 lb/day or <3 lb/hour emitted into atmosphere unless uncontrolled organic emissions are reduced by at least 85%  Non-photochemically reactive solvents: <40 lb/day; <8 lb/hour emitted into atmosphere unless uncontrolled organic emissions 285% reduced	Dry cleaning operations	Approval	Applicable to any article, machine, equipment or other contrivance
Waste Gas Disposal from Ethylene Pro- ducing Plant	8-2:707(h)	<20 lb/day emitted unless waste gas stream burned at 1,300 OF for >0.3 seconds	Accidental or emergency emissions of hydrocarbons	Approval	
Waste Gas Disposal from Vapor Blow-Down System	8-2:707(i)	No emission of hydrocarbon gases unless burned by smokeless flares or equally effective approved control device	Accidental or emergency emissions of hydrocarbons	Approval	



MARYLAND

10.18.06 General Emission Standards, Prohibitions, and Restrictions

.06 Volatile organic compounds

10.18.11 Control of Petroleum Refineries and Petroleum Product Installations, including Asphalt Paving, Asphalt Concrete Plants, Motor Vehicle Fuel Storage, and Use of Waste Oils

.02 Asphalt paving

.04 Petroleum refineries

10.18.13 Control of Gasoline and Volatile Organic Compound Storage and Handling

.01 Definitions

.02 Applicability

.03 Large storage tanks

.04 Loading operations in areas III and IV

.05 Gasoline leaks from tank trucks and vapor control system in areas III and IV

10.18.21 Volatile Organic Compounds from Specific Processes

.01 Definitions

.02 Applicability, determining compliance, and reporting

.03 Automotive and light-duty coating

.04 Can coating

.05 Coil coating

.06 Large appliance coating

.07 Paper, fabric, and vinyl coating

.08 Metal furniture coating

.09 Volatile organic compound metal cleaning

.10 Graphic Arts

.11 [Reserved]

.12 Dry cleaning facilities

.13 Miscellaneous metal coating

.14 Manufacture of synthesized pharmaceutical products

GENERAL EXEMPTIONS: Methyl Chloroform, Freon 113

STATE: MARYLAND  
 ATTAINMENT DATE: 1987  
 GEOGRAPHIC COVERAGE: Anne Arundel, Baltimore, Carroll, Harford, Howard, Montgomery, Prince Georges, and Washington Counties, and the City of Baltimore

Category	Reg. No.	State Limit or Requirement	Exemptions	EPA Action	Comments
Auto & Light Duty Truck Surface Coating	10.18.21.03	Prime coat	1b/gal minus water 1.2	Approval	
		Primer surface	2.8		
		Topcoat	2.8		
		Final repair	4.8		
Surface Coating Cans	10.18.21.04	Sheet basecoat (ext. & int. overvarnish, or two piece can exterior), basecoat & overvarnish	2.8	Approval	
		Two and three piece interior body spray, two piece can exterior end coating	4.2		
		Three piece can side seam spray	5.5		
		End seal compound coating	3.7		
Surface Coating Metal Cans	10.18.21.05	2.6 lb/gal of coating, minus water		Approval	
Surface Coating Paper	10.18.21.07	2.9 lb/gal of coating, minus water		Approval	

Category	Reg. No.	State Limit or Requirement	Exemptions	EPA Action	Comments
Surface Coating Fabrics	10.18.21.07	Fabric coating - 2.9 lb/gal of coating, minus water Vinyl coating - 3.8 lb/gal of coating, minus water		Approval	
Surface Coating Metal Furniture	10.18.21.08	3.0 lb/gal of coating, minus water		Approval	
Surface Coating Large Applicances	10.18.21.06	2.8 lb/gal of coating, minus water	Quick-drying lacquers for repair of nicks and scratches	Approval	
Surface Coating of Insulation of Magnet Wire		No regulations		Approval	The State has certified that no facilities exist in the nonattainment areas.
Miscellaneous Refinery Sources					
Petroleum Liquids in Fixed Roof Tanks	10.18.13.03A	True V.P. <11 psia equipped with floating roof and seals, pressure tank, vapor recovery system, or other equipment of equal or greater efficiency	VOC has TVP <1.5 psia <40,000 gal. capacity built before 5/18/78	Approval	

Category	Reg. No.	State Limit or Requirement	Exemptions	EPA Action	Comments
Bulk Gasoline Plants	10.18.13.058	(B)(1)(a) Tank trucks must maintain a pressure change of not more than 3 inches of water in 5 minutes when pressurized to a gauge pressure of 18 inches of water, or evacuated to a gauge pressure of 18 inches of water. (a) Vapor control system requirements and gasoline loading equipment to prevent exceedance of gauge pressure in (B)(1)(a).		Approval	
Gasoline Loading Terminals	10.18.13.04A	Vapor recovery system equipped with fittings which are vapor tight and will automatically close upon disconnection so as to prevent release of VOC from these fittings.	Existing system <40,000 gal/day throughput New system <20,000 gal/day throughput	Approval	
Service Stations Stage I	10.18.13.048 (1)	Vapor balance system capable of at least 90% control of emissions or an equally effective vapor discharge control system	<20,000 gal monthly avg. throughput	Approval	
Solvent Metal Cleaning	10.18.21.09	Cold cleaners - similar to CTG OTVD - similar to CTG Conveyorized degreasers - similar to CTG No VOC metal cleaning without utilizing equipment and procedures in MSAQP TM 78-010	OTVD - <10.8 ft <sup>2</sup> Conveyorized degreasers - <21.5 ft <sup>2</sup>	Approval	

STATE: MARYLAND

Category	Reg. No.	State Limit or Requirement	Exemptions	EPA Action	Comments
Cutback Asphalt	10.18.11.02	Prohibited from use	Long-life stockpile storage is necessary The use or application from October 15 through April 15 as necessary Use solely as a penetrating prime coat	Approval	
Refinery Leaks	10.18.11.04(C)	Leaking Components - Repair leak within 15 days - Tag and identify leaking components Monitoring - Annually, quarterly, weekly, Inspection - Immediately when seal is leaking liquid; immediately after re-pair of leaking component, <24 hours after venting. Other operational requirements	Refinery discharge <10,000 ppm	Approval	
Surface Coating of Miscellaneous Metal Parts	10.18.21.13	Emissions Standards: Coating Types lbs/gal of Coating Applied (minus water) High Performance 3.5 Clear Coating 4.3 Standard 3.0	<20 lb/day VOC Operations covered by Reg. .03-.10 of this chapter	Approval	

Category	Reg. No.	State Limit or Requirement	Exemptions	EPA Action	Comments
Surface Coating of Flatwood Paneling		No regulations			
Pharmaceutical Manufacture	10.18.21.14	<p>Limitations on outlet gas temperature with varying psia of VOC</p> <p>90% reduction of VOC discharge of 40 lbs/day VOC</p> <p>Vapor balance system, 90% efficient in reduction of VOC emissions; or pressure - conservation vents set at .05 psia</p> <p>Enclose or cover centrifuge and filters which contain VOCs.</p> <p>Repair leaks as expeditiously as possible</p>	<p>Potential Emissions of &lt;15 lb/day of VOC</p> <p>&lt;2000 gal capacity, &lt;VOC with &lt;1.5 psia</p>		
Rubber Tire Manufacture		No regulations			
Graphic Arts	10.18.21.10	<p>&lt;550 lbs/day VOC emissions unless discharge is reduced by:</p> <p>Flexography 60%</p> <p>Packaging 65%</p> <p>Publication 75%</p> <p>&lt;15 lbs/day VOC emissions from web printing unless discharge is reduced by ≥85%</p>	<p>Roll printing if VOC Approval content of ink is &lt;25% by volume if mixed with water ≤ 40% by volume</p> <p>Textile printing</p> <p>Web printing having a hot-air high velocity dryer and condensing-electrostatic precipitator control device installed before 1-1-79.</p>		

STATE: MARYLAND

Category	Reg. No.	State Limit or Requirement	Exemptions	EPA Action	Comments
Petroleum Liquid Storage, Floating Roof Tank	10.18.13.03B	For VOC with TVP <11 psia: - Continuous rim-mounted secondary seal - no holes, tears, openings - uniform and intact seal - >1/8 in gap accumulate <1.0 in <sup>2</sup> /ft Openings covered when not in use Semiannual inspections and testing	VOC with TVP <1.5 psia <40,000 gal capacity	Approval	
Drycleaning - Perchloroethylene	10.18.21.12	Vent exhaust through control method 90% efficient reduction in VOC emissions or <100 ppmv of VOC emitted Diatomaceous earth filters - <25 Kg of VOC/100 Kg wet waste Still bottoms - <60 Kg VOC/100 Kg wet waste Drain filtration cartridges for >24 hrs before discarding	<55 gal/month of perchloroethylene	Approval	
Gasoline Tank Trucks	10.18.13.05	Pressure change restrictions Delivery vessels must pass pressure and vacuum tests to obtain certification each year Concentration of emissions to atmos. <100% of lower explosive limit of propane when measured 1.0 in from source			
<p>NOTES: 1. Emission standard can also be achieved by incineration, provided 90% of VOC is oxidized to CO<sub>2</sub> and H<sub>2</sub>O, or by an equally efficient control system.</p>					

## PENNSYLVANIA

### Sources of Volatile Organic Compounds

- 129.51 General
- 129.52 Surface coating processes
- 129.53 Alternative standards allowing internal effects for surface coating facilities
- 129.54 Seasonal operation of auxiliary incineration equipment
- 129.55 Petroleum refineries - specific sources
- 129.56 Storage tanks greater than 40,000 gallons (152,000 liters) capacity containing volatile organic compounds
- 129.57 Storage tanks less than or equal to 40,000 gallons (152,000 liters) capacity containing volatile organic compounds
- 129.58 Petroleum refineries - fugitive sources
- 129.59 Bulk gasoline terminals
- 129.60 Bulk gasoline plants
- 129.61 Small gasoline storage tank control (stage I control)
- 129.62 General standards for bulk gasoline terminals, bulk gasoline plants, and small gasoline storage tanks
- 129.63 Degreasing operations
- 129.64 Cutback asphalt paving
- 129.65 Ethylene production plants
- 129.66 Compliance schedules and final compliance dates
- 129.67 Graphic arts systems
- 129.68 Manufacture of synthesized pharmaceutical products
- 129.69 Manufacture of pneumatic rubber tires
- 129.70 Perchloroethylene dry cleaning facilities



## GENERAL EXEMPTIONS: None

STATE: PENNSYLVANIA  
 ATTAINMENT DATE: 1982, except for Allegheny, Armstrong, Beaver, Butler, Bucks, Chester, Delaware, Lehigh, Northampton, Philadelphia, Montgomery, Washington, and Westmoreland Counties, 1987.  
 GEOGRAPHIC COVERAGE: Statewide (See Note 2)

Category	Reg. No.	State Limit or Requirement	Exemptions	EPA Action	Comments
Auto & Light Duty Truck Surface Coating	129.52	1b VOC/gal (minus water)  Prime coat Top coat Repair	facilities emitting ≤500 lb/day or 50 TPY	Approval	See Note 1
Surface Coating Cans	129.52	1b VOC/gal (minus water)  Sheet basecoat Two piece can exterior Two and three piece can interior body spray Two piece can end exterior Side seam spray End sealing compound	facilities emitting ≤500 lb/day or 50 TPY	Approval	See Note 1
Surface Coating Metal Coils	129.52	2.60 1b VOC/gal (minus water)	facilities emitting ≤500 lb/day or 50 TPY	Approval	See Note 1
Surface Coating Paper	129.52	2.92 1b VOC/gal (minus water)	facilities emitting ≤500 lb/day or 50 TPY	Approval	See Note 1
Surface Coating Fabrics	129.52	Fabric - 2.92 1b VOC/gal (minus water) Vinyl - 3.76 1b VOC/gal (minus water)	facilities emitting ≤500 lb/day or 50 TPY	Approval	See Note 1
Surface Coating Metal Furniture	129.52	3.00 1b VOC/gal (minus water)	facilities emitting ≤500 lb/day or 50 TPY	Approval	See Note 1
Surface Coating Large Appliances	129.52	2.84 1b VOC/gal (minus water)	facilities emitting ≤500 lb/day or 50 TPY	Approval	See Note 1

Category	Reg. No.	State Limit or Requirement	Exemptions	EPA Action	Comments
Surface Coating of Insulation of Magnet Wire	129.52	1.67 lb VOC/gal (minus water)	facilities emitting $\leq 500$ lb/day or 50 TPY	Approval	See Note 1
Petroleum Liquids in Fixed Roof Tanks	129.56	Pressure tank capable of maintaining working pressure or control devices: 1. external/internal floating roof for VOC with vp $\leq 11.0$ psia 2. $\geq 80\%$ efficient vapor recovery system	Storage tanks with a capacity of $\leq 40,000$ gal and petroleum liquids with a vapor pressure $\leq 4.5$ psia at storage conditions	Approval	See Note 3
Petroleum Liquids in Small Fixed Roof Tanks	129.57	Pressure relief valves set to release at $>0.7$ psig of pressure or $\geq 0.3$ psig of vacuum	$<2,000$ gal capacity $>40,000$ gal capacity with vp $\leq 1.5$ psia	Approval	See Note 3
Bulk Gasoline Plants	129.60	Vapor balance systems on tanks in plants with an average daily throughput of $>12,000$ gallons for deliveries to the bulk plant and an average daily throughput of $>16,000$ gallons for transfer from the bulk plant to delivery trucks	Delivery truck tanks with $\leq 250$ gallon capacity	Approval	Applies to all plants regardless of size, which either 1) service tanks controlled under $\$129.61$ or 2) are located in area controlled in $\$129.61(a)$ See Note 3
Gasoline Loading Terminals	129.59	A vapor collection and disposal system which controls emissions to $\leq 0.0668$ lb/100 gal of gasoline loaded. Vapor - tight seal between the adaptor and the latch of the tank	Delivery truck tanks with $\leq 250$ gallon capacity	Approval	See Note 3

Category	Reg. No.	State Limit or Requirement	Exemptions	EPA Action	Comments
Service Stations Stage I	129.61	Vapor balance system	Tanks with <2000 gal capacity Facilities with <60,000 gal. annual throughput	Approval	Regulation is applicable in 15 counties and the Harrisburg Area Transportation Study area. See Note 3
Miscellaneous Refinery Sources	129.55	<ul style="list-style-type: none"> <li>a) vapor loss control devices on wastewater separators receiving 200 gal/day or more VOC</li> <li>b) mechanical seals on pumps and compressors with vp &gt;1.5 psi</li> <li>c) &gt;90% efficient method to control VOC emission from vacuum producing system, i.e., piping vapors to firebox, incinerator, add to refinery fuel gas</li> <li>d) control VOC emissions from depressurization during process unit turnarounds until the internal pressure of affected equipment is &lt;19.7 psia.</li> </ul>		Approval	
Solvent Metal Cleaning	129.63	Provisions are similar to CTG	ConveyORIZED and cold cleaning degreasers with openings <10 ft <sup>2</sup> .	Approval	
Cutback Asphalt	129.64	Prohibits use of cutback asphalt Limits percentage of solvent in emulsion asphalts	<ul style="list-style-type: none"> <li>1) long-life stockpile storage;</li> <li>2) use between 10/31 and 4/30, as necessary;</li> <li>3) use as a penetrating prime coat, tack coat, dust palliative or pre-coating of aggregate</li> <li>4) limited skin patching in October</li> </ul>	Approval	

Category	Reg. No.	State Limit or Requirement	Exemptions	EPA Action	Comments
Drycleaning - Perchloroethylene	129.70	Emissions vented through condenser or carbon adsorption system Filters - 1) <25% VOC from diatomaceous earth filters 2) <60% VOC in wet waste material from solvent stills 3) All drained for <24 hrs before discarding Repair of units leaking VOC <24 hrs of discovery	<100 TPY VOC emitted	Approval	Applicable in 15 counties and in Harrisburg area Transportation study area
Gasoline Tank Trucks	129.62	Vapor balance system: - Pressure change restrictions - <100% LEL of propane measured 1 inch from potential leak source No visually- or audibly-detectable leaks Relief valves set to release >0.7 psig of pressure or >0.3 psig of vacuum Testing and certification requirements for trucks loading in area specified in Section 129.61(a)	Trucks with <4800 gal capacity exempt from subsections (c) and (d) of this section	Approval	
Ethylene Production Plants	129.65	No emission unless gas stream is burned at >1300°F for at least 0.3 seconds Gases burned by smokeless flares		Approval	

NOTES: 1) Reg. 129.53 allows the bubble concept to be used by surface coating facilities  
2) Local regulations for Allegheny County also exist  
3) General standards for bulk gasoline terminals, bulk gasoline plants and small gasoline storage tanks are set up in Section 129.62

## VIRGINIA

### Emission Standards for Gaseous Pollutants (Rule EX-5)

#### 4.52 Hydrocarbon emissions

- (a) General
- (b) Effluent water separators
- (c) Storage of volatile organic compounds
- (d) Bulk loading of volatile organic compounds
- (e) Gasoline transfer vapor control
- (f) Evaporative losses from filling vehicular tanks
- (g) Submerged fill-storage vessel
- (h) Pumps and compressors
- (i) Waste gas disposal
- (j) Liquid organic compounds
- (k) Architectural coatings
- (l) Disposal and evaporation of liquid organic compounds

#### 4.54 Volatile Organic Compound Emissions - General

- (a) General
- (b) [Reserved]
- (c) Solvent metal cleaning
- (d) Disposal
- (e) Incinerators/Afterburners
- (f) Filling of storage tanks
- (g) Volatile organic compound storage - fixed roof tanks
- (h) Volatile organic compound storage - floating roof tanks

#### 4.55 Volatile Organic Compound Emissions - Coating Industry

- (a) General
- (b) Plant-wide emission reduction plans
- (c) Large appliance coating
- (d) Magnet wire coating
- (e) Automobile and light duty truck coating
- (f) Can coating
- (g) Metal coil coating
- (h) Paper and fabric coating
- (i) Vinyl coating
- (j) Metal furniture coating
- (k) Miscellaneous metal parts and products coating
- (l) Flatwood paneling coating
- (m) Graphic arts

4.56 Volatile Organic Compound Emissions - Petroleum Industry

- (a) General
- (b) Gasoline bulk loading - bulk terminals
- (c) Miscellaneous petroleum refinery sources
- (d) Transfer of gasoline - gasoline dispensing facilities - Stage I
- (e) Gasoline bulk loading - bulk plants
- (f) Tank trucks/account trucks and associated vapor collection systems
- (g) Petroleum liquid storage - fixed roof tanks
- (h) Petroleum liquid storage - floating roof tanks
- (i) Petroleum refinery fugitive emissions - leaks

4.57 Volatile Organic Compound Emissions - Miscellaneous Industry

- (a) General
- (b) Asphalt paving operations
- (c) Synthesized pharmaceutical products manufacturing
- (d) Pneumatic rubber tire manufacturing
- (e) Dry cleaning (perchloroethylene)

STATE: VIRGINIA  
ATTAINMENT DATE:

1982, except for the Richmond Metropolitan area which includes Chesterfield and Henrico Counties and the Washington Metropolitan area which includes Fairfax, Loudoun, and Stafford Counties, 1987.

GEOGRAPHIC COVERAGE: Arlington, Chesterfield, Fairfax, Henrico, Loudoun, Prince William, and Stafford Counties and the Cities of Hampton, Newport News, and Norfolk

GENERAL EXEMPTIONS: 1) Sources with VOC emissions up to 7.3 tons/yr, 40 lb/day and 8 lb/hr determined in a manner acceptable to the Board (see Note 1). 2) Sources exclusively for chemical or physical analysis or determination of product quality and commercial acceptance (with provisions) 3) methyl chloroform, and methylene chloride.

Category	Reg. No.	State Limit or Requirement	Exemptions	EPA Action	Comments
Auto & Light Duty Truck Surface Coating	4.55(e) (1)(2)(3) (4)(5)	Prime application - coating 3.2 lb/gal (excluding water)  Topcoat application - coating 4.8 lb/gal (excluding water)  Final repair application - coating 4.8 lb/gal (excluding water)	Wheel enamels, anti-rust coatings and sealers not associated with prime or topcoat application to the vehicle body	Approval	See Notes 1, 2
Surface Coating Cans	(4.55(f)) (1)(2)(3)(4)	Sheet basecoat and overvarnish; two piece can exterior: 2.8 lb/gal coating (excluding water)  Two and three piece can interior body spray; two piece can exterior end: 4.2 lb/gal of coating (excluding water)  Three piece can side-seam spray: 5.5 lb/gal of coating (excluding water)  End sealing compound coating: 3.7 lb/gal of coating (excluding water)		Approval	See Notes 1, 2

Category	Reg. No.	State Limit or Requirement	Exemptions	EPA Action	Comments
Surface Coating Metal Coils	4.55 (g)(1)(2)	2.6 lb/gal of coating (excluding water)		Approval	See Notes 1, 2
Surface Coating Paper and Fabrics	4.55(h)(1) (2)(3)(4)	2.9 lb/gal of coating (excluding water)	Production of packaging materials (printing of words) and printing operations (rotogravure)	Approval	See Notes, 1, 2
Surface Coating Metal Furniture	4.55(j) (1)(2)	3.0 lb/gal of coating (excluding water)		Approval	See Notes 1, 2
Surface Coating Large Appliances	4.55(c) (1)(2)(3)	Single coat application - 2.8 lb/gal of coating (excluding water)  Topcoat application - 2.8 lb/gal of coating (excluding water)	Quick drying lacquers for repairs of scratches and nicks, provided that the volume does not exceed 2 qts./8 hr period.	Approval	See Notes 1, 2
Surface Coating of Insulation of Magnet Wire	4.55(d) (1)(2)	1.7 lb/gal of coating (excluding water)		Approval	See Notes 1, 2
Surface Coating of Vinyl	4.55(1) (1)(2)	3.8 lb/gal of coating (excluding water)		Approval	See Notes 1, 2



STATE: VIRGINIA

Category	Reg. No.	State Limit or Requirement	Exemptions	EPA Action	Comments
Petroleum Liquids in Fixed Roof Tanks	4.56(g) (1)(2)(3) Appendix M	Equipped with a control method providing 90% efficiency. Should be a pressure tank or be designed or equipped with an internal floating roof or control system of greater efficiency. No holes, tears, opening in seals or seal fabrics - cover all openings Exterior surfaces painted white (with regular repainting)	<40,000 gallon capacity <400,000 gallon capacity for crude oil or condensate stored prior to lease custody transfer.	Approval	See Note 1
Bulk Gasoline Plants	4.56(e) (1)(2) Appendix M	Vapor control system providing at least 77% efficiency Submerged fill plus a vapor balance system or any control system of greater efficiency. No leaks (vapor tight connections) Pressure relief valves should be set to release at no <0.7 psi or the highest possible pressure	Facilities located in rural VOC emission control areas. <4,000 gal day	Approval	See Note 1
Gasoline Loading Terminals	4.56(b) (1)(2)	No VOC >.67 lb/1000 gal of gasoline loaded Controls - 1) Compression-refrigeration-adsorption system 2) Refrigeration system 3) Oxidation system	Sources with liquids of vp <1.5 psia <7.3. TPY, 40 lb/day, and 8 lb/hr.	Approval	See Note 1

Category	Reg. No.	State Limit or Requirement	Exemptions	EPA Action	Comments
Service Stations State 1	4.56(d) (1)(2)(3)	Vapor control system with at least a 90% efficiency, i.e. submerged fill pipe, vapor tight system (no leaks or losses in pressure) on adsorption or condensation system.  Pressure relieve valves on storage containers cannot release <0.7 psi or the highest possible pressure	<2000 gallon capacity Transfers in rural VOC emission control areas Total avg. throughput <20,000 gal/mo Storage tanks used mainly for refueling mobile farm equipment, transfer, made to storage tanks with floating roofs or their equivalent.	Approval	See Note 3
Miscellaneous Refinery Sources	4.56(c) (1)(2)(3)	Vacuum producing systems - vapor control system of at least a 95% efficiency: i.e., vent noncondensibles to a firebox or incinerator or compress vapors & add to the refinery fuel gas. Hot wells - covered & equipped with a vapor recovery system.  Wastewater separators - vapor control system of at least 95% efficiency i.e. solid cover (sealed) a floating roof, or any control system of greater efficiency  Process unit turnaround - vapor control system of at least 95% efficiency. i.e., flare. (depressurized to 5 psig or below)	None	Approval	

STATE: VIRGINIA

Category	Reg. No.	State Limit or Requirement	Exemptions	EPA Action	Comments
Solvent Metal Cleaning	4.54(c) (1)(i)(11)	Cold cleaning - similar to CTG OTVD - similar to CTG Conveyorized degreasing - similar to CTG	Cold cleaning - solvent volatility <0.6 psi at 100°F or if solvent is heated <120°F and degreaser open area <20 ft <sup>2</sup> OTVD - <10 ft <sup>2</sup> conveyorized degreasing - <20 ft <sup>2</sup>	Approval	See Note 1 SIP was revised to exclude the Washington Area from the small source exemption rule.
Cutback Asphalt	4.57(b) (1)(2)(3)	Only emulsified asphalt allowed for paving operations Permitted used when: 1) stockpile storage longer than 1 month is necessary 2) application as a prime coat or tack coat is necessary 3) user demonstrates no VOC emissions under normal use	<60% by volume of VOC Nov-Mar application Manufacture & application of heated asphalt cement as a component in asphaltic concrete mixing or for priming in surface treatment	Approval	
Refinery Leaks	4.56(1)	Leak - VOC conc. >10,000 ppm Every reasonable effort to repair leak within 15 days Monitoring, records, reporting by owner using procedures acceptable to the Board Line containing VOC sealed with second value or equivalent		Approval	Does not apply to safety values

Category	Reg. No.	State Limit or Requirement	Exemptions	EPA Action	Comments
Surface Coating of Miscellaneous Metal Parts	4.55(k) (1)(2)(3)(4)	Clear coating - 4.3 lb/gal coating minus water) Forced air dryers - 3.5 lb/gal coating (minus water) Extreme performance - 3.5 lb/gal coating (minus water) All other coatings - 3.0 lb/gal coating (minus water)	Vehicle refinishing operations Customized coating of <20 vehicles/day Aircraft, marine vessels	Approval	See Note 1
Surface Coating of Flatwood Paneling	4.55(l) (1)(2)(3)(4)	Printed Panels - <6.0 lb/1,000 ft <sup>2</sup> of coated surface Natural Finish Panels <12.0 lb/1,000 ft <sup>2</sup> of coated surface Class II Finish - <10.0 lb/1,000 ft <sup>2</sup> of coated surface	Exterior sliding, tile board or particle board used as a furniture component	Approval	See Note 1
Pharmaceutical Manufacture	4.57(c)	Vapor control system that is >90% efficient for all phases of process Temperature and pressure requirements for surface condensation units Required control system listed Filling of storage tanks: vapor control system - submerged fill pipe - vapor recovery system - vapor balance system no leaks pressure relief valves set to release >0.7 psf vapor-tight	<2000 gal. capacity VOC with vp <4.1 psia	Approval	See Note 1

STATE: VIRGINIA

Category	Reg. No.	State Limit or Requirement	Exemptions	EPA Action	Comments
Pharmaceutical Manufacture (Continued)	4.57(c)	<p>VOC storage:</p> <ul style="list-style-type: none"> <li>- vapor control system</li> <li>- pressure/vacuum condensation vent set at <math>\pm 0.030</math> psi</li> <li>- vent condensation system</li> <li>- carbon adsorption system</li> <li>- internal floating roof</li> </ul> <p>no visible holes, tears all openings covered exterior of tank painted white</p> <p>General: Enclosed exposed liquid surfaces Cover in-process tanks Repair leaks as soon as practical</p>			
Rubber Tire Manufacture	4.57(d)	<p>Undertread, Tread End Cementing or Beading Dipping:</p> <p>85% efficient vapor control system</p> <ul style="list-style-type: none"> <li>- carbon adsorption</li> <li>- incineration - if 90% VOC are oxidized</li> </ul> <p>Green Tire Spraying:</p> <p>95% efficient vapor control system</p> <ul style="list-style-type: none"> <li>- water based sprays</li> <li>- carbon adsorption</li> <li>- incineration if 90% VOC are oxidized</li> </ul>		Approval	See Note 1

Category	Reg. No.	State Limit or Requirement	Exemptions	EPA Action	Comments
Graphic Arts	4.55(m) (1)-(7)	Printing process: Flexographic - $\geq 60\%$ VOC emission controlled Packaging Rotogravure - $\geq 65\%$ VOC emissions controlled Publication Rotogravure - $\geq 65\%$ VOC emissions controlled	Processes using high-solid inks with $\geq 60\%$ non-volatile material Lithography or letterpress printing $< 100$ TPY VOC emitted	Approval	See Note 1
Petroleum Liquid Storage - Floating Roof Tank	4.56(h)	Control method with $> 90\%$ efficiency Various seal closure devices required depending on the type of tank. Seal Closure Devices No visible holes, tears Intact and uniform seal Gaps $> 1/8$ in accumulate to $< 1.0$ in <sup>2</sup> /ft of tank All openings covered Exterior of tank painted white Routine inspections and main- tenance of records required.	$< 40,000$ gal capacity for crude oil, condensate Tanks storing waxy, heavy pour crude oil	Approval	See Note 1

STATE: VIRGINIA

Category	Reg. No.	State Limit or Requirement	Exemptions	EPA Action	Comments
Drycleaning - Perchloroethylene	4.57(e)	No liquid leakage of solvent Max. concentration of solvent in vent from dryer control device <100 ppm (before dilution) Filter wastes:  <55 lb solvent/200 lb wet waste from diatomaceous earth filters <132 lb solvent/220 lb wet waste from solvent still Filtration cartridges drained >24 hrs. before discarding Any system reducing waste losses below 2.2 lb solvent/ 220 lb clothes cleaned will be considered equivalent	Plants with inadequate space for adsorber	Approval	
Gasoline Tank Trucks	4.56(f) (1)-(15)	Designed, maintained and certi- fied to be vapor-tight VOC conc. <100% LEL at 2.5 cm from potential leak source Vapor collection and disposal system pressure requirements Repair within 15 days trucks found to not be vapor-tight		Approval	

STATE: VIRGINIA

Page 10 of 10

Notes: 1. Section 4.54(a)(4); 4.55(a)(4); 4.56(a)(4); 4.56(a)(5). (except for parts (c), (d), (f), and (i); and 4.57(a)(4) except for (b) and (e). provide a general exemption for VOC sources less than 7.3 tons/year, 40 lb/day, of 8 lb/yr. There is no justification for this exemption in EPA's view. This does not meet RACT.

2. Emission standards generally provide that acceptable compliance be achieved by the use of low solvent content coating technology. An owner may implement a plant-wide emission reduction plan, instead of having each coating line comply with the emission standards.

3. Facilities <20,000 gal/mo. (especially in the Richmond area) are regulated by 4.54(f). Control method >60% efficiency



WEST VIRGINIA

Chapter 16-20

Regulation XXI - Emissions of VOCs from storage of petroleum liquids in fixed roof tanks

Regulation XXIII - Emissions of VOCs from bulk gasoline terminals

Regulation XXIV - Emissions of VOCs from petroleum refinery sources

STATE: WEST VIRGINIA  
 ATTAINMENT DATE: See Note 1.  
 GEOGRAPHIC COVERAGE: Putnam and Kanawha Counties, and Valley Magisterial District of Fayette County.

GENERAL EXEMPTIONS: None

Category	Reg. No.	State Limit or Requirement	Exemptions	EPA Action	Comments
Petroleum Liquid Storage in Fixed Roof Tanks	XXI Sub-Sec. 4.01 (a)(b)	Equip with internal floating roof which has closure seal(s), vapor recovery system, or an equally effective alternative control system.	Storage tanks capacities <416,000 gallons (1.6 x 10 <sup>6</sup> liters) used to store produced crude oil and condensate prior to transfer.	See Note 2	
	4.01 (a)(b)				
	Sub-Sec. 4.02(a)(b)	Tanks equipped with floating roofs should have good integrity and have all openings, except stub drains equipped with covers or seals that are closed at all times except when in actual use.			
Miscellaneous Refinery Sources	XXIV Sub-Sec. 4.01(a)	Prohibits emissions of non-condensable VOCs from condensers, hot wells, or accumulators at refineries with vacuum producing systems.		See Note 2	
	4.02(a)	Oil/water separators shall be covered or sealed at all openings during all times except when in use.			
	4.03(a)(b)	Minimize VOC emissions during process unit turnarounds by venting to a control system, flare or firebox, and maintaining process unit internal pressure <19.7 psia.			

Category	Reg. No.	State Limit or Requirement	Exemptions	EPA Action	Comments
Gasoline Loading Terminals	XXIII Sub-Sec. 4.01	Emissions of VOCs during loading not to exceed 80 mg/l of product loaded.	Sources emitting >6.8 kilograms in any one day, nor	See Note 2	
	4.02	Vapor control system that does not allow >80 mg/l emissions.	>1.4 kg in any one hour.		

Note 1: West Virginia is classified as an attainment area for ozone. The State does contain regulations for three VOC sources categories.

Note 2: EPA has not approved these regulations. They are included as additional information for the reader.

Appendix 2.0  
Transfer Efficiency Guidelines



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION III

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EPA REGION III

TRANSFER EFFICIENCY DETERMINATION GUIDELINE

November 26, 1986

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## Table of Contents

I.	Objective	Page 1
II.	Applicability and Implementation	Page 1
III.	Definitions	Page 2
IV.	Applicable Standard Methods	Page 5
V.	Number of Coated Products to be Considered in the Test	Page 6
VI.	Number of Coatings Used in the Test	Page 6
VII.	Number of Coating Lines to be Tested	Page 7
VIII.	Size Considerations	Page 7
IX.	Shape Considerations	Page 7
X.	Establishing Operating Parameters	Page 8
XI.	Coating Characteristics	Page 8
XII.	Measurement of the Amount of Coating Used	Page 9
XIII.	Purge	Page 9
XIV.	Test Conditions	Page 9
XV.	Apparatus	Page 9
XVI.	Establishing Baseline TE	Page 10
XVII.	Procedures	Page 12
	A. Lab/Tin Foil Method	Page 12
	B. Historical Method	Page 14
	C. Weight Method	Page 15
	D. Volume Method	Page 20

XVIII.	Changes in Method of Operation, Equipment/Process Modifications and other Changes	Page 24
XIX.	Retesting	Page 24
XX.	Recordkeeping	Page 24
XXI.	References	Page 25

Region III Transfer Efficiency Determination Guideline  
November 26, 1986

I. Objective

The objective of this guideline is to provide an acceptable procedure to make an accurate assessment of the amount of coating solids deposited onto the surface of a coated object relative to the total amount of coating solids used. It also describes the demonstration that must be submitted in support of a source specific SIP revision for an alternate or equivalent method of compliance or to establish emission credits based on improved transfer efficiency (TE).

II. Applicability and Implementation

This guideline applies to sources that propose to demonstrate compliance with applicable volatile organic compound (VOC) coating regulations or to establish VOC emission credits based on improved TE. Where the applicable State SIP does not explicitly provide for compliance or emission trading based on TE, this guideline describes the procedures which must be implemented and the testing which must be accomplished to support the required SIP revision. Where TE is explicitly addressed in a SIP but no test method or compliance determination procedure is indicated in the SIP, this guideline indicates the procedure which should be implemented to document compliance or credit. EPA Region III will use this guideline, where appropriate, to confirm emission credits and compliance.

A facility proposing a compliance program based on TE must develop a source specific test protocol to demonstrate compliance or show the amount of credit realized by improved TE over a baseline period; submit the protocol to the appropriate regulatory agency for approval; perform the test procedure in accordance with the approved protocol; and, submit the test results with a full engineering description and analysis of the actual test and the results to the appropriate regulatory agency. Any variations from the approved protocol should be fully described and the reasons for any variation should be stated. Compliance determinations and credits will only be accepted if they are supported by real, source specific data indicative of actual operating and production conditions. Except under very limited circumstances involved with the establishment of a TE baseline, (see Historical Method, Section XVII B) estimates of TE based on equipment manufacturer's suggested values or any other technical analysis which is not supported by source specific data is not acceptable.



### III. Definitions

- applied coating solids - The volume of dried or cured coating solids which is deposited and remains on the surface of the coated object (target).

- air atomized spray - Spray coating method in which the coating is atomized by mixing it with compressed air before the coating leaves the nozzle.

- airless spray - Spray coating method in which the coating is atomized by forcing it through a small opening at high pressure. The liquid coating is not mixed with air before exiting from the nozzle.

- air flow rate - The amount of air circulating through a spray booth. Air is circulated to keep the levels of combustibles below the lower explosive limit (LEL) and/or to comply with OSHA standards.

- automatic electrostatic spray - Electrostatic spray applied by a robot or other self-acting mechanism where an electrical charge acting as an attractive agent draws the coating to the nearest ground (substrate).

- atomizing air pressure - The air pressure delivered to the applicator nozzle to atomize the paint (coating) as it leaves the applicator nozzle.

- application equipment - The equipment used to apply the coating to the target. This generally consists of the spray head and any associated piping, and electrical components for electrostatic operations.

- baseline data - Data which relates the quantity and composition of coatings and associated thinning and purging solvents, with the application equipment and other parameters necessary to determine the VOC emissions and TE of coating equipment on any coating line(s) during a specific baseline period.

- baseline TE - The TE of application equipment in use during the baseline period within a specific industrial category. Baseline TEs have been established for use with the emission limits recommended in certain control techniques guidelines (CTGs). The baseline TE for automobile and light duty truck guidecoat and topcoat operations is 30%. The baseline for large appliance and metal furniture coating is 60%. Although EPA has not established TE values for sources covered by the Surface Coating of Miscellaneous Metal

Parts CTG, it suggests a default value of 60%, except where higher TEs are likely (e.g., interior coating of tanks, drums, tubes, etc.). The default value may be used if the source chooses not to do a baseline test or insufficient information exists to determine a baseline TE.

- baseline equipment - Application equipment in use during the baseline period.

- baseline period - The twelve (12) month period immediately preceding the date a State adopted an applicable VOC coating regulation.

- base coat - Generally the first color coat, over a primed target, of a two coat operation.

- clear coat - Generally the final coat applied over a base coat.

- coating application pressure - See paint/coating application pressure.

- coating solids - The nonvolatile component of any coating being used.

- compliance coating - Coatings which meet the regulatory limits specified in approved air pollution control regulations.

- electrostatic spray application - An electrical charge supplied at a controlled voltage on an electrode at the spray gun tip creating an attractive force drawing the paint toward the nearest ground (substrate).

- film thickness - The thickness of the dry cured coating on the substrate. Film thickness varies with application, but coatings on metals generally range from 0.5 to 4.0 mils.

- low-solvent coating - A coating which contains a substantially lower amount of VOC's than conventional organic solvent borne coatings. Low solvent coatings usually fall into the three major groups of higher solids, waterborne or powder coatings.

- line speed - The speed, or movement under normal operating conditions, of the target through the coating booth and all associated subsequent operations.

- manual electrostatic spray- Manually applying coatings using electrostatic spray application equipment.

- mil - A unit of length (thickness) equal to one thousandth of an inch.

- nozzle - The end of the coating applicator through which the coating exits the applicator and which consists of various configurations and diameter openings depending upon the spray pattern desired, degree of atomization of the coating particles and spray application method.

- paint/coating application pressure - The pressure applied to the coatings to deliver the coatings to the nozzle.

- purge or line purge - The coating material expelled from the spray system when clearing it with a solvent or other cleaning liquids to maintain operating conditions or prior to using the same equipment for coating additional objects with different color or composition coatings.

- relative humidity - The amount of water vapor in the air, expressed as a percentage of the maximum amount that the air can hold at a given temperature.

- surface area - The total area of the target intended for coating.

- solvent borne coating - Coating which contains 95% or more organic solvent in its volatile fraction. If water is present, it is only present in quantities less than 5%.

- temperature - Temperature of the coating prior to application.

- topcoat - The last coat applied in a coating system.

- TE - The ratio of the amount of coating solids deposited onto the surface of the coated part to the total amount of coating solids used.

- viscosity - A measure of a coating's resistance to flow.

- volatile fraction - that part of a coating which consists of water and VOC.

- VOC - Any organic compound which participates in atmospheric photochemical reactions. that is. any organic compound other than those which the Administrator designates as having negligible photochemical reactivity.

- VOC content - All volatile organic compounds contained in a coating and expressed as Kilograms of VOC per liter of coating solids or pounds of VOC per gallon of coating solids.

#### IV. Applicable Standard Methods

- ASTM D 1186-06.01 - Thickness of paints/related coatings, dry film thickness of non-magnetic coatings applied to a ferrous base.

- ASTM D 1200-06.01 - Standard test method for determining the viscosity of paints and related coatings by the Ford viscosity cup test.

- ASTM D 3794-06.01 - Standard test method for determining the viscosity of coil coatings by the Zahn cup method test.

- ASTM D 1475-60 - Standard test method for determining the density of paint. varnish lacquer and related products.

- ASTM D 2369-81 - Standard test method for determining the volatile content of coatings.

- ASTM D 3792-79 - Standard test method for determining the water content of water reducible paint by direct injection into a gas chromatograph.

- ASTM D 4017-81 Standard test method for determining the water content in paints by the Karl Fischer titration method.

- 40 C.F.R.. Part 60, Appendix A, Method 24 (revised July 1. 1985) - To determine the weight of volatile matter, weight of water. density, and weight of solids of surface coatings.

- 40 C.F.R.. Part 60. Appendix A, Method 2 (revised July 1. 1985) - To determine the velocity and volumetric flow rates.

- Volume of solids should be determined from coating formulation data and diluent addition records. especially where a chemical reaction may occur in the curing process. The volume of solids may also be calculated from EPA Method 24 or related ASTM test method results if the density of the VOC solvent (or solvent blend) is known or can be determined.

# V. Number of Coated Products to be Considered in the Test

A. One Product: Where only one item is coated on a particular line the actual number of items tested shall be as follows:

<u>Production/Shift</u>	<u>Items Tested</u>
< 33 items	10 items or actual number coated
33-100 items	30%
100-300 items	30 items
> 300 items	10%

An exception may be made for the coating of large items such as heavy equipment or because of unique circumstances where it can be demonstrated that the amount of items suggested in the table is infeasible or that a reasonably accurate test can be accomplished with a smaller sampling. When using the weight method it may be reasonable to group a number of items and weigh them as a group to determine an overall efficiency.

B. Variable Products: Items and groups of items selected for testing should be representative of typical production and exemplify the full range of shape, size and groups of items typically coated. An equivalent number of tests, as if it were for a single item, will be required for each item or group of items selected for the TE test. Utilizing the matrix in "A" above, at virtually no time should less than ten (10) items be tested; however the number of different items to be tested may be reduced if the source is willing to accept results from coating a limited number of items which are demonstrated to be difficult to coat as a result of their shape and/or size. The source is responsible for describing the various items coated and suggesting the items to be tested. The regulatory agency shall make the final decision as to which items are to be tested. It may also be possible to group different items when using the weight method and determine an overall TE.

# VI. Number of Coatings Used in the Test

If numerous coatings are being used which vary significantly (>10%) in solids content, water content, VOC content, coating density or viscosity, or vary in type of coating

applied (e.g., metallic, lacquer, etc.) then several coatings should be tested. Selection should be made based on the list of characteristics stated here and the full range of variability actually experienced on the job. Where the coatings used do not vary significantly one typical coating may be selected. It is the sources responsibility to consider the various coatings used and suggest which ones should be tested. The regulatory agency shall make the final decision as to which coatings are to be tested.

#### VII. Number of Coating Lines to be Tested

If it can be demonstrated that multiple lines coat the same items, have the same application equipment and operating conditions and use the same coatings, only one line needs to be tested. An individual test should be done on each line that does not meet this criteria.

#### VIII. Size Considerations

Care should be taken to include in the test items which represent the full range of item sizes coated at the plant. It is preferable to include items near the extremes of the size range and a typical sized item. Generally, larger items tend to have higher TEs. In order to reduce cost and minimize testing time, it is considered acceptable to eliminate or minimize the testing of larger items. The TE demonstrated on more typical and extremely small items should produce conservative results which would be acceptable to the regulatory agency.

#### IX. Shape Considerations

Generally, flat surfaces demonstrate higher and more consistent TEs. Irregular shaped objects especially those with crevices and internal corners (e.g., pails, interior corners of metal cabinets) create special problems when applying coatings, especially when electrostatic spray equipment is used. As a result, film thickness may vary and TE determinations based on film thickness measurements may be subject to error if care is not taken. Care should also be taken to select a range of item shapes typical of normal plant production. Tests on irregular shaped objects tend to

generate lower TE. A plan which minimizes or eliminates TE testing of flat objects in favor of irregular shaped ones would be considered conservative and acceptable. Such a plan may be proposed to minimize cost or shorten testing time

#### X. Establishing Operating Parameters

Tests should be conducted under normal operating/production conditions. If conditions vary significantly from line to line or among products, several test runs should be considered which represent the full range of conditions. This requirement may be relaxed if it can be demonstrated that the conditions suggested in the test protocol will generate conservative TE values. If possible, tests should be run during actual periods of production, especially if applicators are manually operated.

#### XI. Coating Characteristics

The following information should be supplied for all coatings used:

A. Vendor, coating name, coating characteristics (e.g., metallic/non-metallic, color, acrylic/enamel, etc.) code or other identification used at the plant.

B. Suppliers material safety data sheets.

C. Amount and type of diluent added per unit of coating delivered.

D. The as applied analysis of the coating (see IV Applicable Standard Methods).

Based on the variation in coatings used, the source should suggest coatings for the test with a full range of characteristics (also see VI, "Number of Coatings Used in the Test"). Several coatings must be tested if there is a significant variance in characteristics (>10%) such as solids, density, VOC content, water content, and viscosity.

The test protocol should include provisions to take and analyze coating samples at the beginning and at the conclusion of the test.

## XII. Measurement of the Amount of Coatings Used

The protocol must provide for the actual measurement of each coating used. This may be accomplished by using an appropriate weight measurement device to weigh the coating supply tank or an appropriate calibrated flow meter. The volume or weight of coating used may be determined by either method by directly reading the measurement device or by multiplying or dividing the readings by the coating density, as appropriate. The actual measurement device should be determined based on source specific considerations and the accuracy needed in the measurement device.

## XIII. Purge

If purge is not recycled or recovered, it must be included with the amount of coatings applied. If the purge is recovered or recycled, the test protocol should measure the raw solvent usage on a weight or volume basis before and after testing and it should be eliminated from consideration in calculating the actual TE.

## XIV. Test Conditions

Tests should be conducted under conditions typical of actual production. Testing during normal production is encouraged, especially for systems which include manual (as opposed to automatic) application techniques. If testing cannot be conducted during normal operating hours, considerable care must be taken to simulate actual production conditions during the test. Fully automatic systems tend to be more amenable to testing during periods other than typical production. In these systems, application rate, line speed, coating application time and other production variables tend to be very constant compared to manual systems.

## XV. Apparatus

- spraying equipment - This system consists of paints/coatings being sprayed, the associated hoses conveying the paints/coatings to the spray guns and the applicators.

- weighing equipment - This consists of the equipment necessary to weigh the components being painted/coated, both prior to painting and after painting to determine the weight of the applied solids. Additionally, this includes the



equipment necessary to weigh the coating supply vessel prior to, during, and after all testing has been completed.

Select an appropriate weight measurement device capable of detecting difference within  $\pm 0.05\%$  between the weight of the coating (estimated), plus substrate and the original substrate weight.

- painting/coating thickness gauges - These gauges/instruments shall be used to determine the thickness of the paint/coatings on the coated object.

- flow meter - This meter shall measure the amount of paint/coating material flowing through the flow meter to the nozzle of the applicator. Ideally, this device should be obstructionless and not be affected by paint chemistry, paint viscosity, paint density, or paint temperature. It should be accurate to within two percent. Although a higher degree of accuracy is desirable, as a practical matter, flow meters with greater accuracy than  $\pm 2\%$  are not available as of this writing.

- line speed measurement device - This device should be able to measure the speed of the target through the spray booth.

- viscosity measurement device - Standardized devices used to measure the viscosity of the coatings.

- paint application gauges - Gauges capable of measuring the amount of paint going to the applicator nozzle.

- air pressure gauges - Gauges capable of measuring the air pressure delivered to the applicator nozzle.

- temperature sensors - These devices shall be capable of measuring the temperature of the coating in the coating containers as the coating operation is being performed.

- humidity gauges - Standardized gauges capable of measuring the humidity within the paint booth (e.g., sling hydrometer).

#### XVI. Establishing Baseline TE

Where a baseline TE has been established by EPA, that value shall be used or the source may choose to use the 60% default value where appropriate (see definition of baseline TE). Otherwise, baseline TE shall be established by the source as follows:

A. Locate sources in the same industrial category (SIC) coating similar objects. This may be done by reviewing EPA's compliance data system (CDS) listings and SIC codes with appropriate follow-up calls to EPA regional offices and State agencies.

B. Contact State inspectors familiar with sources identified to determine application equipment used during the baseline period (see III.). At a minimum 10% of the sources identified but not less than 10 or the actual number of sources identified, whichever is less, must be evaluated.

C. Based on "A" & "B" above, establish baseline TE as follows:

1. Where baseline equipment is currently in use at the source in question, perform TE test by weight or volume method as appropriate. Perform historical test to confirm and support weight or volume test results. Baseline TE will be the demonstrated TE unless historical data indicates a significantly higher rate. In that case the historical value will be used.

2. Where the baseline equipment had been but is no longer used at the source in question, perform historical test. The result will be the baseline TE.

3. Where baseline equipment had not been used at the source in question, it was used but records are inadequate, or a default value is inappropriate, the baseline TE shall be the highest TE value reported by the manufacturer for that type of application equipment, regardless of the characteristics of the object being coated, or the values indicated in the table below.

Alternate TEs

<u>Application Method</u>	<u>TE</u>
air-atomized	0.40
airless spray	0.45
manual electrostatic spray	0.60
non-rotating automatic electrostatic spray	0.85
rotating head electrostatic spray (manual and automatic)	0.90

dip coat	0.85
flow coat	0.85
electrodepositin	0.95
powder application	0.95

D. Where the baseline equipment is a mix of different applicator types, the baseline TE shall be the sum of the products of the fraction of each applicator type used, as determined by the survey (if possible), times the TE value from C-3 above. Otherwise, it shall be the arithmetic average of the TE value from C-3 above. If the source is using the same mix of application equipment suggested by the survey (regardless of the number or percentages of applicator types indicated) the mix of actual applicator types used at the source shall be considered baseline.

## XVII. Procedures

### A. Lab/Tin Foil Method

1. Applicability - To determine the TE of a difficult to weigh body/target or where the overspray component has to be eliminated by considering only those areas that should be coated.

2. Special Considerations - This method is generally performed in a laboratory under controlled conditions. Each object (target) is closely wrapped in aluminum foil and painted/coated. Because process variables may be held more constant, the results would tend to indicate a higher TE than if a TE test was conducted in an actual production mode. All measurements taken and equipment used shall be recorded.

### 3. Procedures

a. Bake a clean target to a constant weight, using an approved calibrated weight device (e.g., electronic load cell).

b. Weigh all the foil and tape to be used and cover the body with the foil and tape where necessary. All remaining tape and foil are weighed. The foil covered object is then weighed.

c. The paint/coating pressurized system, including the tubing/hoses and applicator gun(s), are weighed. The object/target is then coated, closely simulating normal plant conditions, and baked, following normal plant baking conditions. Allow the object/target to cool to ambient conditions. The pressurized system, tubing and applicator gun(s), including unused paint are then reweighed. The weight of the paint used is determined by subtracting the ending weight from the beginning weight. In lieu of the weight measurements being taken, appropriate metering of the amounts of coatings used is acceptable.

d. The painted foil covered object is reweighed. The net increase in weight due to the coating solids deposited onto both the intended areas and oversprayed areas is determined by the difference in the weight of the foil covered target, from the unpainted target.

e. The foil is then removed and film thickness measurements are made at predetermined locations, to obtain an average film thickness that represents both the easily reached and more difficult areas of the object.

f. All the painted foil and tape is removed from the object, collected and weighed. The body, with painted foil and tape removed, is reweighed to determine the weight of the dry paint solids caused by any overspray deposited onto an object's surface not specified for coating.

g. The results of all these weighings enable two independent material balances to be made to check the validity of the gravimetric data. By identifying the weighed conditions as follows, the mass balances may be expressed mathematically.

- A = All available clean foil and tape;
- B = Baked clean body;
- C = Unpainted foil and tape covered body;
- D = All unused clean foil and tape;
- E = Painted foil and tape covered body, baked and cooled;
- F = Painted body (overspray), foil and tape removed; and
- G = All painted foil and tape

h. Balance all clean materials before spraying

$$A + B = C + D$$

i. Balance materials after spraying

$$E = F + G$$

j. To calculate TE, each paint with characteristics which vary by greater than ten percent (>10%) must be tested. Volume fraction solids is determined using ASTM D2697-73. The viscosities of each paint are measured using an approved method. Using a standard gallon weight cup, paint densities are determined using approved ASTM methods. The average film thickness is determined using an approved ASTM method and the total area coated must be measured. If the total area coated cannot reasonably be determined, then the weight method for determining TE should be used.

4. Data Analysis and Calculations Percent TE is calculated by using one of the following formulas.

% TE (volume basis)=

$$\frac{[\text{total area } ] [\text{Avg. film } ] [ \frac{1 \text{ ft.}}{12,000 \text{ mils}} ] [ \frac{7.48 \text{ gal}}{\text{ft}^3} ]}{[\text{coated (ft}^2\text{)}] [\text{thickness (mils)}] [\text{volume fraction solids}] [\text{gal. coating used}]} \times [100]$$

% TE (weight basis)=

$$\frac{[\text{lbs. coating on target}]}{[\text{gal. coating used}] [\text{coating density}] [\text{wt. fraction solids}]} \times [100]$$

#### B. Historical Method

1. Applicability - To make baseline TE determinations where the source in question is using or has used baseline equipment.

2. Special Consideration - Must have adequate records and technical data to support any conclusion. Where equipment is still in use, a weight or volume test is also required.

#### 3. Procedures

a. Records and characteristics of coatings and diluents for the baseline year must be evaluated to determine the actual amounts and types of coatings applied.

b. Records of production for the baseline year must be evaluated to determine the actual production amounts for each object coated and type of coating used.

c. Data indicating the amount of coating solids applied (film thickness x surface area or weight) must be available. Relevant information may be available through product quality control testing records.

d. Determine the approximate historical TE (see Data Analysis and Calculations section below)

e. Determine baseline application equipment information: Manufacturer; type (electrostatic, air atomized, etc.); normal operating conditions; and manufacturers suggested TE range.

f. Perform an engineering analysis of the data collected in items "a" through "e" above and calculate/estimate the baseline TE. All calculations, rationale and assumptions must be specified.

g. Compare the historical TE calculated in 'd' above to the baseline estimate derived in 'f' above.

h. The baseline TE shall be the higher of the two TE's evaluated in "g'"above.

#### 4. Data Analysis and Calculations

The historical TE = HTE

$$HTE = \frac{CA \times NO}{TCU} \quad (\text{units must be consistent; either weight or volume is acceptable})$$

Where CA is the amount of coating solids per object; NO is the number of objects coated in the baseline year; and TCU is the total amount of coating solids used in the baseline year.

#### C. Weight Method

1. Applicability - Determine TE of application equipment in use regardless of the characteristics of the item coated.

2. Special Considerations - Valid for most coating operations and especially useful for small and/or odd shaped objects. It may allow for the weighing of groups of objects. Where only part of an object is to be coated, this method may give high TE results by including overspray on areas not intended to be coated. If the potential error is 2% or greater as a result of overspray, either the tin foil method or volume method should be used.

### 3. Procedures

#### a. Establish Precoating Weight of Object(s) to be Coated:

(1) Objects(s) to be coated should be clean and free from all foreign matter.

(2) Select an appropriate weight measurement device capable of detecting difference within  $\pm 0.05\%$  between the weight of the coating (estimated) plus substrate and the original substrate weight.

(3) "Zero" weight measurement device before each weighing.

(4) Identify or tag objects to be coated and record identification reference.

(5) Weigh each item to be coated twice and record each measurement. If the difference between measurements exceeds  $0.10\%$  of the estimated weight of the coating to be applied, the object should be reweighed. If the third measurement does not agree with one of the previous measurements, check measurement device and procedures, take corrective action as necessary and repeat the entire procedure.

(6) At least two observers must read and agree on each weight measurement.

(7) Weight measurements should not be taken until all movement (swaying, rocking, etc.) has ceased and the measurement device and the object are at complete rest. Where practicable, the weight measurement should take place at a location free from vibration, air currents or other conditions which may affect an accurate measurement.

(8) As a confidence check (optional), place the object to be coated on the measurement device, weigh the object and record the reading. Add a known weight to the object (approximately =  $10\%$  of the weight increase anticipated from the coating). If the difference is within  $\pm 1.0\%$  of the known weight, confidence in the accuracy of the measurement is high.

b. Determining the Amount of Coating Used:

(1) The coating supply volume must be metered or weighed to determine the amount of coating being used per object (or group of objects) actually coated. Weighing procedures should be the same as that indicated in "a" above for the object being coated.

(2) The coatings in the supply vessel should be mixed or agitated to ensure that no settlement within the vessel occurs which may tend to affect the ultimate TE calculated.

(3) Establish initial amount of coating available by weighing or establishing initial volume reading of the meter and record

(4) Coat object(s).

(5) Reweigh paint supply or read paint supply volume meter and record

(6) If purging is used to clear lines in between coating color changes or to prevent line clogging, then additional measurements may be required. If plant practice is to recycle or otherwise reclaim the purge stream, then its volume should not be included as part of the TE calculation. However, if the purge stream is not recycled or reclaimed, then the quantity of coating lost during the purge should be included in the TE calculations.

c. Post Coating Weighing

(1) Allow coated objects to fully dry (and cure if appropriate) and return to ambient conditions, especially temperature (Note: If the object being coated has hollow areas, crevices or similar areas where air pockets may occur, warm air resulting from drying ovens may create a buoyant effect which will give a low erroneous weight reading). Drying and/or curing should be accomplished in a manner typical of normal production conditions.

(2) Weigh and record measurements as indicated in "a" above.



d. Coating Samples: Coating samples should be taken at the beginning and the end of each test period. Coating samples must be analyzed on a weight and/or volume basis for total volatiles, water, VOC solids, coating density and viscosity in accordance with the test methods specified in Section IV, Applicable Standard Methods. Manufacturer's formulation information should be noted but not relied on since this information is an average and may vary between batches of coating.

e. Other Measurements: The following parameters must also be measured and/or recorded in the spray booth or area in which the coating is being applied:

- (1) Air circulation rate through the paint booth.
- (2) Speed of targets through paint booth and actual amount of time the target spends in the booth.
- (3) Type of spray application equipment and method of painting (e.g., manual air-atomized, robotic electrostatic, etc.).
- (4) Voltage applied to the electrostatic application equipment.
- (5) Orifice size and configuration of nozzle on application equipment.
- (6) Coating application pressure and atomizing air pressure.
- (7) Paint viscosity and temperature.
- (8) Paint booth humidity.

#### 4. Data Analysis and Calculations

a. The weights used to calculate the TE shall be the average of the two readings taken (or the two consistent readings if three (3) measurements are made).

b. Determine and record the density of each coating used during the test. This shall be determined by testing in accordance with ASTM method D 1475-60.

c. Determine and record the weight fraction of the solids content of the coating by testing in accordance with Section IV, Applicable Standard Methods.

d. Determine and record the weight of the coating used during the test.

e. Calculating % TE.

(1) The weight of coating solids applied = CA

$$CA = OF - OI$$

Where OF is the average final weight of the object(s) and OI is the average initial weight of the object(s).

(2) The weight of coatings solids used = CU

- if the supply is weighed

$$CU = (CI - CF) S$$

Where CF is average final weight of the coating container after the product run, CI is the average initial weight of the coating container before the product run and S is the weight fraction of solids in the coating.

- if the coating supplied is metered.

$$CU = (M_F - M_I) D_C S$$

Where  $M_F$  is the final meter reading,  $M_I$  is the initial meter reading, and  $D_C$  is the density of the coating and S is the weight fraction of solids in the coating.

(3). Transfer Efficiency = % TE

$$\% TE = \frac{CA \left( \frac{x}{y} \right)}{CU}$$

Where x is the total number of objects coated and y is the total number of objects weighed.

(4) Where several different coatings are being tested the overall TE =  $OTE_C$

$$OTE_C = \sum_{i=1}^n \%TE_i U_i$$

Where  $\%TE_i$  is the  $\%TE$  for each coating tested and  $U_i$  is the use factor where:

$$U_i = \frac{AU_i}{AUT}$$

Where  $AU_i$  is the actual amount of a particular coating used in the previous 2 year period and  $AUT$  is the actual amount of all tested coatings used in the same 2 year period.

(5) Where several different type objects are coated on the same line the overall TE =  $OTE_O$

$$OTE_O = \sum_{i=1}^n \%TO_i a_i$$

Where  $\%TO_i$  is the  $\%TE$  for each object tested and  $a_i$  is the use factor where

$$a_i = \frac{AO_i}{AOT}$$

Where  $AO_i$  is the actual amount of the particular object coated in the previous 2 year period and  $AOT$  is the actual amount of all tested objects coated in the same 2 year period.

#### D. Volume Method

1. Applicability - To determine the TE of application equipment in use provided that film thickness and surface area can be accurately determined.

2. Special Considerations - Not applicable for odd shaped or small objects where multiple accurate film thickness measurements are infeasible or doubtful. The results obtained using this method, versus the weight method, may tend to indicate lower TEs with identical coatings and application equipment. This occurs primarily because the volume method includes only those areas intended for coating whereas the weight method includes not only areas intended for coating, but also those that had been coated by any overspray.

### 3. Procedures

a. Determine and record the total surface area of the areas intended to be coated. Take at least 2 film thickness measurements per object for small objects and one per square foot of surface area for larger objects. These measurements shall be as representative as possible of areas that may be expected to have varying film thickness. A sketch with designated points for measurement is suggested where a large number of measurements is required.

(1) If some areas of targets to be coated are or may reasonably be expected to have film thicknesses which may vary by more than 25%, then the areas to be coated should be sketched out on a diagram. The sketch should be divided into a matrix with film thickness measurements taken at all points, indicated on the diagram, that may be expected to vary.

(2) Where coatings of significantly different characteristics or compositions (>10%) are used then film thickness measurements should be taken on several coatings, see Section VI, Number of Coatings Used in the Test.

(3) Film thickness measurements shall be taken before coating, if the areas are primed, and after each subsequent coating. These measurements shall be taken at all points consistent with the pattern (locations) and marked on the diagram discussed in (1) above.

(4) The average film thickness is multiplied by the surface area of each target intended to be coated.

#### b. Determine Paint Flow Measurement or Usage

(1) The volume of paint used can be determined either directly by using a flow meter or indirectly by calculation. The indirect method requires that the coating be weighed in a container, that the container weight be subtracted, and that the volume be determined by dividing by the coating density.

(2) The coatings in the container should be mixed or agitated to ensure that no settlement within the container occurs which would tend to affect the ultimate TE calculated.

(3) Establish initial amount of coating available by weighing or establishing initial volume reading of the flow meter and record.

(4) Coat object(s).

(5) Reweigh paint supply or read paint supply volume meter and record.

(6) If purging is used to clear lines in between coating color changes or to prevent line clogging, then additional measurements may be required. If plant practice is to recycle or otherwise reclaim the purge stream, then its volume should not be included as part of the TE calculation. However, if the purge stream is not recycled or reclaimed, then the quantity of coating lost during the purge should be included in the TE calculations.

#### c. Analysis of Coatings

Coating samples should be taken at the beginning and conclusion of each test. Coating samples must be analyzed for weight of total volatiles, water and solids, and coating density and viscosity in accordance with the test methods specified in Section IV, Applicable Standard Methods. Except for volume of coating solids, manufacturer's formulation information should be noted but not relied on since this information is an average and may vary between batches of coatings. The volume of coating solids must be determined from formulation and dilution data.

#### d. Additional Information to be Documented During the Test

(1) Air circulation rate through the paint booth.

(2) Speed of targets through paint booth and actual amount of time target spends in the booth.

(3) Type of spray application equipment and method of painting (e.g. manual air-atomized, robotic electrostatic. etc.).

(4) Voltage applied to electrostatic application equipment.

(5) Orifice size and configuration of nozzle on application equipment.

(6) Coating application pressure and atomizing air pressure

(7) Paint viscosity and temperature.

(8) Paint booth humidity.

#### 4. Data Analysis and Calculations

a. Calculate and record the average film thickness, in mils (0.001 inches), by totaling each measurement taken from each target at pre-determined points and average the film thickness readings.

b. Determine and record the density of each coating used during the test. This shall be determined by testing in accordance with ASTM method D 1475-60.

c. Determine and record the volume fraction of the solids content of the coating from manufacture formulation data and records of diluent addition.

d. Determine and record the volume of the coating used during the test

e. Calculating % TE

A = paint usage in gallons

B = average film thickness in inches ( 1 mil = 0.001 inch)

C = volume fraction of solids in coating

D = surface area in square feet

E = 7.48 gallons/ft<sup>3</sup>

$$\% \text{ TE} = \frac{E \times B \times D \times \frac{1 \text{ ft.}}{12 \text{ in.}}}{A \times C} \times 100\%$$

XVIII. Changes in Method of Operation, Equipment/Process Modifications and other Changes

Changes in operation, equipment/process modifications or other changes may significantly change TE. Unless it can be clearly demonstrated to the satisfaction of the regulatory agency that any changes and/or modifications will not reduce TE, changes and modifications which effect TE will require retesting within 180 days of the change or modification. Changes which are claimed to have improved TE must be demonstrated through an acceptable test procedure before additional credit can be given.

XIX. Retesting shall be required if:

- A. There is a significant change in operating conditions;
- B. There is a significant change in the characteristics of the coatings being used;
- C. The coating process or applicators are changed or modified and it cannot be demonstrated to the regulatory agency's satisfaction that TE has been maintained or improved;
- D. A substantially different product which is not within the range of products coated in the original test is coated at the source; and
- E. Whenever the regulatory agency concludes that records maintained by the source indicate a significant reduction in TE (significant means greater than a 5% change in any operating condition or parameter.)

XX. Recordkeeping:

Data recording forms for parameters checked during the test should be prepared and thoroughly completed in ink during the test. Original forms must be maintained along with any notes describing actual conditions or observations made during the test. Parameters which are indicative of actual production conditions which may affect TE should be recorded. (e.g., voltage, line speed, atomization air pressure). The actual equipment in use (e.g. type, model, and locations of applicators) should also be documented.

The facility should also plan on maintaining records of operating parameters, equipment usage, production and coating usage and characteristics on a regular basis to assure that operating conditions observed during the test continue to be met.

XXI. References

- Glossary for Air Pollution Control of Industrial Coating Operations (Second Edition) EPA-450/3-83-013R.

- Code of Federal Regulations, Title 40, Part 60 (Revised as of July 1, 1985).

- Baseline TE of Waterborne Enamel Topcoat (General Motors - October 1, 1979).

- What Every Spray Painter Should Know About TE by Dale Hemming, March 1985 issue of Product Finishing.

EPA 600/2-85-107, TE of Improperly Maintained or Operated Spray Painting Equipment Sensitivity Study. Prepared for OAQPS by Air and Energy Engineering Research 9/85.

EPA 450/3-79-030b, Automobile and Light-Duty Truck Surface Coating Operations. NSPS, Prepared Air OAQPS

EPA 450/3 80-007a, Surface Coating of Metal Furniture. NSPS. Prepared for OAQPS 9/80.

EPA Memorandum, April 11, 1986: From Gerald Emison, Director OAQPS response to five VOC Issues raised by the Regional Offices and Department of Justice. Pages 12 - 15 and attachments 1 - 6.





UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION III

841 Chestnut Building  
Philadelphia, Pennsylvania 19107

Regional Counsel Opinion

BACKGROUND

The Pennsylvania State Implementation Plan (SIP) to implement the federal Clean Air Act contains provisions governing surface coating processes for sources with the potential to emit at least 500 pounds per day or 50 tons per year of volatile organic compounds (VOCs). These provisions are in Section 129.52 of Title 25 of the Pennsylvania Code. Section 129.51 of the Code provides that "Techniques other than those specified in §§ 129.52-129.70 . . . may be used to comply with the requirements of these sections if the Department has approved such alternate techniques after finding that they are equivalent to or better than those specified in these sections in terms of the control of volatile organic compounds."

In connection with its implementation and enforcement of these provisions, the Commonwealth of Pennsylvania has requested that the Regional Counsel, EPA Region III, answer legal questions regarding the effect of certain of Pennsylvania's equivalency approvals under the federal Clean Air Act and regarding the legal requirements for a federally approvable "generic" equivalency provision.

FACTS

Mack Trucks, Inc., operates two surface coating facilities in Pennsylvania, both of which are subject to the requirements set forth in Section 129.52 of Title 25 of the Pennsylvania Code. Mack has requested that the State allow it to use control techniques other than those specified in § 129.52 so that it may meet emission limitations different from the emission limitations specified in that section. The alternative techniques involve application equipment which improves the transfer efficiency, thereby reducing the amount of paint (and associated VOCs) which is applied for each surface coating operation.

Based on Mack's request and information supplied, the State has determined that Mack's alternative application equipment is equivalent to or better than the control techniques specified in § 129.52 in terms of VOC control.

The State has issued temporary operating permits for both facilities which establish operating conditions, including a range of transfer efficiency rates for certain sources within each plant. No SIP revision embodying the Mack Truck equivalency determination has been submitted to EPA for approval.

QUESTION #1

In the absence of an EPA-approved case-by-case SIP revision, does the Commonwealth of Pennsylvania's determination of equivalency and approval of alternative techniques for VOC control at Mack Truck's surface coating facilities render those techniques federally enforceable under the Clean Air Act, thereby relieving Mack Truck of the obligation to comply with the emission limitations specified in Section 129.52 of Title 25 of the Pennsylvania Code for federal Clean Air Act purposes?

ANSWER

The Commonwealth of Pennsylvania's approval of the alternative techniques that Mack Truck applied to use under the "equivalency" provision contained in Section 129.51 of Title 25 of the Pa. Code does not, in itself, substitute such techniques for the preexisting emissions limit as the federally enforceable Clean Air Act requirement. Even assuming for the purposes of this discussion that EPA approved in advance some types of equivalency determinations under that provision and that the provision is therefore "generic" for some purposes, such advance approval would not extend to transfer efficiency-based equivalency determinations like those made by Pennsylvania for the Mack Truck operations. Such findings require the exercise of significant discretionary judgment and therefore do not meet the criteria for advance approval under a generic mechanism for modification of otherwise applicable SIP requirements. Therefore, in order for the high transfer efficiency processes at the Mack facilities to constitute an acceptable means for complying with the Pennsylvania SIP and, therefore, with the Clean Air Act, those processes must be made a requirement of the SIP through a case-by-case SIP revision process, including federal rulemaking. Absent such a SIP revision, Mack Truck's facilities remain subject to the VOC control requirements of § 129.52.

DISCUSSION

Section 110(1) of the Clean Air Act provides, with certain exceptions not relevant here, that "[except for] a plan revision under subsection (a)(3) of this section, no order, suspension, plan revision, or other action modifying any requirement of an applicable implementation plan may be taken with respect to any stationary source by the State or by the Administrator." Plan revisions under Section 110(a)(3) can be approved by EPA only if the procedural (notice and public hearings) and substantive requirements of Section 110(a)(2) are met, including EPA's determination that the SIP contains those measures necessary to assure attainment and maintenance of national ambient air quality standards within certain time frames.

EPA has traditionally interpreted these provisions as mandating a sequential two-step SIP revision process, i.e., first the State adopts a revision and then EPA gives it effect as a SIP revision by approving it. For example, in its 1979 "bubble" policy, EPA stated:

Some commenters suggested that EPA would not need to use a case-by-case SIP revision for alternative approaches if the state incorporated a general regulation for alternative control strategies in its SIP that EPA has approved. Instead, EPA should depend on spot audits

to determine if the state is faithfully adhering to the requirements of the general SIP revision.

In response, the Agency believes that case-by-case SIP revisions are necessary for an alternative approach to be legally enforceable. The Clean Air Act requires EPA to review and process all SIP revisions, and this cannot be eliminated or delegated. Additionally, a spot audit would not be a practical means of oversight, since any errors it would turn up are not easily reversible.

44 Fed. Reg. 71786 (December 11, 1979).

EPA apparently intended this sequential process for "alternative control plans" like shifts in transfer efficiency when it stated in the Control Techniques Guideline (CTG) for surface coating of miscellaneous metal parts:

No alternative control plan is effective until it is submitted to and approved by the Administrator of the United States Environmental Protection Agency as a revision of the State Implementation Plan pursuant to Section 110(a)(3)(A) of the Clean Air Act.

Guidance to State and Local Agencies in Preparing Regulations to Control Volatile Organic Compounds from Ten Stationary Source Categories, September, 1979, at 41. \*/

EPA has recognized, however, that, under certain circumstances, Sections 110(1) and 110(a)(3) permit EPA to reverse the sequence in the process by approving into the SIP both a mechanism for the future adoption of source-specific emission limitations and, in advance of that later adoption, the limitations themselves. Because of the advance approval of limits adopted under these "generic" mechanisms, the State may establish or revise federally enforceable limitations without having to submit each such revision to EPA for new approval. The description of this type of SIP revision was set forth in the rulemaking for the New Jersey "generic bubble", 45 Fed. Reg. 77459 (November 24, 1980) \*\*/ and amplified in a 1982 interim Emissions Trading Policy Statement,

\*/ The "questions and answers" discussion following this section of the guidance document specifically discussed higher coating transfer efficiency as one type of "alternative control plan".

\*\*/ Compare 44 Fed. Reg. 71780, 71782 (December 11, 1979).

under which a number of additional state bubble rules have been explicitly approved as having generic effect. 47 Fed. Reg. 15076 (April 7, 1982). \*\*\*/

In EPA notices discussing approval of SIP provisions that allow a State to impose alternative emission limits without receiving subsequent EPA approval, EPA explained that such provisions are approvable only if they provide "mechanical procedures" and do not permit "choices by the State that are not similarly circumscribed and mechanical in operation." E.g., 45 Fed. Reg. 77459, 77461 (November 24, 1980). Put another way, "replicability" in State decisionmaking under the provision means "a high likelihood that two decision-makers applying the rule to given circumstances would reach the same conclusion." Reg. 15076, 15084 (April 7, 1982). This replicability requirement is necessary for EPA to have reasonable assurance that alternative approaches approved under the rule will protect or achieve SIP values at least as well as the original requirements.

EPA approved Section 129.52 of Title 25 of the Pennsylvania Code without stating whether or not it was approving the provision as a generic rule. Hence, there is no evidence that EPA intended to approve the provision as generic. There have been similar circumstances in a number of states where EPA has approved such "equivalency" provisions while remaining completely silent, before and at the time of approval, as to its intent regarding the generic status of these provisions. EPA is now examining whether some of those provisions, when applied to certain specific types of equivalency determinations, may meet the replicability requirement. In any event, it is clear that EPA would generically approve a rule to operate only for categories of determinations that do not involve the exercise of significant non-replicable judgment by the State. In this case, the transfer efficiency evaluation required for the Mack Truck facilities involved complex determinations for which the rule itself did not prescribe procedures and requirements in any detail. The rule left the State a significant range of procedures and

\*\*\*/ EPA expressly approved Section 129.53 of Title 25 of the Pennsylvania Code, (as distinct from the provision at issue here, Section 129.52) as a "generic bubble" provision. That rule provides that, upon certain described showings by a source, the State may approve, in an applicable operating permit, specified alternative emissions limitations for the VOC facility. The criteria under which this generic provision was adopted were identified in the EPA rulemaking notices proposing and finally approving that provision. EPA's notices expressly stated that the provision permits implementation by the State without the necessity for EPA approval of specific alternative emissions standards. 47 Fed. Reg. 23186 (May 26, 1982) and 48 Fed. Reg. 2319 (January 19, 1983).

choices in making those determinations.\*\*\*\*/ Thus, EPA could not have intended to authorize the State to incorporate the arrangement requested by Mack Truck into the SIP without subsequent EPA approval.

QUESTION #2

In circumstances where case-by-case SIP revisions are currently required, how may Pennsylvania revise its SIP so that equivalency determinations and approvals can become automatically federally enforceable, without a requirement for case-by-case SIP revisions?

ANSWER

EPA would approve an equivalency provision generically if the provision specifies an essentially mechanical process which the State must follow in making its equivalency determination. Thus, EPA would approve such a provision generically as it applies to transfer efficiency determinations like the one Mack Truck requested, if the provision itself laid out a detailed process that would constrain the State to produce equivalency findings in a replicable manner. If transfer efficiency evaluations inherently involve determinations so complex that they are difficult to specify, quantify and replicate, such equivalency determinations may be difficult to define in a manner which is sufficiently circumscribed for approval as a generic SIP revision. EPA therefore recommends that if the Commonwealth of Pennsylvania wishes to pursue such a generic approach to equivalency determinations of the type presented by this case, it work closely with the Region in an effort to develop a proposed SIP provision that contains replicable, mutually acceptable procedures.

AUG 8 1986

Date



Bruce M. Diamond

Regional Counsel

Region III

U.S. Environmental Protection Agency

\*\*\*\*/ In EPA's experience, equivalency determinations based on improved transfer efficiency include, among other things, the following considerations: What time period, type of application equipment and transfer efficiency should be considered as the baseline from which improvements are measured? What baseline transfer efficiency should be used if the industry-wide norm cannot be defined? What analytical methods and procedures would be appropriate to determine the historical baseline and improved transfer efficiency? What site specific operating conditions, such as spray gun flow or pressure and spray booth air flow rate, should be monitored during the test and during normal operation to assure continued compliance? Which and how many different colors, types of coatings and coatings lines should be tested?

## Appendix 3.0

### Generic VOC Program Issues

MAY 20 1985

OFFICE OF  
AIR AND RADIATIONMEMORANDUM

SUBJECT: Results of May 3 VOC Meeting

FROM: Director  
Stationary Source Compliance Division  
Office of Air Quality Planning and Standards

TO: Gerald A. Emison, Director  
Office of Air Quality Planning and Standards

This memorandum summarizes the results of the May 3 VOC meeting held in Durham. Staff from CPDD, ESED, SSCD, and OECM's AED were represented. The purpose of the meeting was to discuss the VOC issues summarized in my April 5 memorandum to you and get agreement on those needing Headquarters guidance.

I am pleased to report that the meeting<sup>3</sup> was very productive. The group managed to discuss every issue. As a result of this intensive effort, nineteen issues (represents a combination of some) were decided as needing immediate Headquarters guidance. Three others have had guidance recently issued and seven were dismissed as not needing guidance.

The lead office on the nineteen issues was somewhat evenly divided among the four Headquarters offices. Attached is a list of the nineteen issues and the lead office. It was agreed that draft responses reflecting OAQPS's and AED's input would be produced by June 14. The next step would be to get Regional comment via the VOC Compliance Workgroup. If necessary, this Workgroup would convene to discuss some or all of the drafts.

-2-

As before, I again ask for your support and that of the other Division Directors in timely preparation of responses.

Please let me know if you would like to discuss the results of this meeting or the process outlined.



Edward E. Reich

cc: Darryl Tyler, CPDD  
Jack Farmer, ESED  
Mike Alushin, AED

Attachments



Attachment

VOC Issues to be Addressed

1. Need clarification on the policy implications of the November 20, 1980 can coating memorandum. Included in this response will be the following issues:

- ° cross - line averaging
- ° 24-hour averaging
- ° applicability to other CTG categories
- ° need for SIP revisions
- ° hybrid compliance approaches (e.g. use of a combination of LST and add-on controls)

Lead Office: CPDD (Coordinate with SSCD, ESED, OECM-AED).

2. What is the Agency's enforcement response for sources subject to pending bubbles, specifically for bubbles in areas lacking an approved attainment demonstration?

Lead Office: SSCD

3. Need guidance on recordkeeping requirements. Specifically:

- ° Is it feasible to request daily recordkeeping?
- ° Should SIPs which do not require recordkeeping be declared deficient?
- ° What type of recordkeeping should be required?
- ° How can or should recordkeeping be verified when EPA cannot independently determine compliance?
- ° How are VOC emissions to be calculated over a chosen averaging time when a company is not required to, and does not, maintain records directly pertinent to that unit of time.

Lead Office: SSCD (CPDD to take lead on second bullet via the Ozone Initiatives; OECM-AED to take lead on last bullet.)

4. What is the effect of EPA approval of SIP procedures for State and/or local agency issuance of time extensions or internal off-sets (bubbles)? Do individual State actions under these procedures have to be approved by EPA as SIP revisions before they become effective under the CAA?

Lead Office: OECM-AED (Coordinate with OGC)

5. How can EPA include a bubble in the context of consent decrees?

Lead Office: AED

6. Schedules for LST or installation of add-on controls:

- ° How do we determine the amount of time to give to individual sources-especially beyond 1985?
- ° At what point in an LST schedule do we require the company to install add-on controls?
- ° How to establish a back-up schedule for installation of add-on controls where the present reduction in the SIP is less for add-on than for LST (example, flexographic printers where SIP requires 60% control efficiency for add-on's and 75% reduction for LST).
- ° Balance between expeditiousness of installing add-on's and economic savings realized from LST.
- ° What type of assurances are required from sources before granting LST extensions?
- ° Should the extension be based on attainment status of area?

Lead Office: SSCD

7. At the present time all Class A1 and A2 VOC sources in the New York City (NYC) Metropolitan AQCR have been identified and verified, and those which are out of compliance have been placed on the SVIO list. Region II would like to have all Class B VOC sources which have an ERP >50 TPY, and are out of compliance, placed on the SVIO list. By doing this the Region would be able to more accurately reflect its continuing enforcement effort in the NYC Metropolitan area, currently non-attainment for VOCs.

Lead Office: SSCD

8. It has become apparent that EPA is taking a tougher enforcement stance on the round II CTG's than was evident in round I. Notice of this change came through the August 17, 1984 Lillquist letter which was an attachment to the October 2, 1984 memorandum on coordinating key issues in VOC cases from Micheal Alusin, Associate Enforcement Counsel. Although Region III generally supports this change in policy, we are extremely concerned about the method and timing of disseminating this policy.

This tougher stance on compliance represents a significant shift in policy. The novel distribution approach of attaching it to a memorandum which appears to have been intended for limited distribution leaves much to be desired. States have been negotiating schedules over the past year which reflect EPA's more laissez-faire enforcement posture taken on the round I CTG's. This change in policy is coming to them (and us) about one year late. As a result, it will disrupt the processing of orders and SIP's negotiated by States under our previous enforcement posture and strain EPA/State relations.

Region III suggests that Headquarters reassess its method of policy distribution. If EPA is to ensure the timeliness and appropriateness of State enforcement activities, we must inform the States of the rules of the game in a timely and appropriate manner.

Lead Office: SSCD

9. Need guidance on RACT determinations for CTG categories. Specifically:
  - ° What criteria should be used to determine economic feasibility for non-CTG sources? For CTG sources where recommended RACT is technically infeasible?
  - ° Have any criteria, procedures, or policy been established for making applicability determinations? In particular, have any non-applicability determinations been made for the miscellaneous metal parts and products CTG?
  - ° What type of economic analysis should be performed by the company and EPA to determine feasibility of installation of controls.

Lead Office: CPDD (coordinate with SASD)

10. Establish the Agency's solids-applied requirement for determining equivalency in a definitive manner, as through publication of a Federal Register notice which clarifies the matter once and for all.

Lead Office: CPDD (Suggestion made that this issue be addressed in the Ozone Initiative).

11. How can we tolerate NSPS limits that are less stringent than RACT limits for VOC sources, especially for sources that are not currently eligible for bubbles because they are located in ozone non-attainment areas without approved plans?

Lead Office: ESED

12. Should total quantities of VOC be regulated as opposed to regulating the VOC content of individual coatings?

Lead Office: CPDD

13. What baseline year should be used for determining VOC percent emission reductions as per State SIP regulations?

Lead Office: CPDD

14. Are there any site specific RACT limits being set?

Lead Office: CPDD

15. Is an exemption for use of incinerators in non-ozone season appropriate? How can we justify suing sources for failure to utilize controls during non-ozone season in SIPs where there is no exemption?

Lead Office: OECM-AED

16. Need to resolve inconsistencies regarding transfer efficiency (TE). Specifically:

- ° What baseline should be used (CTG, source's existing level on August 7, 1977, other)?
- ° Should the source get full credit about this level?
- ° How is credit to be calculated?
- ° Should such equivalence be done as an alternate RACT determination?

- ° What is our policy concerning crediting of technology resultant VOC emission reductions?
- ° Should Regions be allowed to determine credits without relying on Headquarters determinations?

Lead Office: ESED (OECM-AED will provide input on SIP revision language).

17. Need to have a reference method for determining capture efficiency of control devices installed by VOC emitting sources. This method should be formally established and should be feasible for routine inspections, not just full blown enforcement tests.

Lead Office: ESED

18. Where incineration is only used sporadically when hi-solvent coatings are used, what type of compliance monitoring is required? Is efficiency of the incinerator impacted by sporadic use?

Lead Office: ESED

19. What are the appropriate test methods for assessing VOC compliance? Where are the gaps, if any, between the need in various contexts for measuring VOC compliance and actual State SIP test methods or EPA promulgated test methods?

Lead Office: ESED

### Issues Already Addressed

1. Need Headquarters to open direct discussions with DOD to ultimately have them require the use of complying coating technology for all DOD contracts. This approach would be better than the piecemeal attempts to get every contractor to expedite compliance with VOC regulations.

Guidance issued by SSCD on April 24, 1985.

2. What are appropriate civil penalties for sources that have missed their final compliance date and are proceeding with LST? Missed their final compliance date and proceeding with installation of add-on controls? Following can coater's policy?

Guidance issued by OECM on September 12, 1984. VOC civil penalties are discussed in Appendix IV.

3. Establish an effective mechanism for resolving VOC issues and questions. Utilize fully the resources for the VOC workgroup, the RACT clearinghouse newsletter and involve all appropriate Agency groups in the resolution: SSCD, CPDD, ESED, OECM, etc.

The VOC Compliance Workgroup which is composed of Regional and Headquarters staff is established for the purposes of addressing VOC compliance and enforcement concerns that are confronting the Regions and States. The VOC RACT Clearinghouse Newsletter is a forum for exchanging technical information on VOC controls. It invites information on EPA activities and determinations directly affecting State and local agency efforts in VOC control. The Clearinghouse also invites articles from industry on successess they are experiencing, expecially in low-solvent coatings. Hopefully, this workgroup is the "effective mechanism" desired. If not, suggestions for improvement are welcome.

VOC Issues Where Guidance Is Unnecessary

1. Currently there are perhaps 5,000 retail gasoline stations in the NYC Metropolitan area which need to be inspected for compliance with Stage I and II vapor recovery regulatory requirements. As Region II understands the situation, those sources are presently regulated by the Office of Mobile Source Enforcement (OMSE). OMSE had been contracted with respect to possible funding of contractor inspections of these sources, or at least a substantial portion of them.

Region II has been told that the Regions' Air Branch handles this funding, yet our Air Branch personnel have no knowledge of this. Region II is therefore requesting that these sources be placed under the jurisdiction of SSCD as stationary sources, or that funding from OMS be made available for contractor inspections. As an alternative, we would be receptive to another funding arrangement Headquarters might be able to suggest.

2. Region IX's oversight function, particularly for small sources, depends on the success of local District inspectors. We need a strategy for ensuring that inspectors receive adequate training in VOC source categories and to verify the quality of their inspections.
3. ORC is tending toward skipping the Federally issued DCO step and going for straight referrals to DOJ - yet all six Region IX DOJ referrals made this year are still pending. As deadlines draw closer, this will become a bottleneck.
4. Is the Agency contemplating any changes in CTG's?
5. Should agency continue to encourage use of non-photochemically reactive but toxic or carcinogenic solvents?
6. Is method 25 reliable?
7. Need for national clearinghouse on:
  - ° Availability of reformulated coatings.
  - ° Installation of add-on controls-location of sources, type of controls and control efficiency.

- ° Expert witnesses to testify as to reformulations, add-on controls and control efficiency.
- ° Viability of CTG's.
- ° Bibliography of all Federal Register policy notices on VOC sources.



Issues That Were Combined With The Nineteen

1. How can EPA permit hybrid compliance approaches where the SIPs do not allow for alternative compliance programs? What type of reduction should be required from a hybrid program, especially where a SIP has different control efficiencies for LST and incineration?

Where SIPs are silent as to compliance methodology, should they be interpreted to require compliance on an instantaneous basis?

Combined with Issue # 1

2. Region IX needs a small source (Class B) identification and compliance strategy - national input and consistency would be helpful.

Combined with Issue # 7

3. With 24-hour averaging it is virtually impossible for Region IX or District inspectors to independently verify compliance via the inspection process.

Combined with Issue # 3

4. What is a bubble? What is a generic bubble?

Combined with Issue # 4

5. What type of economic analysis should be performed by the company and EPA to determine feasibility of installation of controls?

Combined with Issue # 9



Dennis 15

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

April 25, 1985

MEMORANDUM

SUBJECT: New Insight into Lack of Progress in Attaining the Ambient Air Quality Standard for Ozone

FROM: James C. Berry, Chief *fin*  
Chemical Applications Section, CPB (MD-13)

TO: Susan Wyatt, Chief  
Chemicals and Petroleum Branch (MD-13)

Based on results of an informal poll of at least 200 - and perhaps as many as 250 - people, the number of surface-coating plants complying with State regulations is remarkably (unbelievably) low. Only eight people, who may have represented as few as two plants, indicated that they knew the State and Federal regulations that applied to their plant and were in compliance. Furthermore, no one presently out of compliance indicated they would be in compliance by the end of 1985.

Details

As you know, I chaired a session on Governmental regulations that affect the coatings industry in Chicago on April 17th, at the second annual "Paint-Con"(ference). Other speakers were Dr. John Skinner, Director, Office of Solid Waste, EPA; Ernst Hall, Chief, Metals Industry Branch, Industrial Technology Division, EPA; and Gary Anderson, Industrial Hygienist, Chicago Regional Office of OSHA. A copy of the program is attached.

My talk centered around compliance, and essentially paraphrased a two-hour discussion with John Calcagni held earlier this month. I began by repeating my appreciation and admiration for the efforts of the research chemists in the paint industry for developing the many low-solvent coatings that are now available. This was essentially the same comment that I made at the Waterborne and High-Solids Symposium in February which was quoted in the editorial of the February 25th edition of American Paint and Coatings Journal.

My new question to the audience at this meeting was, "Are they selling any of these new products, or more pointedly, are you buying them?" I quoted statistics published by Industrial Finishing Magazine as a result of two ballots published in their magazine. Results of the first, reported in April, 1984, indicated that 65 percent of the respondents had changed paints to a low-solvent variety in the last 3 years, and over 50 percent cited Governmental regulations as the driving force. Five months later, over 62 percent of the respondents to

the second poll expected to change to low-solvent coatings in the next 5 years, and again, about half (49.2 percent) ascribed the reason to Government regulations. Collectively, the two polls would imply that "125 percent" of America's industrial finishers would convert to low-solvent coatings during the current decade.

I then asked (and the audience enthusiastically agreed) to conduct a poll of the attendees. The single rule was that I would ask four questions and members of the audience would hold their hands up as long as they could answer the question in the affirmative.

Question No. 1: Are you directly responsible for an industrial finishing line as a foreman, supervisor or manager?

Answer: About 80 percent of the 200 - 250 attendees raised their hands.

Question No. 2: Do you know the State regulation for your industry, or the State-adopted rule for your plant and the Federally-approved rule, which may be different?

Answer: At least half of those with raised hands dropped them.

Question No. 3: Are you now in compliance with the VOC regulations for your plant?

Answer: All hands were lowered except for eight. (These were conspicuous because they were in two groups in different areas of the room. They could have represented as few as two plants and certainly no more than eight.)

Question No. 4: How many with your hands down expect to achieve compliance by the end of 1985?

Answer: I saw no one raise a hand.

I then offered those with their hands raised an opportunity to leave because the rest of my 25-minute presentation was directed to those with compliance problems.

There were many written questions directed to me during the Q & A period at the end of the session. Two seem worth mentioning.

1. Is the final compliance date January 1, 1987, or December 31, 1987? (My talk had identified the key dates of 1982, 1985, with a delayed compliance

order, waiver, etc.; and 1987 for those areas for which the Governors had requested extensions.) My answer was "December 1982, unless your plant or State received some special concessions." From the audience, the person who asked the question (I presume), "Did Illinois get an extension?"

The other question, in effect, asked, "With the general conservative tendencies of the Nation today, might not the EPA suffer a demise in stature similar to one that OSHA experienced?" My response was that I felt that EPA had already seen its darkest days.

Dick Dalton, Region V "VOC Specialist," was in the audience. He agreed to join me outside of the assembly room to help answer further questions after the session ended. I am grateful for his presence and assistance.

#### Attachment

cc: Dennis Crumpler (MD-13)  
Dick Dalton (Region V)  
Jack Farmer (MD-13)  
Bill Johnson (MD-13)  
Ed Reich (EN-341)  
David Salman (MD-13)  
B. Steigerwald (MD-10)  
Darryl Tyler (MD-12)



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

MAY 17 1985

OFFICE OF  
AIR AND RADIATION

Mr. John C. Cuthbertson  
Chairman, API/NFPA  
Air Quality Committee  
P.O. Box 2218  
Richmond, VA 23217

Dear Mr. Cuthbertson:

I enjoyed meeting with you and your colleagues on April 10. I found the discussion of the issues you raised quite useful.

I have now had the opportunity to review the issues with my staff and others in the Agency. In the course of that review, I noted the August 17, 1984 letters to you and to Dick Lillquist responding to similar concerns raised at the July 22, 1984 meeting with Administrator Ruckelshaus. Those virtually-identical letters discussed the policy considerations involved and criteria for acceptance of State orders as sufficient to obviate the need for independent Federal enforcement action. Those letters also established criteria for reviewing whether it is appropriate to allow a source additional time for conversion to low-solvent technology. I believe the August 17 letters continue to provide a sound basis for resolving outstanding noncompliance issues.

I understand from my discussions with staff that there are a large variety of cases with widely varying equities. The enforcement process is well suited to allow for case-by-case consideration of those equities. Our determination to assure expeditious compliance by all sources accompanied by appropriate penalties remains firm, however.

I appreciate your continuing concern with improving the environment.

Sincerely yours,

A handwritten signature in cursive script, reading "Charles L. Elkins", is written over the typed name.

Charles L. Elkins  
Acting Assistant Administrator  
for Air and Radiation



Appendix 3.1

Can Coating Policy Clarification

(Reserved)

Appendix 3.2

EPA's Enforcement Response  
Where Bubbles Are Pending





Issue

What is the Agency's enforcement response for sources subject to pending bubbles, specifically for bubbles in areas lacking an approved attainment demonstration?

Response

The June 28, 1984 guidance on "timely and appropriate" enforcement response for significant air violators addressed the situation of timely enforcement for sources subject to SIP revisions. The guidance states that EPA will routinely issue NOV's, if not already issued, 120 days following the violation (or shortly after) if the violation is not resolved in accordance with the guidance. Follow up to the NOV is warranted unless EPA determines, in consultation with the State, that continued deferral to the State activity will produce timely compliance.

Where the State activity is a SIP revision (bubbles are SIP revisions), the revision must, by day 120, at least have been scheduled for a State hearing and EPA staff-level review shows it likely to be approved. Where the SIP revision is unlikely to be approved, EPA is obligated under the "timely and appropriate" guidance to issue a NOV on day 120 and follow up with its own enforcement action as appropriate.

Sources subject to SIP revisions in areas that are classified as attainment are not subject to the "timely and appropriate" guidance unless a specific State-EPA agreement addresses such sources. However, such sources remain subject to enforcement by EPA. The criteria for deferral outlined in the "timely and appropriate" guidance may be useful for addressing such situations even though the timelines may not be applicable.



Gerald A. Emison, Director  
Office of Air Quality Planning and Standards

26 FEB 1986

Date Signed

## Appendix 3.3

### Recordkeeping

#### a. Feasibility of Daily Recordkeeping

ISSUE:

"Is it Feasible to Request Daily Recordkeeping?"<sup>1</sup>

Response:

There are two parts to this question. The first is whether the SIP in question is properly interpreted to require daily recordkeeping, making it "legally" permissible to require daily records for compliance determination purposes. This paper will not address that issue.

The second part of the daily feasibility question is how practical will it be for the sources, financially and administratively, to keep records on a line-by-line, daily basis, since that is the basis of many VOC SIP provisions. This paper will first address the technical feasibility of maintaining these records and then reiterate EPA policy in this regard.

One must look at the various possible situations that can arise to determine the level of difficulty sources may encounter. These situations can be broken down into three basic types.

The first situation is those facilities that use only complying formulations which contain no on-site VOC dilution. These sources, by definition, are in compliance at all times because each coating used is in compliance with RACT and SIP requirements. Recordkeeping requirements for these facilities would be straightforward. They would only have to maintain records that show that they don't dilute or cut the coatings before applying them.

The second situation is represented by sources which have installed abatement equipment (add-on controls). The recordkeeping requirements for this category should not be new nor should they be as complicated as those required for the more complex plants. Generally, only routine operational parameters would have to be checked and recorded daily as described in the following "issue" on recordkeeping requirements. Automatic recorders and alarms could be used for some, if not all of the important parameters.

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<sup>1</sup> The first item deals with daily recordkeeping because it was specifically addressed in the question asked. However, the reader must be aware that the time interval required for recordkeeping is a function of SIP regulations.

The last situation will require the most effort to maintain adequate records. This situation is represented by job shops that use a large variety of complying and noncomplying coatings or ink formulations to meet SIP regulations, including "bubble" requirements. These facilities will have the most difficulty meeting a 24-hour recordkeeping requirement. Part of the difficulty is from the resistance by the sources to change present recordkeeping practices. For example, some companies tie their recordkeeping practices to their inventory procedures and take inventory only on a weekly or monthly basis. Also, other plants often record ink or coating use by the "job"<sup>2</sup> which may overlap from one 24-hour period into another. These procedures are generally not acceptable to meet daily recordkeeping requirements.

In some cases, significant modifications may be required in the operation of a process that may also require additional labor. However, these costs should not be taken at face value by compliance authorities since there may be significant process and emission control benefits to improved recordkeeping. A shop which keeps better records, daily, by the job or contemporaneously (real time), should have better cost control because it knows more about its process, inventory, and emission control. This would be true even if longer periods of averaging (greater than 24 hours) are allowed. This is especially true if the companies also institute better methods for determining the quantities of different formulations used. These methods could include continuously recording flow meters, totalizers, etc. for determining coating and VOC diluent use.<sup>3</sup>

Given the foregoing discussion, it is apparent that there are facilities which would have significant difficulties with recordkeeping on a daily basis (i.e., daily VOC emissions cannot be determined, or application of RACT is not economically or technically feasible on a daily basis). EPA has established

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<sup>2</sup> A "job" is usually defined as an order for a single identifiable product for a single customer. It will require set up time as the proper rolls or other equipment is installed. Hence the machine or line is down both before and after completion of a job.

<sup>3</sup> In addition, some recordkeeping problems can be alleviated if some type of automated bookkeeping is used by the source i.e., computerized records for coating and VOC use, process variables, and emission control parameters. This could greatly simplify the auditing of the process line coating usage and inventories, especially if the source has adequate monitoring and process control devices.

a policy addressing longer averaging times. Sources which desire a longer period must comply with the January 20, 1984 memorandum from John O'Connor entitled, "Averaging Times for Compliance with VOC Emission Limits". This memorandum sets forth specific requirements for approval of averaging times greater than 24 hours. Recordkeeping requirements are directly related to the compliance time interval i.e., in order for compliance authorities to make proper compliance determinations, sources must maintain records on the same basis as is required for these (compliance) determinations. Briefly the requirements of the memorandum are:

1. Daily VOC emissions cannot be determined or application of RACT is not economically or technically feasible on a daily basis.
2. Achieve real emission reductions consistent with RACT control levels.
3. Have an averaging time not to exceed thirty days.
4. Demonstrate that the new standards will not jeopardize attainment or the reasonable further progress (RFP) plan for the area.
5. Have an approved SIP with no violations of ambient standards or a revised SIP demonstrating ambient standards attainment and maintenance of RFP.

In conclusion, daily recordkeeping SIP requirements are appropriate except under conditions as articulated in John O'Connor's January 20, 1984, memorandum.

In addition, the requirement to maintain daily records needed to make emission compliance determinations, in and of itself, may not require a source to compute its emission on a daily basis. In such a case, where there is no emission computation requirement, the source must only maintain the records needed to make a compliance determination for the time interval set forth in the SIP. The relationships of reporting requirements to compliance verifications are addressed in the next two issues of this discussion.

Appendix 3.3

Recordkeeping

b. Deficient Recordkeeping Requirements

In SIPs

(Reserved)

Appendix 3.3

Recordkeeping

- c. Type of Records that should be  
Maintained





ISSUE:

"What Type of Recordkeeping Should be Required?"

Response:

Recordkeeping requirements should be tailored to the source and to the applicable SIP emission limits or other Federal requirements. For this reason, it is not possible to establish a universally applicable policy. However, the following guidance should prove helpful in formulating recordkeeping requirements for particular sources.

Ideally (and currently in some SIPs) records should be kept for each line<sup>4</sup> on a contemporaneous basis. However, due to a mixture of different control methods, this may be difficult. Also SIPs generally require compliance on a line and specific time basis, and therefore, this would govern how records should be kept.<sup>5</sup>

Recordkeeping can generally be broken into two categories. The first category concerns the formulation of coatings, inks, adhesives, etc., and the second is information on the add-on control devices. Formulations data which are needed are fairly straightforward and include the following:

1. Properties of coatings, inks, etc., "as supplied" by coating manufacturing plants on a line-by-line basis. These properties are listed in EPA-450/3-84-019, "Procedures for Certifying Quantity of Volatile Organic Compounds Emitted by Paint, Ink, and other Coatings".
2. Properties of coatings, inks, etc., "as applied" by manufacturing plants on a line-by-line basis. These properties are also listed in EPA-450/3-84-019.

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<sup>4</sup> The definition of a (production) line may vary depending on applicable regulations. NSPS regulations are fairly specific. Some cases may also be defined in the SIP which could also require RACT compliance on a coating by coating basis.

<sup>5</sup> This basis may be different due to individual SIP provisions or where the source has received EPA approval for different recordkeeping requirements consistent with the previously discussed January 20, 1984 John O'Connor memo. In addition, cross line averaging is allowed for can coaters where the SIP does not specifically prohibit such averaging, as stated in the December 8, 1980 Federal Register reference in the above John O'Connor memo.

3. Quantity of ink, coatings, etc., used. This information is generally needed on a line-by-line basis.
4. Type and quantity of dilution solvents used, generally needed on a line-by-line and coating by coating basis.
5. Transfer efficiencies of coating processes if different from those cited in regulations. Credit for higher transfer efficiency may need to be documented and approved by EPA in some cases. This is dependent on the CTG/NSPS category and the specific SIP requirements. More specific guidance in this area is given in the responses to the issues on transfer efficiency.

For add-on controls at least the following information<sup>6</sup> should be kept (checked and recorded daily) in order to assure continuous compliance:

1. Operational parameters on the capture system such as fan power use, duct flow, duct pressure etc.
2. Operational parameters on the control system. These will vary depending on the specific type and design of the device. The use of approved continuous emission monitoring (CEM), which is properly maintained and calibrated, may negate the need for some of the following information:
  - a. For carbon adsorbers: Bed temperature, bed vacuum pressure, pressure at the vacuum pump, accumulated time of operation, etc.
  - b. For refrigeration systems: Compressor discharge and suction pressures, condenser temperature, defrost brine temperature, etc.
  - c. For incinerator systems, flame temperature and accumulated times of operation of incinerator and respective process lines.

<sup>6</sup> This information is general in nature. The specific operating parameters will vary for each type of device and manufacturer. Specific sources of information which will be of use in determining important operating parameters include the following:

- (a) "Survey of Mechanical Reliability of Vapor Control Systems for Bulk Gasoline Terminals", EPA 340/1-85-0017
- (b) The Background Information Documents on the various VOC NSPS source categories.
- (c) The control equipment manufacturer's recommendations.

3. Data used to determine recovery rates of carbon adsorbers and refrigeration systems must be recorded on a daily basis if continuous recordings are not available. This will allow some recovery rates to be compared against VOC usage on the applicable lines.<sup>7</sup> Therefore, records of VOC usage should be maintained even where only add-on controls exist, especially if the source uses a mix of compliance methods.
4. If solvents are not reused or incinerated, ultimate disposal records should be kept.

Operational parameters should be checked by a source on a daily basis in order to assure proper operations. The substitution of continuous recordings, including emergency alarms for certain parameters, can be allowed for certain daily checks. Stack (performance) tests required after a system goes on line, must also be conducted if there are serious operational problems with the source, poor solvent recovery, or important changes in the process or control methods. In addition, since NSPS standards generally identify compliance and recordkeeping requirements, the compliance authority should review these standards when setting recordkeeping requirements for similar facilities regulated under SIP/RACT standards.

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<sup>7</sup> The compliance reviewer must also consider the hold-over (heel) of VOC in the carbon bed when making a review. This hold-over of VOC from one day into the next may give the appearance of excessively high recovery one day and usually low the next. This aberration, in and of itself, should not be considered a non-compliance situation.



Appendix 3.3

Recordkeeping

d. Verification of source compliance

Based on Source Records

ISSUE:

"How Can or Should Recordkeeping be Verified When EPA Cannot Independently Determine Compliance?"

Response:

This response provides guidance relative to verifying compliance of VOC sources. EPA and the States have at least six basic methods for verifying compliance of such sources. These are:

1. Walk through plant.
2. Checking records to make sure the company is complying using the proper formulation mix. This basically consists of auditing records and emission requirements.<sup>8</sup>
3. Checking operation and maintenance records as well as VOC recovery of add-on control systems.
4. Checking the operating permits, fire-safety inspections, and/or insurance company premium/ policies to assure low solvent coatings are used.
5. Testing emissions (stack tests).
6. Verifying (testing) formulations "as supplied" and "as applied" as defined in EPA-450/3-84-019.

Generally, the first method (walk through plant) is not acceptable by itself. As a result, inspections should include a combination of the above methods, especially methods 1, 2, 3 and 6 listed above. Item 2, confirmation of recordkeeping, is required to give companies the incentive to keep accurate records and submit accurate reports to compliance agencies. The confirmation of records should not be too difficult a problem for small shops because they either do not use a large number of formulations, use only complying coatings with little or no VOC diluents, or use only add-on controls.

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<sup>8</sup> This also includes those cases where records are kept on an item by item basis such as can coating where a "standard" coating use per item is used. However it is recommended that the actual coating used in a production run be checked every so often against the "standard".


The source may use "prorating of production" if a production run carries from one day into the next in order to compute emissions as regulations allow. This only applies if production is constant, or known for the required (SIP) time interval.

This relatively easy confirmation sometimes is not the case with larger sources. In some cases where the company has a number of lines using a large number of complying and noncomplying formulations, verification of compliance becomes a significant accounting effort. This is especially true if the situation is further complicated by add-on controls for some lines. However, compliance agencies must still check these sources. If lines or a group of lines can be separated out for auditing this can simplify the process so that only part of a plant need be audited.

In addition, where line-by-line auditing is especially difficult, an audit on a plant-wide basis may be a practical approach even where there is no plant-wide "bubble." Although this does not result in per line compliance, it can give a reasonable indication, a screening, whether a facility is even close to compliance. However, for compliance purposes, this overall plant-wide approach should not replace a line-by-line evaluation where such compliance is required by the SIP.

Therefore, some combination of the aforementioned methods may be required in assuring compliance of various sources. The auditing of process records and testing of formulations may be the only way to verify compliance in some cases, and the agency will have to initiate these procedures if it wants to determine compliance of these sources despite the significant additional resource demands required.

Much of the above agency resource demands may be minimized, or at least better focused, by requiring improved reporting from the source. Besides giving the compliance authorities some idea of what emissions are being emitted from a source, it would also require the source to make the computations to determine its emission rate. This in turn would give some assurance that the source is maintaining some type of records which can be used by EPA and State agencies in verifying compliance. Therefore, as a minimum, quarterly reporting of emission exceedances is strongly recommended wherever State regulations allow.

  
Gerald A. Emison, Director  
Office of Air Quality Planning  
and Standards

4-11-86

Date Signed



## Appendix 3.3

### Recordkeeping

- e. Determining VOC Emissions Where Available  
Records Are Not Consistent With Averaging  
Specified in the SIP Standard



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

JAN 17 1986

OFFICE OF ENFORCEMENT  
AND COMPLIANCE  
MONITORING

MEMORANDUM

SUBJECT: Issues #3(e) and #5 of the VOC Issue Resolution Process: Establishing Proof of VOC Emissions Violations, and Bubbles in Consent Decrees Resolving Civil Actions Under Section 113(b) of the Clean Air Act

FROM: Courtney M. Price *Courtney M. Price*  
Assistant Administrator for Enforcement  
and Compliance Monitoring

TO: Regional Counsels  
Regions I-X

Air Management Division Directors  
Region I, III, V and IX

Air and Waste Management Division Director  
Region II

Air, Pesticides, and Toxic Management Division  
Directors,  
Region IV and VI

Air and Toxics Division Directors  
Regions VII, VIII and X

In the attached memoranda, I am answering two questions that you identified as important issues in our Clean Air Act enforcement effort to reduce emissions of volatile organic compounds ("VOC"). Specifically, this guidance responds to issues #3(e), and #5 of the nineteen issues listed in a May 20, 1985 memorandum titled "Results of May 3 VOC meeting."

The issues addressed by this guidance concern how to establish proof of VOC emission violations (issue #3(e)) and the relationship between pending or potential bubble applications and consent decrees (issue 5). The main theme of the guidance on issue #3(e) is to encourage the use of Section 114 of the Clean Air Act to obtain information where data is not otherwise available to prove violations under the applicable test method. The principle point of the guidance on issue #5 is to emphasize that the current SIP governs until any amendments are federally effective.

This guidance is part of an Agency-wide effort to address VOC enforcement issues and should be considered in conjunction with the responses to the other VOC issues, which will be distributed by the responsible EPA offices as they are developed.

One major comment regarding issue 3(e) was repeated by several commentors during the second round of review and is worth mentioning briefly here. The comments suggested that rather than attempting to fix recordkeeping problems through §114 requests, EPA should work towards incorporating better recordkeeping requirements in the state implementation plans. For example, EPA could issue SIP deficiency notices where the SIP does not provide for recordkeeping requirements adequate to determine if the source is in compliance with the SIP.

Our response to issue 3(e) is designed to deal with those interim problems concerning recordkeeping which arise prior to the resolution of the more fundamental concern of poorly drafted SIP recordkeeping requirements. The issue of how to improve the SIP's is being addressed by the Control Programs Development Division. The attached guidance is intended to advise you of the tools available to obtain better evidence of violations, and my office's policy concerning the use of those tools, until such time as they may become unnecessary because of corrective SIP revisions.

I appreciate the efforts of the Regions in commenting on the various drafts of the two following documents and hope that you find them helpful in resolving some of the issues concerning VOC enforcement.

Attachments

ISSUE NUMBER 3(e): How are VOC emissions to be calculated over a chosen averaging time when a company is not required to, or does not, maintain records directly pertinent to that unit of time?

RESPONSE: This issue is presented when the period for assessing compliance under the SIP with the VOC emission limitation (e.g., a source must meet a percent VOC limitation over a 24 hour period or instantaneously) does not correspond to the records maintained by the source (e.g., records of VOC usage are kept by the source only on a monthly basis). The issue is also presented in other contexts. For example, a SIP may require line-by-line compliance while the source records are maintained only on a plant wide basis. The issue is important because compliance determinations for many types of VOC sources rely upon the records of VOC usage kept by the individual company.

Where the SIP itself requires records to be maintained that correspond to the SIP emission limitations, corrective action can be taken under Section 113 of the Clean Air Act to require the source to keep the proper records. This action can consist of the issuance of an administrative order under Section 113(a), or the initiation of a judicial action under 113(b). The remainder of this memorandum addresses the situation where the SIP does not contain such a record keeping requirement.

There are four recommended techniques available to determine source compliance with VOC SIP emission limitations in the absence of a SIP record keeping requirement for source records which correspond to the SIP emission limitations. These four different techniques are primarily useful in four different contexts.

The first technique consists of the use of mathematical algorithms. A description of two different types of available algorithms is attached (attachment 1). Both apply various mathematical computations to monthly or yearly data to produce a figure representing the minimum number of days that a source had to be out of compliance with the SIP emission limit. This calculation is statistically based and does not identify the particular days that a source was in violation. Use of the algorithms may be helpful in settlement discussions with the source and in determining a settlement penalty.

Use of the results of the algorithms in a different context, to prove violations at a trial or hearing, presents several issues. Defendants can be expected to argue that the Government may prove violations only through the use of the appropriate test method, which would be the method specified

in the federally-approved SIP, or if there is none, the appropriate EPA test method in 40 CFR Part 60 (see 40 CFR §52.12(c)). To overcome this point, the Government would have to argue that violations can also be proven through expert opinion testimony under the Federal Rules of Evidence, Rule 702 (Testimony by Experts), 703 (Basis of Opinion Testimony by Experts), and 704 (Opinion on Ultimate Issue). In order to use the results of the algorithms as evidence of violations at a trial, the Government should be prepared to prove the statistical validity of the algorithms through expert testimony, and to show through the opinion of an expert, based upon the results of the algorithms, that the source had to be in violation for a given number of days. The Government would not be able to prove precisely which days a company was out of compliance nor which lines (or how many lines) were out of compliance. The Government would be able to show, based on the source's total VOC output and the restrictions provided in SIP, that at least one of the lines at the source was out of compliance for a certain minimum period of time. Sole reliance on algorithms has the negative effect of calculating violations on an averaging basis in what may be the absence of any SIP provision authorizing averaging.

Because of these potential issues of proof and the effect of averaging out some violations by using algorithms, steps should be taken to obtain the data necessary to calculate emissions under the applicable test method. Thus, the second recommended technique to determine source VOC compliance is to use Section 114 of the Clean Air Act to request currently existing source records which can be used to develop the data necessary to make compliance determinations under the applicable test method. Items such as sales slips, invoices, production records, solvent orders, etc., may be available and useful in developing the necessary data for the test method calculations. Once a case has been filed discovery can also be used to supplement the information obtained under Section 114.

The third recommended technique to determine source VOC current and future compliance is the issuance of a request under Section 114 requiring the source to prospectively keep the necessary records. This technique is the most straightforward of the three and the one that should generally be pursued. It may be the only option in the case where sources have not kept records in a form which can be used, directly or indirectly, to determine compliance under the applicable test method. It may also be the only realistic option where the use of existing records to develop the necessary data for the test method calculations would be unduly time-consuming and burdensome for the Agency.

Under the authority of Section 114, EPA may require a source to establish and maintain records reasonably required to determine compliance with the SIP (Section 114(a)(1)(A) and (B)). By issuing such a request, EPA would impose an obligation on a source to keep and maintain those records which are necessary to calculate compliance determinations under the applicable test method. The requested record keeping should be in a format consistent with the SIP emission requirements. Thus, if the SIP requires compliance on a line-by-line basis and on a 24 hour average, the records should be kept on the basis of individual lines using no more than 24 hour averaging. Also, the required measurements as to VOC content should be consistent with applicable EPA test methods. For example, EPA should require in the Section 114 request that data on the VOC content of a particular coating or ink is produced through a measuring process identical to EPA's method 24 or 24 A in 40 C.F.R. §60 App. A.

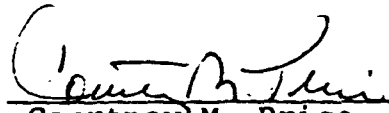
As a fourth technique, Section 114 may also be used to require a source to sample emissions in accordance with the methods prescribed by EPA (Section 114(a)(1)(D)). Thus, Section 114 may be used to require a source to conduct an emissions test in accordance with the applicable test methods. This type of Section 114 request would probably be the most appropriate where compliance determinations are made on the basis of emissions testing as opposed to an analysis of the VOC content of the individual coatings used. In certain situations where it is unclear whether the coating or ink supplier is using proper test methods, EPA may want to require the user of those coatings to run tests for VOC content using EPA's approved test methods.

In conclusion, algorithms exist and are available to estimate the minimum number of days a company was out of compliance with SIP VOC emission limitations in the absence of company records which are necessary to make compliance determinations under the applicable test method. The results of the algorithms are primarily useful for purposes of settlement discussions or for identifying sources which should be required to submit information under §114. While this guidance does not preclude using algorithms and expert opinion testimony to prove violations at a trial, the Government should be prepared to prove at least some days of violation through the applicable test method in the event that expert opinion evidence is rejected by the judge. The records necessary to develop this proof under the applicable test method can be sought through a Section 114 request for information where the company has data which can be used

to develop the necessary records. Such records can also be developed on a prospective basis through a requirement imposed under the authority of Section 114 requiring the source to maintain the necessary records. Finally, Section 114 can also be used to require source testing of emissions.

Future litigation reports based upon VOC SIP emission limitation violations should, if at all possible, either contain proof of violations using the applicable test method covering at least part of the period of time the source is alleged to be in violation of the emission limitation or should contain a cause of action based upon a source's failure to comply with a previous request issued under Section 114 for source records or testing. Prior to the referral of a report, the authority granted EPA under Section 114 should be used, where necessary, to obtain the data needed to establish some days of violation under the applicable test method. Through the use of Section 114, the Government should either have the evidence needed to prove specific violations, or, if a source fails to comply with the Section 114 request, a basis to proceed under Section 113(b)(4) for violation of Section 114. Litigation reports relying solely upon algorithms to evidence violations are appropriate only if, after diligent effort to obtain more detailed data, statistical proof through the use of algorithms remains the only available technique.

If you have any questions concerning this guidance, please contact Burton Gray at FTS 382-2868.



Courtney M. Price  
Assistant Administrator

JAN 17 1986

Appendix 3.4

Determining if SIP Provisions are Generic: Bubbles,  
Equivalency Provisions, Variances, and Similar SIP  
Provisions (Reserved)





Appendix 3.5

Bubbles In the Context of a  
Consent Decree

ISSUE NUMBER 5: How Can EPA Include A Bubble In The Context Of A Consent Decree?

RESPONSE: EPA cannot endorse a consent decree which contains a schedule for compliance with a bubble until EPA has promulgated final approval of the particular bubble as a SIP revision (or until the bubble has been approved by the State if the bubble is granted under a generic bubble provision). This position is supported by existing Agency policy ("Guidance for Drafting Judicial Consent Decrees" issued on October 19, 1983), Section 113 of the Clean Air Act and case law.

A consent decree must require final compliance with the currently applicable SIP. The Agency's "Guidance For Drafting Judicial Consent Decrees," states that consent decrees must require final compliance with applicable statutes or regulations. Other than interim standards, a decree should not set a standard less stringent than that required by applicable law or regulation, because a decree is not a substitute for regulatory or statutory change. (See page 11 of the Guidance.)

Section 113(b)(2) of the Act, 42 U.S.C. 7413(b)(2), provides EPA with the authority to initiate civil actions to obtain injunctive relief to correct source violations of the SIP. A settlement of such an action must include a requirement to comply with the SIP provisions that formed the basis of the request for injunctive relief. The settlement cannot require final compliance with a provision not yet a part of the federally approved SIP.

Case law also supports the proposition that the SIP may only be changed through certain specific procedures and that absent those procedures, no change can be effected to the original SIP emission levels. Train v. Natural Resources Defense Council, 421 U.S. 60 (1975). The SIP, as approved through a formal mechanism by EPA, sets the official emission limits and remains the federally enforceable limit until changed. Ohio Environmental Council v. U.S. District Court, Southern District of Ohio, Eastern Division, 565 F.2d 393 (6th Cir. 1977).

A decree may contain a general provision recognizing that either party may petition the court to modify the decree if the relevant regulation is modified, as would be the case with a bubble. The following language is an example of such a reopener clause where EPA approval of the individual bubble is required.

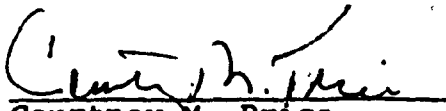
If EPA promulgates final approval of a revision to the applicable regulations under the State Implementation Plan, either party may, after the effective date of the revision, petition the Court for a modification of this decree.

If a federally approved generic procedure is applicable, the reopener clause should be modified to reflect the particular generic procedures.

If a SIP revision that affects a decree's compliance schedule is finally approved, decree language, as indicated above, may permit the source to petition the court for a modification of the schedule. A source is relieved from its obligation to meet the existing schedule only upon final approval by EPA, or by the state if under a federally approved generic bubble regulation, of the SIP revision and only upon a modification of the decree. The consent decree may not contain a clause which would automatically incorporate any future bubble.

It is important to note in the above context that consent decree compliance schedules must be as expeditious as practicable in terms of implementing a control strategy to achieve compliance with the existing SIP and may not add in extra time to provide for final EPA action on a request for a SIP revision. The "Guidance for Drafting Judicial Consent Decrees" states on page 12 that, "The decree should specify timetables or schedules for achieving compliance requiring the greatest degree of remedial action as quickly as possible." The concept of expeditiousness was taken from §113(d)(1) (applicable to compliance schedules in Delayed Compliance Orders) which was added to the Clean Air Act by the Amendments of 1977. The principle was incorporated into Agency guidance issued shortly after the 1977 amendments pertaining to compliance schedules in judicial consent decrees, e.g., "Enforcement Against Major Source Violators of Air and Water Acts" - April 11, 1978 (see pg. 4), and "Section 113(d) (12) of the Clean Air Act" - August 9, 1978 (see pg. 2).

If you have any questions concerning this guidance please contact Burton Gray of AED at FTS 382-2868.

  
Courtney M. Price  
Assistant Administrator

JAN 17 1986

Appendix 3.6

Schedule for Low Solvent Technology



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

AUG - 7 1986

MEMORANDUM

SUBJECT: Policy on the Availability of Low-Solvent Technology Schedules in Clean Air Act Enforcement Actions

FROM: J. Craig Potter  
Assistant Administrator  
for Air and Radiation (ANR-443)  
*Richard H. Myers*  
Acting Assistant Administrator  
for Enforcement and Compliance Monitoring

TO: Regional Administrators  
Regions I-X

Your staffs have requested resolution of the issue of when low-solvent technology (LST) schedules can be considered as an available method of compliance in cases brought to abate emissions of volatile organic compounds (VOC). They also asked for guidance on what period of time should be given in a compliance schedule. In response, we have determined the following Agency policy.

Background

In earlier guidance addressing options for VOC control, EPA encouraged the low solvent (reformulation) approach. Though compliance dates in the SIPs were generally December 31, 1982, EPA recognized when the earlier guidance was issued that it could take longer than December 31, 1982 for sources to develop and implement complying coatings. Through surveillance and enforcement activities by the States and EPA in recent years, it became evident that many sources had not made serious efforts to find complying coatings or, in some instances, efforts directed toward complying coatings failed to yield desirable results. Often, sources were not vigorously pursuing the alternative of installing add-on controls. As a result we now face extended non-compliance, increased VOC enforcement activity,

and a need to issue specific guidance on what is an acceptable schedule for VOC violators where pursuit of LST is being considered. It must be emphasized that more than five years have passed since the VOC regulations were first adopted by the States. With the ozone attainment dates already past in many areas and less than two years away in extension areas, it is critically important to assure compliance in an expeditious manner.

#### Policy

LST schedules may be used in EPA enforcement actions as long as the following five conditions are met:

1. The schedule must be expeditious. It can provide no more than three-months from the date of filing of the complaint (or equivalent State action in cases where the State is pursuing the enforcement action) for a source to demonstrate compliance using complying coatings.
2. Add-on controls must be part of the schedule with a commitment to implementation should the LST program fail. The add-on control program can extend up to an additional twelve months. It must begin at the end of the three-month (or shorter) LST schedule and have increments of progress encompassing: commencing engineering studies, ordering control equipment, commencing installation of control equipment, completing installation, and demonstrating compliance.
3. Final compliance cannot extend beyond December 1987.
4. Stipulated penalties must be part of the schedule for failure to meet incremental dates of the add-on control program.
5. Civil penalties must be obtained. (This requirement is established by previous policies such as the September 20, 1982 Post-1982 Enforcement Policy and the June 28, 1984 "timely and appropriate" guidance for the air program. These policies are located at Sections V.R. and I.I. respectively in the Clean Air Act Policy Compendium.) Penalties assessed by EPA must be consistent with the September 12, 1984 CAA Stationary Source Civil Penalty Policy, as amended, and penalties assessed by States must be consistent with the June 26, 1984 guidance by the Deputy Administrator entitled "Implementing the State/Federal Partnership in Enforcement: State/Federal Enforcement Agreements." These policies are located at

Sections V.Y. of the Clean Air Act Policy Compendium and Tab GM-41 of the General Enforcement Policy Compendium, respectively.

Schedules resolving State enforcement actions will be evaluated in light of this policy to determine the appropriateness of EPA deferring to the State resolution. A State enforcement resolution should include at least conditions (1), (2), (3) and (5) of those required in EPA actions.

This policy is effective on the date of this memorandum, except for the following limited situation. To allow for a smooth transition, ongoing State settlement negotiations where greater than three-month LST schedules are being considered will be accepted as long as the other elements of this policy for a State enforcement resolution are satisfied. This limited exception will terminate ninety days from the date of this guidance.

This policy is not applicable to schedules issued pursuant to Section 113(d). Approvability of those schedules is dependent upon meeting the requirements of Section 113(d). However, in making a determination of expeditiousness for a DCO, the concepts outlined in conditions (1) and (2) of this guidance should be followed.

If you have any questions on this policy, please call your Regional liaison contact in OAQPS's Stationary Source Compliance Division or OECM's Air Enforcement Division.

cc: Air Division Director, Regions I-X  
Regional Counsel, Regions I-X





UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

AUG - 7 1986

OFFICE OF  
AIR AND RADIATION

MEMORANDUM

SUBJECT: Policy on SIP Revisions Requesting Compliance Date Extensions for VOC Sources

FROM: J. Craig Potter  
Assistant Administrator  
for Air and Radiation

TO: Regional Administrators  
Regions I-X

A handwritten signature in cursive script, appearing to read "J. Craig Potter".

A number of States have asked EPA to approve SIP revisions granting compliance date extensions for individual VOC sources in ozone nonattainment areas. The attached policy sets forth EPA's position on when approval of such SIP revisions is appropriate and what the States must demonstrate in order for EPA to approve them. Regional Offices should review the requests for SIP revisions for conformance to this policy. SIP revisions now pending at Headquarters will also need to be reviewed by the Regions in light of this policy.

Attachment

cc: Richard H. Mays, OECM  
Gerald A. Emison, OAQPS  
Alan Eckert, OGC  
Air Division Directors, Regions I-X  
Regional Counsels, Regions I-X

Policy on SIP Revisions Requesting Compliance Date  
Extensions for VOC Sources

In order to approve a source-specific compliance date extension, two tests must be met. First, a State must demonstrate that the extension will not interfere with timely attainment (attainment by the formally established attainment date) and maintenance of the ozone standard and, where relevant "reasonable further progress" (RFP) towards timely attainment. <sup>1/</sup> The attainment date will generally be December 31, 1982, or the date established under Section 110 where the State has adequately responded to a request for SIP revisions under §110(a)(2)(H), or December 31, 1987 in ozone extension areas. The demonstration may be based on a comparison between the margin for attainment predicted by the demonstration submitted with the approved ozone SIP <sup>2/</sup> and the increased emissions that would result under the proposed compliance date extension. <sup>3/</sup> If there is an adequate margin to absorb the increased emissions (and the extension would not interfere with RFP), then EPA may conclude that the compliance date extension will not interfere with the attainment and continued maintenance of the ozone standard.

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<sup>1/</sup> The reference to a demonstration of RFP towards timely attainment is not intended to redefine RFP but only reaffirms that an RFP analysis is required.

<sup>2/</sup> For areas where revisions to the Part D SIP are required (such as 1987 extension areas or SIP call areas) and those revisions have not been fully approved, the State would have to submit a demonstration the equivalent of that required for EPA approval of the ozone SIP. Without an approvable demonstration EPA cannot determine whether the individual compliance date extension will interfere with timely attainment and maintenance of the standard, or with RFP. A de minimus showing would not be acceptable, since in the aggregate even very small sources would contribute significantly to ozone formation.

<sup>3/</sup> In making such a comparison it will be necessary to determine what, if any, portion of the margin has been utilized by new sources of VOCs that may have located in the area since the SIP was approved, as well as by existing VOC sources that may have already been granted compliance date extensions.

If the State or EPA believes that there has been a substantial change in the inventory of VOC sources or total VOC emissions since the ozone SIP was approved so that the margin of attainment has changed significantly, a revised demonstration in support of the source-specific SIP revision should be submitted. 4/

Second, time extensions also must be consistent with the requirement that nonattainment area SIPs provide for "implementation of all reasonably available control measures as expeditiously as practicable" [§172(b)(2)]. Expeditiousness should be demonstrated by determining when the source was first put on notice of the applicable requirement (e.g., adoption of the current regulation by the State) and the time that has elapsed since then. EPA has generally determined that for most VOC sources this period is less than three years. 5/ Any source-specific SIP revision for a compliance date extension within these timeframes may be presumed to be expeditious. Compliance date extensions for periods longer than these timeframes, however, should be closely scrutinized to determine whether or not they are truly expeditious. 6/ This should include an examination of the compliance status of other sources nationally in the same VOC source category (this examination would be the responsibility of the State), and the most expeditious means of compliance available (including add on control equipment, process change, or raw material improvement) irrespective of the method proposed in the SIP

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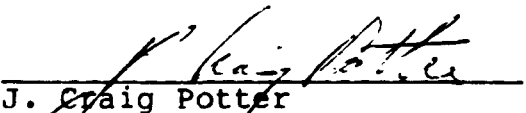
4/ Such a demonstration would be necessary, for example, in areas originally demonstrating attainment by 1982, but for which post-1982 monitoring data are indicating exceedances of the ozone standard or raising serious questions about the original prediction of attainment.

5/ For three source categories (can coating operations, graphic arts printing and automotive assembly plant paint shop operations), based on industry experience EPA has through policy statements concluded that expeditiousness may be longer than three years.

6/ The same holds true for review of individual compliance date extensions incorporated in any area-wide ozone SIP revisions submitted by a State (such as those being submitted pursuant to an EPA SIP call under Section 110(a)(2)(H)). Any change in the original deadline for an individual VOC source incorporated in an area-wide ozone SIP revision must be demonstrated to be expeditious (as well as not interfere with timely attainment and maintenance).

revision. Unless it can be shown that the original timeframe approved in the SIP did not allow sufficient time for an economically and technologically feasible compliance plan to be implemented, a SIP revision for a compliance date extension beyond the timeframes set forth above should be denied.

In conclusion, both the demonstration of timely attainment (including RFP where relevant) and maintenance and the expeditiousness tests must be met before a State SIP revision can be approved.

  
J. Craig Potter  
Assistant Administrator  
for Air and Radiation

**AUG - 7 1986**



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

NOV 21 1986

MEMORANDUM

SUBJECT: Early Compliance And Stipulated Penalties in  
VOC Enforcement Cases

FROM: John B. Rasnic, Acting Director *John B. Rasnic*  
Stationary Source Compliance Division  
Office of Air Quality Planning and Standards

Michael S. Alushin *M. S. Alushin*  
Associate Enforcement Counsel  
Air Enforcement Division

TO: Air Management Division Directors  
Regions I, III, V and IX

Air and Waste Management Division Director  
Region II

Air, Pesticides, and Toxics Management Division  
Directors  
Regions IV and VI

Air and Toxics Division Directors  
Regions VII, VIII and X

Regional Counsels  
Regions I-X

In an August 7, 1986 policy issued by Craig Potter and Richard Mays ("Policy on the Availability of LST Schedules In CAA Enforcement Actions"), EPA disallowed any compliance schedules in consent decrees which gave the source more than three months after the filing of the complaint to reach compliance through the application of low solvent technology. Two issues have arisen concerning the application of this policy which we hope to answer below.

**RECEIVED**

NOV 28 1986

ENFORCEMENT CASE  
ACTIVITIES SECTION

First, consent decrees may contain a clause providing for compliance through a means other than add-on controls prior to the compliance date for add-on controls. Such a clause could read "(Source) agrees to attain final compliance by (date of add-on controls) through the following schedule for controls, or by some other means at an earlier date." The language should be general in order to keep EPA from committing itself to a compliance plan other than the add-on control schedule.

Second, even if the source achieves early compliance through low solvent technology, EPA will not forgive stipulated penalties which have been incurred as the result of missed milestones in the schedule for installing add-on controls. However, we will not require stipulated penalties for the milestones which come after the date that the source achieved compliance through low solvent technology. The rationale for this position is that we view the add-on schedule to be the "real" one in these cases, and in order for sources to take that schedule seriously, we need to collect stipulated penalties until the time compliance actually occurs. Including a clause allowing complete forgiveness of stipulated penalties would encourage sources to continue to gamble on the possible success of low-solvent technology, precisely the situation that we hoped to end by issuing the August 7, 1986 policy.

cc: VOC Workgroup Members

**RECEIVED**  
NOV 28 1986  
ENFORCEMENT CASE  
ACTION SECTION



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

DEC 23 1986

MEMORANDUM

SUBJECT: Availability of Low-Solvent Technology ("LST")  
Schedules in Clean Air Act Section 120 Enforcement  
Actions

FROM: Michael S. Alushin *M. S. Alushin*  
Associate Enforcement Counsel  
Air Enforcement Division

John B. Rasnic, Acting Director *John B. Rasnic*  
Stationary Source Compliance Division

TO: Addressees

On August 7, 1986, EPA issued a "Policy on the Availability of Low-Solvent Technology Schedules in Clean Air Act Enforcement Actions" against Volatile Organic Compound ("VOC") emission sources (the "LST Policy") (attached). The purpose of the LST Policy is to ensure compliance with VOC emission limitations as expeditiously as practicable. It does so by mandating that such schedules meet five conditions in order to receive EPA approval.

The purpose of this memorandum is to answer the question, posed by one Office of Regional Counsel, whether and, if so, how the LST Policy applies to Section 120 administrative actions. The brief answer is that major elements of the LST Policy do apply to such actions, and that Section 120 can serve as a useful tool in implementing that policy.

EPA drafted the LST Policy with Section 113 civil actions -- in which EPA has injunctive authority -- in mind; the Policy speaks in terms of conditions and requirements which LST compliance schedules must meet in order to be acceptable to EPA. For example, the LST Policy defines "expeditiousness" so as to require that an LST schedule provide for compliance no later than three months from the date on which the government files a civil complaint.

Section 120 on the other hand does not provide injunctive power as such; by its terms, it authorizes EPA only to recoup from a source the economic benefit of its noncompliance.

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Air Management Div. 1000

AIR ENFORCEMENT BRANCH  
EPA Region III

However, in conformity with the structure of the Clean Air Act, EPA does require under §120 that a source demonstrate compliance with applicable law as expeditiously as practicable. Indeed, to read §120 otherwise would defeat its purpose, for a central concern of Congress propelling enactment of §120 was that existing civil remedies were not effecting compliance expeditiously enough. A key feature of §120 -- its "penalty clock" which won't stop "ticking" until a source achieves compliance -- is intended to spur speedy compliance by eliminating incentives to delay. In addition, Congress wrote into the text of §120 itself tight deadlines for the administrative resolution of challenges to Agency determinations of liability and penalty amount, so as to speed the process leading to compliance.

Moreover, the same compliance considerations which led to the LST policy apply whether the enforcement vehicle is civil or administrative. These considerations include unacceptable levels of VOC noncompliance and real concern over the prospects for meeting deadlines for attainment of the National Ambient Air Quality Standard for Ozone.

Therefore, it is the Agency's intention that the LST Policy guide, to the extent possible, enforcement actions brought under §120 as well as under §113. This has the following consequences, among others.

First, Regions may import into §120 the LST Policy's definition of "expeditious".\*/ This means that EPA may require that a source which proposes to comply by LST base its §120 penalty calculation on a compliance schedule no more than three months long. (The schedule begins on the date the source receives the §120 Notice of Noncompliance.) For sources which intend to comply by LST, but which cannot do so within the three-month period, the calculation should be based instead on the costs to install "add-on" pollution control equipment, over the normal period required for that installation.

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\*/ The LST Policy sets out several other enumerated elements which a civil consent decree must contain in order to win EPA approval. These elements include provisions for civil penalties, stipulated penalties, and specified increments of progress incident to compliance schedules. While it certainly is acceptable to include some of these elements in a §120 administrative consent agreement, it is not appropriate as a matter of §120 policy to require it.



Second, regions should be mindful of limitations which this approach may present, given the nature of the §120 remedy. For example, §120 requires two calculations of the noncompliance penalty, one before and one after compliance is achieved. The second "revises" the first, based on the costs of compliance actually incurred, which in turn depend on the means of compliance actually chosen. Therefore, in a §120 action where compliance by LST is not achievable within three months, but is achievable in the same time it would take to install add-on controls, or sooner, a source may choose to continue its LST compliance program even in the face of the LST Policy, in the belief that that choice would result in a smaller §120 penalty. To enforce the "expeditious" compliance required by the LST Policy in such a case, EPA might need to bring a civil action under §113 for specific injunctive relief and expanded penalties.

Third, it is important to remember that §120 actions once instituted must be properly concluded. For example, a §120 action cannot be brought merely as leverage in enforcement efforts against a source, then dismissed once it has helped induce compliance or once a §113 action becomes necessary. A §120 action must be concluded pursuant to §120 and its implementing regulations and interpretative policies. See especially "Permissible Grounds for Settlement of Noncompliance Penalties Under Section 120 of the Clean Air Act" (March 19, 1985) (governing reductions in penalties), and "Rules Governing Conclusion of Clean Air Act Section 120 Actions" (May 15, 1985) (governing settlements of §§113 and 120 actions against same violation). (These documents are set out in the Clean Air Act Compliance/Enforcement Guidance Manual at VII.L. and VII.M., respectively.)

The prospect of being subject to simultaneous enforcement actions under Sections 120 and 113 should provide a source strong incentive to comply promptly in response to the §120 action alone. However, if it appears likely that a Section 120 action would not by itself induce compliance, it may be preferable to bring a §113 civil action instead, so as to minimize the burden on EPA enforcement resources.

We are hopeful that this guidance will clarify the appropriate role for §120 in VOC enforcement actions against sources proposing compliance or conversion to low-solvent technology coatings. Should you have any questions or comments concerning this guidance, please contact Laurence Groner of the Air Enforcement Division at FTS 382-2820.

Attachment

Addressees:

Regional Counsels  
Region I-X

Air and Waste Management Division Director  
Region II

Air Management Division Directors  
Regions I, III, V, and IX

Air, Pesticides, and Toxics Management Division Directors  
Regions IV and VI

Air and Toxics Division Directors  
Regions VII, VIII, and X

Regional Counsel Air Contacts  
Regions I-X

David Buente, Chief  
Environmental Enforcement Section  
DOJ

Appendix 3.7  
Non Major ("B") Sources

Issue: At the present time all Class A1 and A2 VOC sources in the New York City (NYC) Metropolitan AQCR have been identified and verified, and those which are out of compliance have been placed on the significant violator list. Region II would like to have all Class B VOC sources which have an ERP > 50 TPY and are out of compliance, placed on the significant violator list. By doing this the Region would be able to more accurately reflect its continuing enforcement effort in the NYC Metropolitan area, currently non-attainment for VOCs.

Response:

As noted in the Agency Operating Guidance for FY 1986-1987, SSCD will be developing a strategy that addresses Class B VOC violators in ozone non-attainment areas where control of such sources is essential to attainment. This strategy will become operational in FY 1987 (see attached for initial thinking on the elements of this strategy). One issue to be considered is the possibility of expanding the significant violator definition in FY 1987 to include selected Class B sources.

  
\_\_\_\_\_  
Edward E. Reich, Director  
Stationary Source Compliance Division  
Office of Air Quality Planning and Standards

JAN 31 1986

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**ENFORCEMENT CASE**  
**ACTIVITIES SECTION**

#### G. Class B VOC Sources

Develop general and area-specific strategies for dealing with Class B VOC sources. Elements of the strategies would have to include:

- (1) identification of which source categories with substantial numbers of Class B sources are significant contributors to nonattainment in the areas of concern
- (2) analysis of relative amounts of reductions likely to be obtainable from such source categories, to determine the most cost-effective areas of focus, nationally and in each geographic area
- (3) identification of the status of regulation of such source categories in areas where they are important and additional regulatory actions possible
- (4) inventorying Class B sources (or at least the larger Class B sources) in the source categories of concern to each area
- (5) determining compliance status of Class B sources of concern in each area
- (6) initiation of appropriate enforcement actions to resolve violations

From a national perspective, strategy development would have to consider:

- (1) compliance determination approaches for large numbers of small sources
- (2) expansion of "t and a" and significant violator concepts to selected Class B VOC sources
- (3) mechanisms for obtaining compliance less resource-intensive than traditional approaches
- (4) penalty policies and methods of assessment
- (5) public and industry education programs to enhance voluntary compliance
- (6) mechanisms for handling compliance data and any necessary modifications to CDS guidance

To begin to address the Class B VOC problem:

- (1) SSCD has committed to develop during FY 1986 a strategy (or strategies) for dealing with Class B VOC sources in areas where their control is important for attainment
- (2) The FY 1986 grants allocation targets \$1 million for States to develop and refine Class B VOC inventories
- (3) The draft FY 1987 budget contemplates expanded efforts to address Class B sources, as well as implementation of a Reasonable Efforts Program

Appendix 3.8

Distribution of Policy and Guidance

Issue: It has become apparent that EPA is taking a tougher enforcement stance on the round II CTG's than was evident in round I. Notice of this change came through the August 17, 1984 Lillquist letter which was an attachment to the October 2, 1984 memorandum on coordinating key issues in VOC cases from Micheal Alushin, Associate Enforcement Counsel. Although Region III generally supports this change in policy, we are extremely concerned about the method and timing of disseminating this policy.

This tougher stance on compliance represents a significant shift in policy. The novel distribution approach of attaching it to a memorandum which appears to have been intended for limited distribution leaves much to be desired. States have been negotiating schedules over the last year which reflect EPA's more laissezfaire enforcement posture taken on the round I CTG's. This change in policy is coming to them (and us) about one year late. As a result, it will disrupt the processing of orders and SIP's negotiated by States under our previous enforcement posture and strain EPA/State relations.

Region III suggests that Headquarters reassess its method of policy distribution. If EPA is to ensure the timeliness and appropriateness of State enforcement activities, we must inform the States of the rules of the game in a timely and appropriate manner.

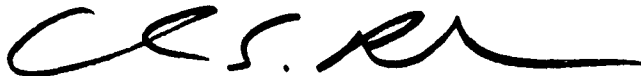
Response:

Traditionally, it is SSCD's approach to issue guidance or policy documents to the Regional Offices with ongoing staff support to respond to questions or provide clarification. Subsequently, it is incumbent upon the Regional Office to disseminate this information to its States in any manner it chooses.

In the VOC area, a Regional-Headquarters compliance workgroup was established to be a focal point for VOC issues and subsequent policy or guidance. SSCD chairs this workgroup and has distributed numerous VOC articles and policy memoranda through the workgroup members. The August 17, 1984 Lillquist letter cited in the issue was distributed to the Air Branch Chiefs on August 29, 1984, with copies to the Workgroup members (see attached).



In order to assure that all SSCD policy and guidance memoranda are being seen by the Regional Office staff, SSCD will institute a process of listing quarterly all policy and guidance memorandum that have been issued. This list will be sent to the Air Branch or Compliance Branch Chiefs. Where a memorandum on this list has not been seen by the Region, a request can be made for a copy. It will be incumbent upon the Region to assure that appropriate memoranda are distributed to the States and locals. The process of providing this listing will commence at the end of the first quarter FY 1986.



---

Edward E. Reich, Director  
Stationary Source Compliance Division  
Office of Air Quality Planning and Standards

7/31/86

Appendix 3.9

Economic Feasibility of RACT  
Non CTG and Source Specific RACT  
Determinations

## Issue:

What criteria should be used to determine economic feasibility for non-CTG VOC sources? For CTG sources where recommended RACT is technically infeasible?

## Response:

EPA's definition of VOC RACT for ozone plans is the lowest emission limitation that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility. This is explained in greater depth in the September 17, 1979 supplement to the general preamble on the criteria for approval of Part D SIP revisions (44 FR 53761). Where EPA cannot rely on presumptive norms, RACT for a particular source is determined on a case-by-case basis considering the technological and economic circumstances of the individual source. Hence, whether or not a source is addressed by a CTG, no universally applicable decision rule can supplant case-by-case judgment on what constitutes RACT.

In evaluating economic feasibility for RACT, the Agency gives significant weight to cost-effectiveness. However, no specific cost effectiveness threshold exists to determine RACT. Numerous other factors (i.e., age of facility, quantity of emissions, nature of emissions, severity of existing air quality problem, extent of controls present, comparability to standard industry practice in related industries, cross media impacts, economic impacts, etc.) must be considered in establishing RACT. It is conceivable, given differing local circumstances, that a control option could be reasonably available in one location and unreasonable in another.



Gerald A. Emison, Director  
Office of Air Quality Planning and Standards

4-11-86

Date Signed

Appendix 3.10

Solids-As-Applied  
Determining Equivalency

(Reserved)

Appendix 3.11

NSPS vs RACT Limits  
Averaging Time Differences

(Reserved)

Appendix 3.12

Regulating Total VOC vs. VOC  
Coating Content

Dropped-No Action Required

Sources Must Meet SIP Requirements

Appendix 3.13

Baseline Year

Issue

What baseline year should be used for determining VOC percent emissions reductions as per State SIP regulations?

Response

° There is no one particular year that can be considered to be the baseline year for compliance purposes for all source categories. The baseline year is generally considered to be the effective date of the emission control regulation for the source category.

° The SIP itself, however, should be checked to determine if it contains language affecting baseline year determinations. It is possible that in approving the SIP either EPA or the State commented on this issue, thus providing guidance to sources. If there is no contrary guidance in the SIP, the general rule stated above should take effect.

° The stated issue and response relate to individual source compliance rather than to a SIP planning baseline or emissions trading issue. SIP baselines are defined in current policy and the issue of baselines relative to trading is covered in the various Agency policy documents on trading.

° The issue is only applicable to "percent reduction" types of regulations. A regulation based strictly on "VOC content" (e.g., lbs VOC/gal coating or percent solvent regulations, etc.) or add-on control equipment percent requirements, would not require a baseline date as compliance would be based only on a comparison against the SIP emission limits.

° The "percent reduction" requirement applies to the emission rate as expressed in terms of VOC content, not to total VOC emissions. That is, the percent reduction applies against the pre-control coatings/inks formulations, not to the emissions in mass per unit of time. This is consistent with the intent of the CTG's. The pre-control coatings/inks formulations used as the baseline in determining percent reductions must be representative of the coatings/inks in use at the time the regulation became effective.



Gerald A. Emison, Director  
Office of Air Quality Planning  
and Standards

26

Date Signed



Appendix 3.14

Site Specific RACT Determination

Issue: Are there any site-specific RACT limits being set?

Response: Site-specific RACT determinations are required for > 100 T/yr stationary sources not covered by a CTG where (1) sources are located in urbanized areas that did not attain by 1982 and (2) for urbanized areas that have requested an extension until 1987. In addition, case-by-case RACT determinations are allowable where the CTG suggested limit has been found to be technologically or economically infeasible. These case-by-case RACT determinations must be approved by EPA as source-specific SIP revisions.

Site-specific RACT determinations have been <sup>made</sup> for a number of > 100 T/yr stationary source categories not covered by CTG's. Examples of this are Region IV RACT determinations for aluminum foil plants, woodworking plants, etc. Region I reportedly is making RACT determinations for a large number of sources. For example, more than 30 site-specific non-CTG RACT determinations in the State of Massachusetts will be submitted as SIP revisions to EPA in the near future. Also, a number of case-by-case RACT determinations have been made for CTG site-specific sources in Massachusetts in the past.

Case-by-case RACT determinations are allowable under EPA policy for both CTG and non-CTG source categories where appropriate.

The VOC RACT Clearinghouse is available and should be used for ensuring Regional consistency in RACT determinations for similar site-specific source categories.



Gerald A. Emison, Director  
Office of Air Quality Planning and Standards

28 FEB 1988

Appendix 3.15

Seasonal Afterburner Exemption

ISSUE

Is an exemption for use of incinerators in non-ozone season appropriate? How can we justify suing sources for failure to utilize controls during non-ozone season in SIPs where there is no exemption?

RESPONSE

The origin of the policy on seasonal controls began when EPA issued guidance on July 28, 1976 which authorized procedures for the approval of SIP revisions allowing seasonal operation of certain gas-fired afterburners. Such revisions could be accomplished without a detailed, time-consuming analysis of air quality impact so long as the seasonal shutdown period was consistent with that delineated in a staff study ("Oxidant Air Quality and Meteorology," February 6, 1976) and if the existing air quality showed no past violations in the months during which the afterburners were shut down.

On December 1, 1980, in a memorandum to the Regional Offices titled "Revised Seasonal Afterburner Policy" (attachment 1), EPA further stated that any plan revision which provided for afterburner shutdown in the period of November through March outside of southern California and the Gulf Coast should be proposed for approval.

It is important to note that the policy applies to gas-fired afterburners installed to control emissions of volatile organic compounds (VOCs) for the purpose of reducing ambient ozone concentrations. It does not apply to flares (which do not use natural gas as an auxiliary fuel), VOCs vented to boilers, afterburners operated principally for odor control, or afterburners operated to control toxic or hazardous substances. It is also important to note that the policy on seasonal control of afterburners can only be implemented through the SIP process. The EPA does not have a general exemption regarding seasonal controls of VOC gas-fired afterburners.

A second category of sources to which seasonal controls can be applied through the SIP process are cutback asphalt facilities. In some SIPs, control of these facilities is required only during the summer months.

In 1984, EPA, through the Office of Air and Radiation considered whether to expand the categories of sources to which such seasonal policies could apply. ("Seasonal Volatile Organic Compound (VOC) Control and Phillips Petroleum," dated September 21, 1984 (attachment 2)) The decision was made not to expand the scope of the policy primarily because:

- Only a relatively small additional cost savings could be expected from any expansion of the policy.

- 5
- Exposure to toxic emissions might increase.
  - Pursuing such an initiative could disrupt VOC control efforts at a time of uncertain implementation.
  - Scarce resources might have to be diverted from current programs to prepare the necessary administrative actions.
  - The control flexibility in the program already available might be jeopardized since Section 302(K) of the Clean Air Act, passed subsequent to EPA's seasonal afterburner policy, requires controls on a "continuous basis."

It was for the above reasons that the recommendation was made to implement the existing policy as presently written.

Thus, the policy concerning seasonal control of afterburners can be implemented only if a State submits, and EPA approves, a SIP provision providing for seasonal operation. In the absence of such a provision, sources are obligated under State and federal law to continuously operate afterburners as necessary to meet applicable emission limits. EPA expects sources to meet their legal obligations, and is directed by Sections 113 and 120 of the Clean Air Act to take corrective enforcement action if a source fails to do so. The justification for enforcing SIP requirements providing for the continuous operation of afterburners rests with this directive in the Clean Air Act. SIP standards are initially developed by the States and can be more stringent than required by the Clean Air Act and EPA policy. Once federally effective, the SIP requirements are to be met by sources and enforced by the States and EPA.



Gerald A. Emison, Director  
Office of Air Quality Planning  
and Standards

28 FEB 1986

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Date Signed

PII-172-80-12-1-033

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

DATE: DEC 01 1980

SUBJECT: Revised Seasonal Afterburner Policy

FROM: Walter C. Barber, Director  
Office of Air Quality Planning and Standards (MD-10)TO: Director, Air and Hazardous Materials Division  
Regions I-X

On July 28, 1976, the Agency issued its policy on the "Seasonal Operation of Natural Gas-Fired Afterburners." This policy authorized the approval of SIP revisions without a detailed, time-consuming analysis of air quality impact if the seasonal shutdown period was consistent with that delineated in a staff study ("Oxidant Air Quality and Meteorology," February 6, 1976) and if existing air quality showed no past violations in the months during which the afterburners were shut down. Because of the nation's continuing need to conserve energy resources and because of the revision to the national ambient air quality standard for ozone, we have reconsidered a portion of this policy.

An analysis of available ambient air quality data concluded that exceedances of the revised national ambient air quality standard for ozone do not occur in the November through March period, except for areas of southern California and the Gulf Coast. As a result of this analysis, it is appropriate at this time to modify the "seasonal afterburner policy" to state that any plan revisions which provide for afterburner shutdown in the period of November through March outside of southern California and the Gulf Coast should be proposed for approval. All other portions of the original policy remain unchanged, namely:

- (1) The policy applies to gas-fired afterburners installed to control emissions of volatile organic compounds (VOCs) for the purpose of reducing ambient ozone concentrations. It does not apply to flares (which do not use natural gas as an auxiliary fuel), VOCs vented to boilers, afterburners operated principally for odor control, or afterburners operated to control toxic or hazardous substances; and

- (2) A policy to seasonally control afterburners can only be implemented through the SIP process. The attached staff report, supported by air quality data, should be adequate technical support for approving a SIP revision allowing for seasonal shutdown of afterburners in a given location.

It is recommended that you notify the State agencies in your Region that EPA supports a policy which permits sources to shut off afterburners during the months of November through March except for areas of southern California and the Gulf Coast. Should you have any questions in this regard, please contact Mr. Richard G. Rhoads, Director, Control Programs Development Division, Office of Air Quality Planning and Standards at FTS 629-5251.

Attachment

cc: Chief, Air Programs Branch, Regions I-X

SEP 21 1984

MEMORANDUM

SUBJECT: Seasonal Volatile Organic Compound (VOC) Control

~~and Phillips Petroleum~~

Joseph A. Cannon

FROM: Joseph A. Cannon, Assistant Administrator  
for Air and Radiation (ANR-443)

TO: Milton Russell, Assistant Administrator  
for Policy, Planning, and Evaluation (PM-219)

This is with regard to your memorandum of June 15, 1984, discussing seasonal VOC control and the Phillips Petroleum Federal Register notice. Your memorandum suggests that expanding seasonal VOC control beyond the existing afterburner policy offers significant promise as a control cost-savings initiative. You also expressed concern that the Office of Air and Radiation (OAR) was attempting to revoke the existing seasonal afterburner exemption in the Phillips Petroleum package. I would like to address these two issues separately.

SEASONAL CONTROL

We can understand your perspective regarding expanded seasonal VOC control since intuitively it is quite appealing to not control pollutants if they clearly are not causing an air pollution problem. However, such a seemingly simple approach has a number of potential pitfalls which need to be considered prior to pursuing such an initiative. The Office of Air Quality Planning and Standards' (OAQPS') review of your recommendations has reached the following conclusions:

- Substantial control flexibility already exists under the current policy in the area of greatest payoff; hence, only relatively small additional cost savings can be expected from an expansion.
- Exposure to toxic emissions may increase.
- The basis for no further control in several listing decisions under Section 112 may be undermined.
- Pursuing such an initiative at this time may disrupt VOC control efforts at a time of uncertain transition to implementation.



- Resources in State, local, Regional, and Headquarters Offices may need to be diverted away from current programs to prepare the necessary administrative actions.
- The substantial control flexibility already available under the current policy may be jeopardized.

Our basis for these conclusions is discussed below.

#### No Major Payoff Can Be Expected

The VOC emissions can be reduced through incineration, other add-on controls, or low-solvent technology. While a few individual sources may still realize significant savings through an expanded seasonal VOC control policy, the bulk of the savings available has been addressed through the existing seasonal afterburner exemption. The consultant study prepared by your staff confirms our initial conclusions regarding the limited potential for cost savings from expanding this policy. The following is taken from that analysis:

Twenty-three (23) RACT source categories were examined to determine whether any of them could be major beneficiaries from an extended seasonal control policy. This examination indicates that most sources within these categories are unlikely to have major savings directly attributable to discontinuance of existing VOC control measures under such a policy extension due to the following reasons:

- They employ control measures which are integral to the process equipment (e.g., submerged fill pipes, floating roofs, etc.) and which cannot be disabled.
- RACT consists of switches to inherently low polluting processes (e.g., substitution of solvent-based to low- or no-solvent coatings). Such sources are unlikely to switch back because: (a) there is little financial incentive to do so, (b) the quality of product using low or no solvent coatings is acceptable, and (c) there will be costs associated with a changeover.
- Several sources have no add-on or other controls and, therefore, are unable to benefit from an extended SCP because they currently use bubbles as an effective method of complying with RACT. This attests to the success of the bubble policy.
- Many sources that can benefit from a seasonal control policy already do so since they are equipped with natural gas fired incinerators. These are exempt from wintertime operation under

the current SCP. However, it should be noted that not all incinerators are able to use the current exemption from natural gas fired incinerators because: (a) some incinerators have dual fuel capability and may, therefore, be ineligible for exemption in certain jurisdictions, (b) some sources seem to be unaware of the exemption, (c) other sources have integrated their incinerator into the general process and/or winter space heating system so that the recovered heat from the incinerator is now indispensable, and (d) as is their prerogative under Section 116 of the Clean Air Act, several State and local agencies do not provide exemptions for natural gas fired afterburners on a routine basis.

- For many sources, savings due to recovery of VOCs are sufficiently high so that they have no incentive to disable controls.

Major beneficiaries from any shutdown of controls resulting from an extended seasonal control policy will be those sources that use (or will use) end-of-pipe control devices for RACT and can neither use, sale nor burn recovered (i.e., collected) VOCs. Based on this observation, the categories most likely to benefit are: graphic arts (especially flexography) and paper coating.

With regard to flexographic and paper coaters, only those who install incinerators without heat recovery could realistically expect to benefit from the policy (very few have), and they have already been addressed through the existing policy.

#### Toxic Emissions May Increase

The most visible adverse impact to the public will be the potential increase in toxic emissions. The Agency has maintained that significant reductions in toxic emissions will accrue through VOC control for ozone. The majority of the chemicals being studied for toxicity as air pollutants are VOC. Table I illustrates that 29 of the 37 substances under assessment exist as VOC. Further, in some cases, it is not the primary constituent of the VOC but simply one of many constituents. For example, gasoline vapor is a major source of benzene. Also, coatings are formulated with solvents composed of many compounds which can and are changed. Hence it is not a simple task to determine whether a particular source has an adverse toxics impact or whether in the future it will continue to have an adverse impact. Given this complexity, toxic emissions may likely be emitted from sources in increased quantities if the policy is expanded indiscriminately. Even if this were not true, the perception of its possibility would require greater reporting requirements and/or technical support before the Agency could responsibly take such a general step.

### Basis for Section 112 Decisions Will be Undermined

Decisions regarding controlling or not controlling toxic chemicals under Section 112 often hinge on the incremental environmental impact of additional control requirements. The baseline considers the existing SIP and whether there is a SIP requirement to provide some control. Expansion of seasonal afterburners will undermine this basis. As an example, bulk terminals are a significant source of gasoline vapor and benzene emissions. Lifetime risk of cancer due to high exposure to gasoline in the vicinity of uncontrolled terminals has a plausible upper bound of  $1.2 \times 10^{-3}$ . This is the highest-risk source category in the gasoline marketing chain for benzene and gasoline vapors. While the Agency has yet to decide to control bulk terminals for benzene, the existence of SIP requirements obviously mitigates the risk. This analysis using the SIP baseline would be suspect if the Agency announced expansion of the seasonal VOC policy allowing exemption periods for VOC. This same problem will reoccur in a number of listing decisions presently being made.

### Disruption of Present VOC Control Efforts

The less quantifiable but potentially greater adverse impact is the additional disruption such a policy may cause State agencies. States presently feel overwhelmed by the demands the VOC program has placed on them. To add an additional requirement to an already complex regulatory program may adversely affect SIP approvals and compliance.

Further, most of these regulations are to be implemented soon. Final compliance dates have either passed or will pass in 1985. To provide sources with a potential new vehicle to argue that compliance requirements should be deferred may undermine the present Agency initiatives to move away from planning and into implementation. This initiative runs the risk of being the straw that breaks the proverbial camel's back.

### Diversion of Resources

The administrative burden of preparing an expanded seasonal VOC policy is not inconsequential. Rulemaking which could be as extensive as that which is presently underway for the emission trading policy will be necessary to formally promulgate the policy. Following issuance of the policy, States will have to undergo individual rulemaking activity to provide for seasonal controls in their plans. Subsequently, individual Federal rulemaking will be required to incorporate the State rules into the Federal SIP. Therefore, even presuming no litigation, a significant fraction of what we, the States and local agencies are presently expending in the SIP planning exercises may have to be expanded on adopting and implementing this initiative. This can only be accomplished by diverting activity away from areas where environmental improvement is being accomplished (e.g., inspections, compliance activity, Group III CTG adoption). Once the policy is issued, processing SIP revisions is a nondiscretionary duty. Significant allocations of resources will be necessary to address what is a major administrative task.

While the administrative burden is not insurmountable, it is real and could adversely affect compliance. It will take an investment on the part of States and EPA to surmount these administrative demands. The available resources are limited. Given the lack of identified benefits, it does not seem to be worth the effort.

#### Jeopardizing the Present Policy

Proposing an expansion of the seasonal VOC policy for notice and comment is not without risk. As it now stands the present policy provides significant flexibility to those who most can use it--users of gas-fired afterburners. Reopening the policy introduces the risk of a challenge to the entire policy. The present exemption for gas-fired afterburners was adopted as a narrow exercise of administrative discretion. The primary basis for approval was the natural gas supply shortage which existed in the mid-1970's. The energy availability situation has changed significantly since that time. Hence, this basis may no longer be available if this policy were reopened. Moreover, efforts were made in the initial policy to distinguish this from intermittent control systems previously used by sulfur dioxide sources. Since this policy was initially issued, the Clean Air Act Amendments of 1977 added Sections 123 and 302(k) to expressly require continuous controls. While neither development necessarily invalidates the present policy, both result in additional complexities. As your staff noted, there are those who would like to see the present policy rescinded. By opening the issues, you may provide them a vehicle to accomplish the very opposite goal you seek.

For these reasons, I recommend we continue to implement the existing policy on seasonal control as it is presently written. For all its warts, the present policy works. It provides significant flexibility for those who can most use it, has been accepted, and can continue to be implemented without significant additional rulemaking or resource burdens. The most prudent course of action appears to be to leave the policy alone.

#### PHILLIPS PETROLEUM

The Office of Air and Radiation (OAR) had no intention of revoking the existing seasonal afterburner policy in the notice. The original wording of this Federal Register notice explained in some detail why the seasonal afterburner policy did not apply in this instance, and did not place the policy into its statutory context, even though the original wording provided an adequate basis for disapproving this particular application. Given the Office of Management and Budget's (OMB's) tendency to ask for a statutory basis for EPA disapprovals when a policy is cited, I think it is prudent to modify the disapproval language to reflect the statute rather than explain why the afterburner policy does not apply in hopes of avoiding extensive interplay with OMB on this package.

I do not believe it has any precedential value for any future exemptions the Agency might wish to pursue since we would have to take notice and comment on any policy change to expand the use of seasonal controls. It is not clear what you mean by narrowing our basis for disapproval since there is no policy to ever approve such an action.

Further, given the benzene/gasoline vapor toxicity issue discussed above, using this action as a vehicle to announce consideration of expanding the seasonal VOC policy seems ill advised. Based on the discussion above, I have concurred on the disapproval package and have forwarded it to OMB.

Attachment

cc: Indur Goklany, RRS  
Michael Levin, RRS  
William Pedersen, OGC  
Ed Reich, OAQPS  
Gerald ~~Emison~~, OAQPS  
Darryl Tyler, OAQPS  
Barbara Bankoff, OAR  
Paul Stolpman, OAR

Table 1

37 Potentially Toxic Substances Under EPA Assessment

A. Substances that exist in the ambient air primarily as particles (8)

Beryllium	Maleic Anhydride*
Cadmium	Manganese
Coke oven emissions	Nickel
Dioxin (2, 3, 7, 8-TC D)*	Polychlorinated Biphenyls*

B. Substances that exist in the ambient air primarily as volatile organic compounds (29)

Acetaldehyde	Formaldehyde
Acrolein	Hexachlorocyclopentadiene
Acrylonitrile	Methyl Chloroform
Allyl Chloride	Methylene Chloride
Benzyl Chloride	Nitrobenzene
Carbon Tetrachloride	Nitrosomorpholine
Chloroenezene	Perchloroethylene
Chloroform	Phenol
Chloroprene	Phosgene
Cresol	Propylene Oxide
p-Dichlorobenzene	Toulene
Dimethyl Nitrosamine	Trichloroethylene
Epichlorohydrin	Vinylidene Chloride
Ethylene Dichloride	Xylene
Ethylene Oxide	

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\* Although these organic compounds can exist in the ambient air as either particles or gases, these substances will be considered particles for the purposes of this analysis.



Appendix 3.16

Transfer Efficiency

(Reserved)



Appendix 3.17

Capture Efficiency

(Reserved)

Appendix 3.18

Intermittent Incinerator Use Where Both  
High and Low Solvent Materials Are Used

## Issue:

Where incineration is only used sporadically when high-solvent coatings are used, what type of compliance monitoring is required? Is efficiency of the incinerator impacted by sporadic use?

## Response:

The temperature of the incinerator is of interest only during periods when the production process is operating. As a result, the guidance below is appropriate only when, for example, a printing press is actually printing.

The following records are essential for determining compliance.

- ° The periods of time when the process is operating.
- ° Periods of time when the average gas temperature of the incinerator is colder than 28°C (50°F) below the average temperature during the most recent successful performance test.
- ° If a catalytic incinerator is used, all periods when the average gas temperature of the device upstream of the catalyst bed is colder than 28°C (50°F) below the gas temperature during the most recent successful performance test.
- ° All periods when the average gas temperature across the catalyst bed is less than 80 percent of the temperature differential during the most recent successful performance test.

Sporadic operation of the incinerator should not affect its VOC destruction efficiency if the temperatures are raised to the operating levels used during the most recent successful performance test before the solvent-borne inks, paints, etc., are introduced to the line.

If a thermal incinerator has a brick-lined combustion chamber, it may not be practical to shut the incinerator down during periods when it is not needed because of the risk of spalling the brick lining if the temperature falls below about 500°C. The need to remain above about 500°C would minimize the potential fuel savings that would otherwise accrue from intermittent operation.

## Issue:

Should a source be required to retrofit thermocouple wells on an incinerator to permit temperature monitoring?

## Response:

Generally, yes. The object, of course, is to verify continuous operation under conditions consistent with those under which the incinerator successfully passed the performance test. The optimum location for a retrofit thermowell(s) may be different from the guidance above but shall be located so as to insure that it (they) reflect the operation of the incinerator.



Gerald A. Emison, Director  
Office of Air Quality Planning and Standards

4-11-86

Date Signed

Appendix 3.19

Appropriate Test Methods

Issue:

What are the appropriate test methods for assessing VOC compliance? Where are the gaps, if any, between the need in various contexts for measuring VOC compliance and actual State SIP test methods or EPA promulgated test methods?

Response:

The September 14, 1984, memorandum entitled, "Volatile Organic Compound (VOC) Test Methods or Procedures for Source Categories in Groups I, II, and III Control Techniques Guidelines (CTGs)" gives an updated list of recommended source test methods applicable to CTGs (see Attachment I). Some SIPs may list different methods endorsed by others such as the American Society for Testing and Materials (ASTM) or others. Some of these State requirements were published before EPA developed the methods presented in the attachment. When a SIP has approved a test method, EPA will abide by that method. Changes to these methods can only be made by a SIP revision. However, when the approved test method is different from the indicated EPA test method, we urge the States to modify their regulations to be consistent with the NSPS test methods.

The September 14, 1984, memorandum lists Method 24A for use with Graphic Arts CTGs. Method 24A was developed only for the publication rotogravure sector of the graphic arts industry. Method 24 shall be used for analysis of inks for flexography and rotogravure package printing.

When coatings are to be tested for VOC content, it is helpful if the results are reported on the VOC data sheet described in the document, "Procedures for Certifying Quantity of Volatile Organic Compounds Emitted by Paint, Ink, and Other Coatings," EPA-450/3-84-019, December 1984. Use of the VOC data sheet and its implementing instructions will ensure that VOC contents of coatings are analyzed and reported on a consistent basis.

Issue:

Can Reference Method 18 (gas chromatography/flame ionization detector) be substituted for Reference Method 25?

Response:

Yes, but only in limited situations where the solvent or VOC is a single compound or the identities of the components are known. Results of this method would be suspect if the gas

stream being tested contained a mixture of unknown organics. Two examples of the latter would be (a) an oven exhaust where a blend of "proprietary" (hence, unknown) solvents are evaporated from a coating, or (b) the exhaust stream of a combustion device that is or is suspected to be operating inefficiently.

It should be noted that Reference Method 25A, 25B, or 25C could also be substituted for Reference Method 25, and in some situations may be more desirable. Additional guidance on the appropriateness of a particular method may be obtained from George Walsh, Chief, Emissions Measurement Branch, ESED (MD-13, RTP, NC 27711).

Issue:

Is the variability of Reference Method 24, when used to analyze waterborne coatings, acceptable?

Response:

Yes. Certainly variability in a Reference Method is undesirable and we would prefer a more reproducible method. The variability in the analysis is the result of calculating the VOC as the difference between two large and independently measured values, the weight of total volatiles (water and VOC) and the weight of water. To overcome this inherent imprecision, one would have to either conduct a large number of duplicate tests in order to calculate a statistically valid average VOC content or measure VOC by an independent method. In 1980, the EPA proposed in the Federal Register another version of Reference Method 24 with an additional step, an independent measurement. All who commented on the Federal Register proposal rejected the alternative version because the additional step would be too costly.

Reference Method 24, consequently, remains the best enforcement tool available for determining the VOC content of coatings. The inherent imprecision of determining the VOC content of waterborne coatings for enforcement purposes is accommodated by adjusting the analytical results based on confidence limits calculated from the precision statement established for RM 24's constituent ASTM methods. This has a disadvantage. Some waterborne coatings test at high VOC values that may be effectively immune from citations when corrected by use of the precision adjustment. One should remember, however, that any waterborne coating provides a large emission reduction over almost any solvent-borne coating. To assure a clear understanding of the precision adjustment, a more detailed explanation was given in a February 14, 1986, memorandum from Jack Farmer to Ed Reich (see Attachment II).

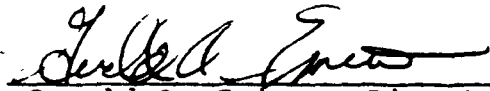
Issue:

Can a Reference Method be developed for measuring the volume of solids in surface coatings?

Response:

Method 24 does not specify a procedure for experimentally determining the volume fraction of solids in a surface coating. When the method was originally proposed on October 5, 1979, it did include a procedure for experimentally determining the volume fraction of solids - the American Society for Testing and Materials (ASTM) D2697-73, Standard Method of Test for Volume Nonvolatile Matter in Clear or Pigmented Coatings. During the comment period, we received a very large number of comments concerning potential problems in the application of this procedure. As a result, it was deleted from Method 24 before its promulgation on October 3, 1980.

Note in Attachment III, the memorandum "Method for Measuring the Volume of Solids in Surface Coatings" dated January 24, 1986, from J. Farmer.



Gerald A. Emison, Director  
Office of Air Quality Planning and Standards

4-11-86

Date Signed





Attachment I

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

SEP 14 1984

MEMORANDUM

SUBJECT: Volatile Organic Compound (VOC) Test Methods or Procedures for Source Categories in Groups I, II, and III Control Techniques Guidelines (CTG's)

FROM: Darryl D. Tyler, Director *Darryl D. Tyler*  
Control Programs Development Division (MD-15)

TO: See Addressees

The purpose of this memorandum is to update the list of recommended source test methods or procedures applicable to the CTG's issued by the Office of Air Quality Planning and Standards, Emission Standards and Engineering Division, Emission Measurement Branch (EMB) and to provide direction on how to apply these methods. This memorandum updates the memorandum from Edward F. Tuerk, Acting Assistant Administrator, Air, Noise and Radiation to Director, Air and Hazardous Materials Division, Regions I-X, dated April 6, 1981.

Subsequent to the April 6, 1981 memorandum, numerous new source performance standards (NSPS) and associated recommended test methods have been promulgated for source categories covered by the CTG's. These promulgated standards and reference test methods will be codified in the July 1, 1984, issue of the Code of Federal Regulations, 40 CFR Part 60. The reference test methods are included in Appendix A of Part 60. In addition, a number of the Group III CTG's have been issued. In those cases where reference methods have not been promulgated, methods that have been formally proposed are recommended and the Federal Register (FR) publication is cited. In the absence of proposed methods, a draft method is available from EMB.

The test methods or procedures for the Groups I and II CTG's are summarized in Tables 1 and 2. The major change from the April 6, 1981, version of the tables is the substitution of promulgated NSPS methods where applicable. The reference methods are essentially identical in principle to the CTG methods cited previously, but generally include simplifications, clarifications, or improvements to increase the practicality, accuracy or precision of the methods originally recommended in the CTG's.

It is important to note that the recommendation of a reference test method in Appendix A of Part 60 does not necessarily provide a complete procedure for the determination of compliance. The format of the applicable regulation must be considered to specify how long a test run by the method should last (averaging time), how many runs are required (replicates), and whether or not any additional methods are necessary to convert the VOC concentration to another basis (volumetric flowrate for mass rates, or oxygen/carbon dioxide for an excess air correction). Specifically, Methods 1, 1A, 2, 2A, 2B, 2C, 2D, 3, and 4 are used, as appropriate, for flowrate and excess air determinations. These methods are listed in Table 4. The procedural specifications for NSPS are included in the subpart for the affected source category in the "Test Methods and Procedures" section. If the CTG format is the same as the NSPS, then the NSPS procedures may be used as a guide. If the formats are different, then the NSPS method should be used in conjunction with the procedures specified in the CTG, or the applicable regulation.

Another consideration must be that for some of the NSPS reference methods, it is necessary to refer to the source category regulation to provide a complete procedure.

Two examples are the leak definition [compound(s) and concentration] for Method 21, and the pressure change limits for Method 27. These are not included in the NSPS reference methods and must be provided by the State or local regulation.

The procedure recommended in "Control of Volatile Organic Compound Leaks from Petroleum Refinery Equipment" (EPA-450/2-28-036, June 1978) and for the other source categories where fugitive emissions are covered has been replaced by Method 21. Method 21 is the same as the previous recommendation except that the instrument specifications have been simplified. The rigorous analyzer specifications were found to be unnecessary to provide reliable leak/no leak decisions. The revised specifications require significantly less effort and recordkeeping. The specification of the calibration compound(s) has been changed to hexane or methane in air at a concentration of about 10,000 ppmv. This provides an alternative, and tests have shown that the leak/no leak decision is essentially not affected by the analyzer calibration compound when hexane and methane are compared. If commercial standards are not available, a standard preparation procedure is provided in Method 18, "Measurement of Gaseous Organic Compound Emissions by Gas Chromatography," promulgated 48 FR 48344, October 18, 1983.

The recommended test methods for low solvent coatings and printing inks are changed to Methods 24 or 24A as appropriate. The CTG references cite outdated American Society for Testing and Materials (ASTM) procedures and calculation procedures. However, if the NSPS methods are used, it may be necessary to change from the NSPS units of weight of VOC per volume solids to the CTG units of weight of VOC per volume coating adjusted for water.

The recommended test methods for Group III CTG's are presented in Table 3.

A list of the VOC and related measurement methods is summarized in Table 4 and a FR publication date is given if the method has been promulgated or proposed since July 1, 1983. A list of knowledgeable EMB personnel for each method is given in Table 5.

One final note on which test method is Federally recognized, should ambiguity on this exist. Where a SIP has an approved test method, EPA will abide by such method. Changes to these methods can only be made by a SIP revision. Where the SIP does not explicitly define a test method, then under 40 CFR 52.12(c) the NSPS methods as discussed above are applicable. Where the approved test method is no longer the same as that identified above, States are urged to modify their regulations to be consistent with the NSPS test methods.

Should you have any questions, please contact John Calcagni at 919/541-5665 or Bill Polglase at 919/541-5516.

#### Attachments

##### Addressees:

Director, Air and Waste Management Division  
Regions II, IV, VI-VIII, X  
Director, Air Management Division  
Regions I, III, V, IX  
Director, Environmental Services  
Regions I-X

cc: Regional Administrator, Regions I-X  
VOC Regulatory Contacts, Regions I-X  
VOC Compliance Contacts, Regions I-X  
Chief, Air Branch, Regions I-X  
Chief, Compliance Branch, Regions II, III, V, VII, IX  
George Walsh  
Winton Kelly  
Nancy McLaughlin  
John Rasnic  
Ed McCarley

Table I

## TEST METHODS OR PROCEDURES FOR GROUP I CTGS

Industry	CTG Document Number	Applicable Control Options	Recommended Method(s) and Document(s) Citing Test Method	Document May Be Ordered From
Cans, Coils, Paper, Fabric, and Automobiles and Light-Duty Trucks	EPA-450/2-77-008	Low solvent coatings	Method 24, 40 CFR Part 60	GP07
		Add-on <sup>1</sup>	Method 25, 40 CFR Part 60 or methods in "Measurement of Volatile Organic Compounds," EPA 450/2-78-041	GP07
Metal Furniture	EPA-450/2-77-032	Low solvent coatings	(CTG pp.5-1 to 5-5) Method 24, 40 CFR Part 60	NTIS2 GP07
		Add-on <sup>1</sup>	Method 25, 40 CFR Part 60 or methods in "Measurement of Volatile Organic Compounds," EPA 450/2-78-041	GP07
Magnetic Wire Coating	EPA-450/2-77-033	Add-on <sup>1</sup>	Method 25, 40 CFR Part 60 or methods in "Measurement of Volatile Organic Compounds," EPA 450/2-78-041	NTIS2
				GP07
Large Appliance	EPA-450/2-77-034	Low solvent coatings	(CTG pp. 5-1 to 5-4) Method 24, 40 CFR Part 60	NTIS2 GP07
		Add-on <sup>1</sup>	Method 25, 40 CFR Part 60 or methods in "Measurement of Volatile Organic Compounds," EPA 450/2-78-041	GP07 NTIS2

Table 1 (continued)

## TEST METHODS OR PROCEDURES FOR GROUP 1 CTGS

Industry	CTG Document Number	Applicable Control Options	Recommended Method(s) and Document(s) Citing Test Method	Document May Be Ordered From
Bulk Terminals	EPA-450/2-77-026	Add-on <sup>1</sup>	40 CFR 60.503 "Test Methods and Procedures", Methods 25A, 25B, 2A, 2B	GP07
Bulk Plants	EPA-450/2-77-035	Vapor Balance System <sup>4</sup> Equipment Specifications and Operating Procedures	Leak Tests--Monitoring During Transfer (see tank truck CTG)  Equipment Inspection, CTG pp. 6-3 Leak Tests--Monitoring During Transfer (see tank truck CTG)	NTIS <sup>2</sup>
Service Stations--Stage 1	Design Criteria Document (DCD)	Equipment Specifications and Operating Procedures Vapor Balance System <sup>4</sup>	Equipment Inspection, DCD pp. 3-6 Leak Tests--Monitoring During Transfer (see tank truck CTG)	ESD <sup>3</sup>
Fixed-Roof Tanks	EPA-450/2-77-036	Equipment Specifications and Maintenance Requirements Internal Floating Roof <sup>5</sup>  Add-on <sup>1</sup>	CTG pp. 6-2  Method 25, 40 CFR Part 60	NTIS <sup>2</sup>  GP07

Table 1 (continued)

## TEST METHODS OR PROCEDURES FOR GROUP I CTGS

Industry	CTG Document Number	Applicable Control Options	Recommended Method(s) and Document(s) Citing Test Method	Document May Be Ordered From
Petroleum Refineries				
Vacuum Producing Systems, Waste- water Separators and Process Unit Turnaround	EPA-450/2-77-025	Various Equipment Specifications and Operating Procedures	CTG pp. 6-2	NTIS2
*Cutback Asphalt	EPA-450/2-77-031	Water Emulsion	Direct Observation by Inspector	
		Emulsion Solvent Content	ASTM Distillation Test D-244	ASTM
*Degreasing	EPA-450/2-77-022	Equipment Speci- fications and Operating Pro- cedures	CTG pp. 3-31, 3-33, 3-35, and 7-1 to 7-7	NTIS2
		Add-on Carbon Adsorber	Draft Test Method	UAQPS6

Table 2

## TEST METHODS OR PROCEDURES FOR GROUP 11 CTGS

Industry	CTG Document Number	Applicable Control Options	Recommended Method(s) and Document(s) Citing Test Method	Document May Be Ordered From
Petroleum Refinery Fugitive Emissions (Leaks)	EPA-450/2-78-036	Inspection Monitoring Maintenance	Method 21, 40 CFR Part 60	GP07
Surface Coating Miscellaneous Metal Parts and Products	EPA-450/2-78-015	Low Solvent Coatings	(CTG pp. 6-1) or Method 24, 40 CFR Part 60	NTIS <sup>2</sup> GP07
		Add-on <sup>1</sup>	Method 25, 40 CFR Part 60	GP07
Factory Surface Coating of Flatwood Paneling	EPA-450/2-78-032	Low Solvent Coatings	(CTG pp. 5-1) or Method 24, 40 CFR Part 60	NTIS <sup>2</sup> GP07
		Add-on <sup>1</sup>	Method 25, 40 CFR Part 60	GP07
Pharmaceutical Manufacture	EPA-450/2-78-029	Maintenance and Operation	(CTG pp. 7-2)	NTIS <sup>2</sup>
		Add-on <sup>1</sup>	Method 25, 40 CFR Part 60	GP07
Rubber Tire Manufacture	EPA-450/2-78-030	Add-on <sup>1</sup>	Method 25, 40 CFR Part 60	GP07
Graphic Arts Rotogravure and Flexography	EPA-450/2-78-033	Low Solvent Inks, High Solids Inks	Method 24A, 40 CFR Part 60	GP07
		Add-on <sup>1</sup>	Method 25, 40 CFR Part 60	GP07
External Floating Roof Tanks	* EPA-450/2-78-047	Inspection Maintenance Monitoring	CTG pp. 5-1 to 5-4	NTIS <sup>2</sup>
*Drycleaning Perchloroethylene	EPA-450/2-78-050	Operation and Maintenance	CTG pp. 6-1 to 6-4	NTIS <sup>2</sup>
		Add-on Carbon Adsorption	Draft Test Method 23	OAQPS <sup>6</sup>

Table 2 (continued)

## TEST METHODS OR PROCEDURES FOR GROUP II CTGS

<u>Industry</u>	<u>CTG Document Number</u>	<u>Applicable Control Options</u>	<u>Recommended Method(s) and Document(s) Citing Test Method</u>	<u>Document May Be Ordered From</u>
Gasoline Tank Trucks	EPA-450/2-78-051	Pressure-Vacuum Test	Method 27, 40 CFR 60, or CTG, Appendix B	GP07
		Inspection, Moni- toring, Maintenance for Monitoring During Loading	CTG-Appendix B-Leak Tests	NTIS2



Table 3. Test Methods or Procedures for Group III CTG's

<u>Industry</u>	<u>CTG Document Number</u>	<u>Applicable Control Options</u>	<u>Recommended Method(s) and Document(s) Citing Test Method</u>	<u>Document May Be Ordered From</u>
Large Petroleum Dry Cleaners	EPA-450/3-82-009	Operation and Maintenance Add-on	CTG, Appendix E 40 CFR Part 60, Method 25	NTIS2 GP07
Natural Gas/Gasoline Processing Plants	EPA-450/3-83-007	Inspection Monitoring Maintenance	40 CFR Part 60, Method 21	GP07
SUCMI-Fugitive	EPA-450/3-83-006	Inspection Monitoring Maintenance	40 CFR Part 60, Method 21	GP07
Manufacture of High Density Polyethylene Polypropylene and Polystyrene	EPA-450/3-83-008	Add-on	40 CFR Part 60 Method 18, 25, or 25A As appropriate	GP07
VOL Storage	CTG not issued as of 9/1/84			
SUCMI Air Oxidation	CTG not issued as of 9/1/84			

#### Footnotes

1. Add-on: Incineration, carbon adsorbers, refrigeration/compression/absorption, etc.
2. Order by document number from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161 (nominal fee required).
3. Order from U.S. EPA, Office of Air Quality Planning and Standards, Emission Standards and Engineering Division, Chemical and Petroleum Branch, Mail Drop 13, Research Triangle Park, N. C. 27711. Document Title: "Design Criteria for Stage 1 Vapor Control Systems Gasoline Service Stations", November 1975.
4. Visual inspection except for leaks.
5. Visual inspection only.
6. Order from: U.S. EPA, Office of Air Quality Planning and Standards, Emission Measurement Branch, Mail Drop 19, Research Triangle Park, N. C. 27711. Method Title: "Method 23--Determination of Halogenated Organics from Stationary Sources," proposed 45 FR 39766, June 11, 1980.
7. Order from: Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, Document title: "Code of Federal Regulations, 40 CFR Protection of Environment, Parts 60 to 80."

\* Test method currently not included in 40 CFR Part 60.

Table 4: NPS Reference Test Methods for Volatile Organic Compounds

Method 1	Sample and Velocity Traverses for Stationary Sources, 40 CFR 60, Appendix A.
Method 1A	Sample and Velocity Traverses for Stationary Sources with Small Stacks or Ducts, (proposed 48 FR 48955, October 21, 1983)
Method 2	Determination of Stack Gas Velocity and Volumetric Flow Rate (Type S Pitot Tube) 40 CFR 60, Appendix A.
Method 2A	Direct Measurement of Gas Volume Through Pipes and Small Ducts, 48 FR 37592, August 18, 1983.
Method 2B	Determination of Exhaust Gas Volume Flow Rate from Gasoline Vapor Incinerators, 48 FR 37594, August 18, 1983.
Method 2C	Determination of Stack Gas Velocity and Volumetric Flow Rate from Small Stacks or Ducts (Standard Pitot Tube), (proposed 48 FR 48956, October 21, 1983).
Method 2D	Measurement of Gas Volume Flow Rates in Small Pipes and Ducts, (proposed 48 FR 48957, October 21, 1983).
Method 3	Gas Analysis for Carbon Dioxide, Oxygen, Excess Air, and Dry Molecular Weight, 40 CFR 60, Appendix A.
Method 4	Determination of Moisture Content in Stack Gases, 40 CFR 60, Appendix A.
Method 13	Determination of Gaseous Organic Compounds by Gas Chromatography, 48 FR 48344, October 18, 1983.
Method 21	Determination of Volatile Organic Compound Leaks, 48 FR 37600, August 18, 1983.
Method 23	Determination of Halogenated Organics from Stationary Sources, (proposed 45 FR 39766, June 11, 1980).
Method 24	Determination of Volatile Matter Content, Water Content, Density, Volume Solids, and Weight Solids of Surface Coatings, 40 CFR 60, Appendix A.
Method 24A	Determination of Volatile Matter Content and Density of Printing Inks and Related Coatings, 40 CFR 60, Appendix A.
Method 25	Determination of Total Gaseous Nonmethane Organic Emissions as Carbon, 40 CFR 60, Appendix A.
Method 25A	Determination of Total Gaseous Organic Concentrations Using a Flame Ionization Analyzer, 48 FR 37595, August 18, 1983.
Method 25B	Determination of Total Gaseous Organic Concentration Using a Nondispersive Infrared Analyzer, 48 FR 37597, August 18, 1983.
Method 27	Determination of Vapor Tightness of Gasoline Delivery Tank Using Pressure-Vacuum Test, 48 FR 37597, August 18, 1983.

Table 5: VOC Contacts

Emission Measurement Branch  
 ESED/OAQPS  
 Mail Drop 13  
 U.S. Environmental Protection Agency  
 Research Triangle Park, North Carolina 27711  
 Telephone: (919) 541-(extension)  
 FTS: 629-(extension)

<u>Specialty</u>	<u>Contact</u>	<u>Mail Drop</u>	<u>Telephone Extension</u>
Method 18 23 and Hazardous Pollutant Test Methods gas chromatograph method	Kenneth W. (Bill) Grimley	19	2237
Method 21 and Fugitive VOC Test Methods	Winton Kelly	13	5543
Methods 24, 24A, and 25	Gary McAlister	19	2237
Method 25	Clyde E. (Gene) Riley	13	5543
Methods 25A, 25B, 27. Surface Coating, and Gasoline Marketing Test Methods	Nancy D. McLaughlin	13	5242 5543
Flow Measurement Methods (1, 1A, 2, 2A, 2B 2C, 2D. 3, 4)	Any of above		

Attachment II



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

14 FEB 1986

MEMORANDUM

SUBJECT: Jefferson County APCD's Request for an Opinion on the Suitability of the EPA Reference Methods 24 and 24A as Enforcement Tools

FROM: Jack R. Farmer, Director  
Emission Standards and Engineering Division (MD-13)

TO: Edward E. Reich, Director  
Stationary Source Compliance Division (EN-341)

The memorandum of the same title, dated February 3, 1986, should be discarded. We neglected to incorporate certain comments from your staff. The changes occur on pages 3 and 4.

This is in response to a letter of October 24, 1985 from Mr. Michael T. DeBusschere of the Air Pollution Control District of Jefferson County, Kentucky. He requested an opinion as to whether the EPA Reference Methods 24 and 24A are sufficiently reliable to be enforcement tools. His concern stems from a memorandum of October 15, 1985 by Mr. Dick Everhart, also of the Jefferson County District. Apparently, the measured volatile organic compound (VOC) content of a series of coatings tested by several laboratories exhibited a wide variability. The variability was particularly severe among waterborne coatings. Mr. Everhart recommended adopting the EPA's "Procedures for Certifying Quantity of Volatile Organic Compounds Emitted by Paint, Ink and Other Coatings," EPA-450/3-84-019, December 1984.

Mr. Gary McAlister and Mr. Dennis Crumpler of the Emission Standards and Engineering Division have studied Mr. DeBusschere's request and the memorandum by Mr. Everhart. They conclude that the procedure of repeatedly heating and reweighing the samples as described in Mr. Everhart's memorandum is clearly inconsistent with the procedure specified in Reference Method 24 (RM 24). The deviation could have contributed to the extreme variability obtained by the participating laboratories.

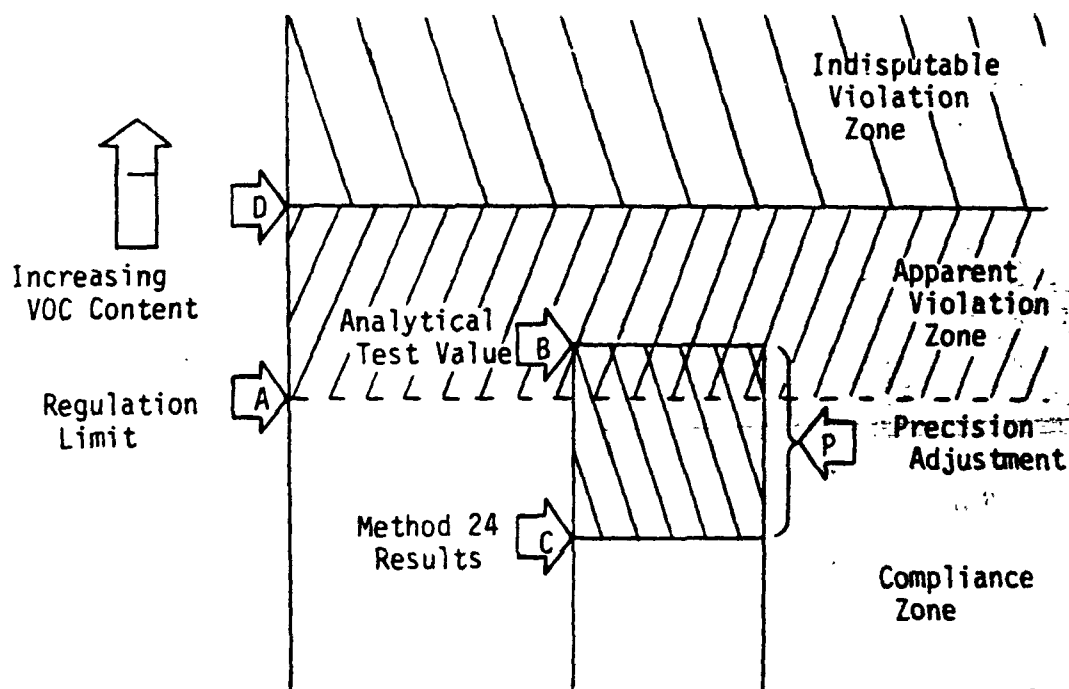
The RM 24 is a compilation of procedures developed by the American Society of Testing and Materials (ASTM). An ASTM representative has reported that in 100 percent of the complaints he has received regarding lack of reproducibility or poor precision of those procedures, the laboratories involved had deviated from the established procedures.

You should be aware that certification of a coating through use of the EPA's publication, "Procedures for Certifying Quantity of Volatile Organic Compounds...", does not avoid use of RM 24. The publication merely provides specific instructions and a set of data sheets for certifying the VOC content of a coating based on analysis by RM 24.

The VOC determination for a waterborne coating is inherently variable because it is essentially the difference between two independently measured values, the weight of total volatiles (water and VOC) and water content. If the water content is a large portion of the total volatiles, as one would expect in a waterborne coating, a small error in the measurement of water content will result in a relatively large error in the calculated VOC content. For example, if the total weight of volatiles is 8 grams and the water portion weighs 7 grams, a 10 percent error in the water analysis (i.e., 7.7 grams) would result in a threefold error in the indicated VOC content (an apparent VOC content of 0.3 instead of 1 gram). It was for this reason that the precision adjustment (which is based on the confidence limits calculated from ASTM's interlaboratory precision statement for the measured total volatiles and water content of waterborne coatings) was incorporated into RM 24. It safeguards against falsely citing a coater whose coatings are actually in compliance but measure in violation because of the uncertainty inherent in RM 24.

Figure 1 illustrates the system. Suppose a coating has a VOC content slightly less than "A," which is the level of the regulation the source is trying to comply with. Although in compliance, when tested the coating

FIGURE 1.



appears to have a VOC content of "B," an apparent violation. When the precision adjustment "P," is subtracted from the test value as required by RM 24, the VOC content as measured by RM 24 is "C." The coating complies with the regulation.

On the other hand, if RM 24, which includes the precision statement, indicates a coating is out of compliance, i.e.,  $(B-P) > A$ , there is no doubt the coating violates the applicable regulation.

If a truly noncomplying coating exhibits a VOC content anywhere within the apparent violation zone, it will not be found in violation after the precision adjustment is applied. As you can see, the analytical results of RM 24's constituent ASTM Methods (D 2369 and D 3792 or D 4017) would have to indicate a VOC content greater than "D" before the effect of the precision adjustment would no longer show the coating in compliance. Any criticism of the RM 24 would, therefore, focus on its inability to identify a coating that is truly out of compliance but is in compliance because of the precision adjustment in the method.

To overcome the inherent imprecision in RM 24, it would be necessary to measure VOC by an independent method. The EPA proposed another version of RM 24 with an additional step for this purpose. All who commented on the Federal Register proposal rejected the alternative version because the additional step would be too costly.

The "Procedures" publication was developed at the request of the coatings industry. Properly used, it could relieve the coating user from any requirement to analyze the coatings he uses. He could require his supplier (the manufacturer of the coating) to furnish the VOC content of the coating on the EPA data sheet. To use the data sheet, the instructions require the supplier to analyze by RM 24 and prohibit him from incorporating the precision adjustment. The supplier should not certify his coating as in compliance unless results of the analysis by RM 24 (without the precision adjustment) indicate compliance. The user of the coating can then, based on the certification from the supplier and his own dilution records, prepare a separate data sheet, certifying the VOC content of the diluted coating that is applied to his product. Again, he too is precluded from using the precision adjustment in his calculations for certification.

The inspector, upon visiting a plant, would normally review the certification data sheets. If they indicate compliance, the source would be presumed in compliance. Upon occasion, however, he likely will wish to take samples and analyze them with RM 24 to assure that the coater and suppliers are conducting their analytical tests properly. The Agency's analysis (prior to incorporating the precision adjustment) should not differ significantly from the results on the data sheet. If they do, the analytical

work on which the certification is based should be reviewed to determine the reason, and to ensure the proper procedures are being used, and to ensure the coating is not being misrepresented. Before making a determination of noncompliance, the enforcement agency would still be required to make the precision adjustment.

In conclusion, RM 24, even with its shortcomings, remains the best enforcement tool available for determining the VOC content of coatings. The inherent imprecision of determining the VOC content of waterborne coatings for enforcement purposes necessitates an adjustment of the analytical results based on confidence limits calculated from the precision statement established for RM 24's constituent ASTM methods. Some waterborne coatings that test at high values before applying the precision adjustment may be effectively immune from citation because of the precision adjustment. There is some consolation, however, in the fact that waterborne coatings, even if marginally in compliance, provide a large emission reduction over their solvent-borne predecessors.

I hope this explanation has been helpful. If you have additional questions related to the ASTM methods or RM 24, please contact Gary McAlister of the Emission Measurement Branch at (FTS) 629-2237. If there is some question about the VOC Data Sheets, please call Dennis Crumpler at (FTS) 629-5605.

Attachment

cc: Dennis Crumpler, ESED (MD-13)  
Tom Helms, CPDD (MD-15)  
Gary McAlister, ESED (MD-19)  
John Rasnic, SSCD (EN-341) ✓  
George Walsh, ESED (MD-13)  
Jim Wilburn, AMB, Region IV  
Susan Wyatt, ESED, (MD-13)  
VOC Contacts (See attached list)



Several procedural and editorial changes have been made to Reference Method 24 (Candidate 2) and Reference Method 25 as proposed in order to clarify and to improve the sampling and analytical procedures. These changes are based on additional information obtained by EPA from experience with the methods and on the public comments received.

#### Reference Method 24

The following discussion summarizes the procedural changes made to proposed Reference Method 24, Candidate 2. The procedures were added to protect the source owner from invalid results that might result from poor analytical techniques, application of the method to a coating not suitable for analysis with Reference Method 24, or imprecision in Reference Method 24 resulting from a high percentage of water in the solvent.

The promulgated reference method requires the analyst to complete duplicate analyses on each sample tested. A comparison is then made between these results and the within-laboratory precision statements for each parameter. Duplicate analyses are made until the results fall within the range established for the within-laboratory precision statements. The purpose of the procedures is to verify that the analyst can achieve a level of precision for the coating under analysis equal to or better than the precision obtained by experienced analysts participating in the ASTM studies of the method. Because of the variety of coatings that may be subject to analysis, it is possible that certain coatings may not be amenable to analysis using Reference Method 24; that is, in certain cases it may not be possible to achieve results which meet the precision limits. In this case, the method provides for a case-by-case evaluation and development of a suitable procedure.

An additional procedure for waterborne coatings was added to the promulgated reference method to protect the source owner or operator from a determination of noncompliance when the owner is actually in compliance. This procedure is needed because the results of Reference Method 24 are dependent on the difference between the weight of total solvents and the weight of water. As the percent weight of water increases, the difference decreases. As a result, any imprecision in the measurement of the weight of total solvent in water is magnified in the calculation of organic solvent content. For example, if the total solvent of a coating is measured as  $100 \pm 2$  units and the water content is measured at  $90 \pm 2$

units, the organic solvent content would be in the range of 8 to 14 units. The magnitude of the range, as a percent of the true organic solvent content, increases with increasing water content and could, as shown in the example, lead to a conclusion of noncompliance even when the owner is in compliance. The procedure added to Reference Method 24 for waterborne coatings protects the owner or operator from this erroneous determination by minimizing the calculated value for VOC content. This is done, for example, by subtracting the between-laboratory precision statement from the average value of total solvent and adding the between-laboratory precision statement to the average value for water content. Thus, if a source owner is in compliance based on average coating values, the compliance method will automatically show a lower VOC content because of the adjustments made to the average values based on the between-laboratory precision statements.

Based on comments from manufacturers that ASTM 2697 has only been shown to be applicable to architectural coatings, the analytical procedure for determining volume solids has been eliminated from Reference Method 24. The commenters stated that this ASTM procedure was not applicable to all the coatings that Method 24 was intended to cover. Therefore, Method 24 requires that the volume solids be calculated from manufacturer's formulation data.

The coatings classifications step in the proposed method was eliminated because industry comments indicated that it was only necessary to separate waterborne (water reducible) and solvent-borne (solvent reducible) coatings. Therefore, the "Procedure" discussed in Section 4 of the proposed method has been simplified.

Several commenters recommended that the use of coatings manufacturers' data be allowed in calculating VOC content of coatings rather than required Method 24. Coatings manufacturers' data will be allowed in calculating VOC content of coatings because this will reduce the burden on the industry to measure all coatings with Method 24. Use of this method to calculate VOC content of coatings will require industries to closely monitor and record all organic solvents added to the coatings at the plant. Method 24 will be the reference method.

One commenter suggested that EPA should specify the volume fraction of solids for the various types of coatings similar to the way transfer efficiencies were listed. Based on comments from manufacturers that ASTM 2697 has only

been shown to be applicable to architectural coatings, the volume fraction of solids determination in Method 24 has been removed. Method 24 specifies the use of manufacturer's formulation data for calculating volume fraction of solids.

#### Reference Method 25

The majority of the procedural changes made to Method 25 relate to calibration requirements and are meant to improve quality assurance and at the same time simplify the daily operation of the analytical equipment. This is accomplished by requiring performance tests on the analytical equipment (nonmethane organic analyzer and condensate recovery and conditioning apparatus) prior to initial use; specific criteria for the performance tests are provided. Routine daily calibrations (much less time consuming than previously required) are conducted and the results are compared to performance test reference values to determine whether the performance of the analytical equipment is still acceptable.

In the promulgated test method, several important system components are not specified; instead, minimum performance specifications for these components are provided. The method is written in this manner to allow individual preference in choosing components, as well as to encourage development and use of improved components. Therefore, Addendum I which lists specific information regarding system components found to be acceptable has been added to the method to provide guidance for users.

Specifics of the most important procedural changes that have been included in the promulgated test method are as follows:

1. Section 1.1. Applicability. This section was rewritten to clarify the applicability of Method 25 in relation to several other organic measurement methods.

2. Section 2.2.2 Nonmethane Analyzer. The reference to the analyzer is changed from "total gaseous nonmethane organic analyzer" to "nonmethane organic analyzer".

The quantity  $\text{CO}_2$  from trap can recovery. Furthermore, a requirement that the NMO analyzer meet a performance test with specific criteria is added. Previously, only demonstration of "proper separation, oxidation, reduction and measurement" was required.

3. Section 4.1.3 Pretest Leak Check. The leak check procedure is simplified. Instead of evacuating the sample train,

Attachment III

24 JAN 1986

MEMORANDUM

SUBJECT: Method for Measuring the Volume of Solids in Surface Coatings

FROM: Jack R. Farmer, Director  
Emission Standards and Engineering Division (MD-13)

TO: Conrad Simon, Director  
Air and Waste Management Division, Region II

As noted in your memorandum of September 19, 1985, Method 24 does not specify a procedure for experimentally determining the volume fraction of solids in surface coatings. When the method was originally proposed on October 5, 1979, it did include a procedure for experimentally determining the volume fraction of solids--the American Society for Testing and Materials (ASTM) D2697-73, Standard Method of Test for Volume Nonvolatile Matter in Clear or Pigmented Coatings. During the comment period, we received a very large number of comments concerning potential problems in the application of this procedure. As a result, it was deleted from Method 24 before its promulgation on October 3, 1980.

The ASTM, through its Committee D-1 on paints, is continuing to investigate more suitable procedures for measuring the volume of solids. The Committee chair person reported to us in June of 1985 that some very encouraging results had been obtained using a gas pycnometer. Results were preliminary; the Committee is planning further tests of the instrument. If this instrument proves to be reliable, it may form the basis for a new ASTM procedure, which might be included in Method 24. In the meantime, we still recommend the use of manufacturers' formulation data for the volume of solids, as specified in Method 24.

Appendix 3.20  
Averaging Time - SIP Revision Policy



JAN 20 1984

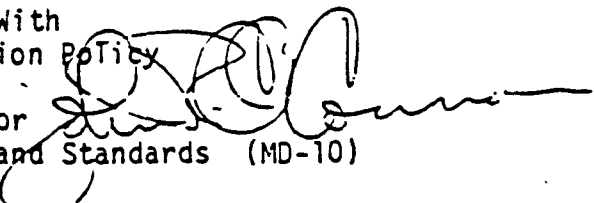
RECEIVED

JAN 23 1984

EPA, REGION III  
OFFICE OF REGIONAL ADMINISTRATION

MEMORANDUM

SUBJECT: Averaging Times for Compliance With  
VOC Emission Limits - SIP Revision Policy

FROM: John R. O'Connor, Acting Director   
Office of Air Quality Planning and Standards (MD-10)

TO: Director, Air and Waste Management Division  
Regions II-IV, VI-VIII, X  
Director, Air Management Division, Regions I, V, IX

The purpose of this memorandum is to clarify the Agency's policy regarding emission time averaging for existing sources of volatile organic compounds (VOC's). Numerous State Implementation Plan (SIP) revisions, both broad regulations and source-specific changes, have been submitted which provide for compliance determinations by "time averaging" emissions of VOC for periods exceeding 24 hours. These requests and the following policy on this subject were discussed extensively at a recent meeting attended by those Regional Offices which have the most pending actions (Regions I, III, IV, V); the Office of Air Quality Planning and Standards; and the Office of General Counsel. This policy represents the consensus of the meeting attendees.

The objective of EPA's national VOC emissions control program is the timely attainment and maintenance of the national ambient air quality standard (NAAQS) for ozone. SIP revisions and other regulatory actions relating to VOC control must maintain the integrity of this basic objective. There should be assurances that VOC emission control is reasonably consistent with protecting this short-term ozone standard. Further, since SIP's and associated VOC control programs contemplate the actual application of reasonably available control technology (RACT), regulatory actions that incorporate longer term averages to circumvent the installation of overall RACT level controls cannot be allowed.

RECEIVED

SEP 4 1984

ENFORCEMENT POLICY &  
STATE COORDINATION SEC.

JAN 24 1984

EPA REGION III

Current Agency guidance specifies the use of a daily weighted average for VOC regulations as the preferred alternative where continuous compliance is not feasible. An example might be 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 coating operators are allowed to "bubble" several production lines and average emissions over a 24-hour time period.

The preferred daily weighted average alternative may not be feasible in all cases. Where the source operations are such that daily VOC emissions cannot be determined or where the application of RACT for each emission point (line, machine, etc.) is not economically or technically feasible on a daily basis, longer averaging times can be permitted under certain conditions. In determining feasibility, consideration might be given, for example, to the extent to which modifications can be made to testing, inventory, or recordkeeping practices in order to quantify daily emissions. Also, variability or lack of predictability in a source's daily operation might be considered as well as availability of control technology or the physical impediment or restriction to control equipment installation. In order to allow longer than daily averaging in SIP regulations, the following conditions or principles must be honored:

1. Real reductions in actual emissions must be achieved, consistent with the RACT control levels specified in SIP's or the control technique guidelines (CTG's). These limits are typically expressed in terms of VOC per unit of production (a qualitative term such as lbs VOC/gal coating). Where it is not feasible to specify emission limits in such terms, emission limits per unit of time can be approved provided that:
  - a. The emission limits reflect typical (rather than potential or allowable) production rate and operating hours. These emission limits must truly reflect emissions reductions consistent with RACT and are not simply an artificial constraint on potential emissions. This must be supported in the SIP revision by historical production and operation data.
  - b. Nonproduction or equipment downtime credits are not allowed in the emission limit calculation unless a Federally enforceable document specifically restricts operation during these times. Such credit must be based on real, historical emissions.
2. Averaging periods must be as short as practicable and in no case longer than 30 days.
3. A demonstration must be made that the use of long-term averaging (greater than 24-hour averaging) will not jeopardize either ambient standards attainment or the reasonable further progress (RFP) plan for the area. This must be accomplished by showing

that the maximum daily increase in emissions associated with long-term averaging is consistent with the approved ozone SIP for the area.

- 4. Sources in areas lacking approved SIP's, or in areas with approved SIP's but showing measured violations, cannot be considered for longer term averages until the SIP has been revised demonstrating ambient standards attainment and maintenance of RFP (reflecting the maximum daily emissions from the source with long-term averaging).

Meaningful short-term (i.e., daily) emission caps are desirable especially for sources subject to large fluctuations in emissions. The use of a daily cap (equal to or less than current average emissions on a daily basis) that limits short-term emissions to RACT equivalent levels would meet the above objective of ensuring VOC control that is consistent with attaining the NAAQS for ozone.

States have the primary responsibility to show adherence to the above principles and, to do so, must include the following information (in detail) in all SIP revision requests that seek VOC averaging times greater than 24 hours:

1. The VOC 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 new emission limit requirement and to support the showing that the emission limit is consistent with RFP and the demonstration of attainment.

Each EPA Regional Office shall have the primary responsibility for determining the approvability of application requests. However, in order to assure Regional consistency, coordination with the Office of Air Quality Planning and Standards staff is encouraged during the initial development of any single "time average" SIP revision or regulation. Also, all SIP revisions involving long-term averaging must be proposed in the Federal Register with an explanation of how the principles listed above have been satisfied.

Should there be any questions on this policy, please call Tom Helms (FTS 629-5526) or Brock Nicholson (FTS 629-5516).

Attachment

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